

Technical Specifications
for
Augmentation of IT Infrastructure
located at
National Load Despatch Centre (NLDC), Katwaria
Sarai, New Delhi
and
Establishing of Basic IT Infrastructure
at
POSOCO-Corporate Centre
IFCI Tower, Nehru Place, New Delhi

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1. Introduction

Power System Operation Corporation Ltd. (POSOCO), herein after referred as “Owner”, is a Govt. of India Enterprise which is established to Ensure Integrated Operation of Regional and National Power Systems to facilitate transfer of electric power within and across the regions and trans-national exchange of power with Reliability, Security and Economy.

POSOCO has its corporate office at B-9, First Floor, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016. POSOCO is assigned to take up role of the Independent System Operator (ISO) in Indian power sector. POSOCO comprises the corporate centre and its Load Dispatch Centres comprise National Load Dispatch Centre at Delhi, Back up National Load Dispatch Centre at Kolkata with Five Regional Load Dispatch Centres located across the India.

Information Technology is vital to POSOCO operations and it aims at utilizing Information Technology (IT) for ‘Automating’ its operations for more productive, knowledge based work environment and improved decision-making.

Presently, POSOCO CC and NLDC offices are located at same place and it is proposed to shift the POSOCO CC along-with some departments of NLDC to 9th floor and half of 8th floor of IFCI Tower, Nehru Place. In view of same, POSOCO is intended to establish basic IT infrastructure at IFCI Tower, Nehru Place to facilitate the official seating there. Further, strengthening/augmentation of existing IT infrastructure at NLDC B-9, First Floor, Qutab Institutional Area, Katwaria Sarai, New Delhi is also envisaged under the scope of this contract.

The present scope of work under this contract includes supply, installation/commissioning, configuration, testing, integration with existing system (wherever applicable) of the hardware and software envisaged under the contract along with a Maintenance and Support of vendor for 05 years (with back-to-back OEM warranty) with resident engineer. The contract shall be extended for further two (02) years (6th and 7th years) on the sole discretion of the owner.

2. Scope of the project

The scope of work envisaged under the contract is as following:

- i. Supply, Inland, transportation, loading and unloading, Transit Insurance, Delivery at site, Installation, Cabling, Testing, Commissioning, Configurations, Documentation, Training to POSOCO Administrators, Warranty and Service support of all the components supplied under this contract including Operating System, Security software, and other Software components as per Technical Specifications and Bill of Quantities mentioned under the contract. ***Hardware specifications of the equipments to be supplied under the contract to NLDC and CC POSOCO are attached as Annexure-I and Annexure-II respectively. Bill of quantity (BoQ) of the equipments are mentioned at Annexure-III.***
- ii. **Items required to be supplied with All Computing Systems & Peripherals (Work Stations, All- In-One Desktop Computers and Printers) :**

- a. PCs to be supplied with pre-installed OS Software with latest service pack with license and installation/activation keys.
 - b. Vendor to supply the Operating System DVD, which shall be used for installation of the OS in case of software corruption, hard disk replacement etc. Also Recovery / Reinstallation DVD containing software, device drivers for computing devices, display, sound, network interface, DVD/CD-ROM/ DVD/CD-writer, keyboard, mouse etc., shall be supplied.
 - c. In case, if above software are to be downloaded from OEMs website, it is the responsibility of the vendor to download, write to CD/DVD as appropriate OR provide in external USB storage and submit sufficient number of OS/driver CD/DVD as instructed by Engineer-In-charge.
 - d. Factory moulded CAT 6 Patch Cord is to be supplied with all the end-computing devices like Computers, Printers, Laptops and Printers etc. The supplied patch cord should be of min 7' (feet) and it should conform or exceed the EIA/TIA 568 B standards for CAT 6 boots on RJ 45 plugs at both ends. These items are not a BoQ item but vendors have to provide as and when required.
- iii. Vendor shall have back-to-back contract with OEM for the warranty/subscription etc. for the entire period of contract (including AMC period). Copy of documentary evidence in this regard shall be submitted by the successful Vendor along-with the invoice.
 - iv. All hardware(s) & software(s) supplied under the contract shall have five (05) year manufacturer standard enterprise warranty/support/license/subscription (back-to-back OEM warranty including updates, patches, etc.). All software(s) supplied shall be of latest version at the time of supply. All software should have perpetual license and have all subscription for updates/patches for the supplied version. No additional cost in this head shall be reimbursed by the owner. If any cost is occurred in these heads then the same shall be deducted from the contract invoice.
 - v. Vendor shall provide single point of contact (preferably software) for registering calls/complaints of the users.
 - vi. Integration with existing system, if any.
 - vii. Assistance in replacement of old device with newly supplied device including configuration.
 - viii. Deployment of Resident Engineer at IFCI Tower Nehru Place, who will maintain all the systems supplied at both locations.
 - ix. Fully On-site support.

3. General Terms and Conditions

The General terms and conditions are mentioned in sub-sections below.

3.1. Rates

Firm and Fixed during entire duration of the contract without any price variation on any account whatsoever.

3.2. Work Schedule

06 weeks (Six weeks) from date of issuance of Letter of Award for Supply, Inland, transportation, loading and unloading, Transit Insurance, Delivery at site, Installation, Cabling, Testing, Commissioning, Configurations, Documentation, Training to POSOCO Administrators, Warranty and Service support of all the components supplied under this contract including Operating System, Security software, and other Software components as per Technical Specifications and Bill of Quantities mentioned under the contract.

3.3. Payment Terms

- a) **For supply:** 100% payment (excluding Maintenance and Support charges) shall be released after successful Supply, Inland transportation, Installation, Cabling, Testing, Commissioning and Configurations of the supplied systems along-with submission of back-to-back OEM warranty for the entire duration of contract (5 years) and required Contract Performance Guarantee (CPG) and after verification by Engineer-in-charge or his authorised representative.
- b) **For Maintenance and Support:** Payment shall be released on quarterly basis after the completion of every quarter and after verification by Engineer-in-Charge or his authorised representative.
- c) **For extended Comprehensive AMC (6th and 7th year):** Payment shall be released on quarterly basis after the completion of every quarter and after verification by Engineer-in-Charge or his authorised representative. Before the release of payments of extended period, Vendor shall submit OEM Back-to-Back support documents along-with desired Contract Performance Guarantee (CPG) for the extended periods.
- d) Tax shall be deducted at source as per the statutory laws.

3.4. Quantity Variation

During the execution of the contract, the Owner reserves the right to increase or decrease the quantities of items under the contract but without any change in unit price or other terms and conditions. Such variation shall not be subjected to any limitations for the individual items but the total variation in all such items under the contract shall be limited to +/- 20 % (plus/minus twenty percent) of the total contract price.

3.5. Duration of Contract

All supplied systems shall be under OEM back-to-back warranty along-with Vendor maintenance and support with a scope of work under this technical specification, initially for a period of 05 (five) years. Owner at its discretion may extend the comprehensive AMC contract for further two years (6th and 7th), vendor has to submit the Back-to-Back OEM Support contract at that time for this extended comprehensive AMC.

3.6. Cancellation of Contract in Full or Part

During the entire period of the contract, if at any point of time, vendor fails to deliver the services as per the scope of work detailed under this technical specification (TS), due to any lapse / reason, Owner reserves the right to terminate the contract in full/partial by giving one (01) month advance notice to the Vendor. Also, during the entire period of contract, if it is felt that services envisaged under this TS is required partially/not required, the Owner reserves the right to terminate the contract in partial/full by giving one (01) month advance notice to the Vendor without mentioning any reason. Under such conditions, the payment for that period would be made on pro-rata basis and shall be restricted till the notified date of termination of service. In the case of termination / cancellation of the order, the vendor will not be entitled to recover from Owner any amount by way of damages, loss or otherwise.

4. Warranty / Maintenance and Support

The contract is to be operated on single responsibility basis. The availability of all the equipment/items supplied under the contract is the essence of the contract. Vendor shall maintain required availability of the system during entire tenancy of the contract as per the terms and conditions and requirements mentioned in document. The maintenance of all the supplied system is comprised of all activities required to keep the above systems up and running all the time at an optimum level by proactive monitoring, diagnosis and rectification of any failure of all the hardware(s) and software(s).

The Vendor's scope also includes providing all spares and services including all type of the configurations to maintain the system in optimum performance and operational state.

The Vendor is required to coordinate with the OEM for getting work completed related to the hardware(s), software(s) which are under OEM warranty and/or support. For all other equipment/software(s), the Vendor is required to supply spare parts, perform trouble-shooting, installation, re-installation, configuration, etc. for software(s) installed at NLDC, Katwaria Sarai and POSOCO-CC, Nehru Place. Vendor is also required to maintain all hardware(s), software(s), Operating System (OS), Database (if applicable) in updated state by applying patching, firmware upgrade as and when made available by the respective OEMs.

Vendor shall provide suitable PC(s)/Laptop to their Resident Engineer(s) deployed under the contract.

4.1. Scope of work during Warranty Period

The detailed scope of services to be provided by vendor during contract period, shall include but not limited to the following:

- Periodic checking under preventive maintenance (as described under *section 4.3*) including functional checking of hardware(s) and software(s).
- Restoration of part failure or complete failure of any/all supplied systems.

- Monitoring of system performance and required tuning for optimum performance after any changes made in system such as addition of a new component.
- The operation and performance of the systems under AMC shall be monitored on a regular basis and shall submit report on fortnightly basis on below mentioned activities for each location (i.e. systems at Nehru Place and Katwaria Sarai office). The Vendor shall submit the detailed procedure to meet these requirements.
- Monitoring of servers' resources and all major nodes shall be carried out by gathering log data and analysis of the results. The Vendor shall advise the Owner on the appropriate actions to be taken, if required. The information on following shall be maintained:
 - a. CPU loading (Peak and Average)
 - b. Disk utilization (Peak and Average)
 - c. Operating system error reports
 - d. Memory utilisation (Peak and Average)
 - e. LAN utilisation (Peak and Average)
 - f. System error log
- The Vendor shall also be responsible for monitoring of the cyber security of the systems. The logs of the systems shall be analysed for exceptions and the possible incident of intrusion/trespass and shall be communicated to the Owner promptly.
- The Vendor shall also be responsible to perform annual cyber security test (VA & PT) through CERT-IN Certified auditors and implement the recommendation given by auditors in respect to security of supplied system in consultation with the owner. No additional shall be paid by the Owner.
- The warranty shall include repair/replacement of all items with original or standard make like keyboard, mouse, RAM, cabinet, SMPS, modems, Network cards, Monitors, printers, Jack/Patch Panel, I/Os, motherboards, processors, routers, Switches, Hubs, PC/server fans, RAID controllers, speakers, headphones, Laptop batteries, Printer Teflon, printer heads, head mask, Printer Fuser, ETB and all other IT related components and peripherals taken under warranty until unless clearly specified by Vendor and agreed by POSOCO. All the spares shall be Genuine, Original, New and POSOCO shall be provided with the bills, as and when asked, against the spares purchased by the vendor as a proof of it.
- During Warranty period, replacement of defective components or sub-components shall be replaced by the brand new genuine spare parts bearing the same OEM part number. Under exceptional circumstances only related to non-availability of spare(s) of the same part number, the compatible spare(s) having different OEM may be accepted after getting necessary approval from Engineer In-charge or his/her authorised representative. However, in such cases the spare part(s) to be supplied against the defective part(s) shall be brand new and shall bear part number from the respective OEM.
- For all the supplied systems, vendor has to take back to back OEM warranty/support from respective OEM. Documentary proof from OEM confirming 05 years On-site comprehensive warranty should be submitted at the time of site handover.

- The type of maintenance shall be fully comprehensive in nature and shall be done on-site including repair /replacement (with equivalent or higher specification items).
- The consumables mentioned anywhere in the documents will include only toners, ink cartridges, printer drums, printer papers, magnetic tapes, floppy diskettes and stationery only. No other item will be considered under consumables and repair/replacement of all other parts/items shall be responsibility of the Vendor.
- Vendor should respond to the problem on near real-time basis during normal POSOCO working hours. Any damage to the equipment occurred during the maintenance work being carried out shall be repaired/replaced (with equivalent or higher specification items) by the Vendor at its own expense.
- Vendor shall maintain adequate number of readily available spares at site office like Keyboards/mouse/all type of hard disks/monitors/ speakers/ FDD (if applicable)/ CD Drives/ modem cards/ LAN cards, etc., to attend to the problem immediately. Necessary lockable storage in this regard will be arranged by POSOCO.
- No alteration/attachments/adjustment shall be made to the hardware(s) being repaired that can decrease /reduce the actual capability of the machine.
- No component(s)/equipment shall be removed from its respective place from the office premises without informing the authorized officials of POSOCO. A gate-pass duly signed by officer-in-charge or his/her authorised representative is necessary for moving out any parts, for which the Resident/Service Engineer shall maintain appropriate entries in the IN/OUT register and would also co-ordinate in preparing the gate-pass for the same.
- Proper labelling/markings the hardware(s) equipment as directed by officer-in-charge with clear identification for each equipment shall be done.
- The vendor shall arrange for all tools, tackles, testing instruments, etc. as required during all operations such as transportation, installation, testing, commissioning, maintenance, etc. for completing the scope of work.
- Dedicated resident engineer along-with dedicated mobile number (at Vendor own cost) during the entire period of maintenance shall be posted at site.
- Escalation matrix shall be provided during the contract period. Vendor shall also provide details of appropriate Escalation Matrix in case of non-satisfactory service support.
- One online-portal shall be made available where users can launch the complaints and it shall keep all records in a dedicated database. A call-report sheet giving the details of problem attended, duly signed by the concerned end user shall be maintained.
- The vendor shall arrange for standby equipment, if the faulty equipment is not rectified within specified period or machines are taken out of office premises for servicing/repair.
- In case Resident Engineer is not able resolve the issue, Vendor shall assign appropriate resource from his office to resolve the same without any cost implication to the Owner.
- If any part of a system / sub-system gives repeated / recurring problems i.e., 3 times in a period of one month then it must be immediately replaced by the Vendor preferably by

the OEM / EIC recommended same spare parts. In case of replacement of keyboard and mouse only new item will be provided.

- Integration and configuration of the replaced hardware(s) and software(s).
- Software Management should be done by vendor.
 - a) Installation/re-installation of OS and other software purchased/supplied by POSOCO.
 - b) Configuration of routers, servers, UTM, and switches as required by POSOCO.
 - c) Trouble shooting and user level software(s) support for PC/workstation/laptop
 - d) Loading of various software upgrades/releases/patches purchased/supplied by POSOCO.
 - e) Installation/configuration of client software like MS Office/Open Office/etc. on PCs/Laptops.

4.2. Resident Engineer

For accomplishing above tasks, the Vendor is required to depute minimum One (01) qualified resident engineer at POSOCO-CC, Nehru Place with knowledge of servers, ADS, MS Exchange, database, DHCP, SCCM Server etc. The resident engineer(s) shall make all efforts to solve any issues in the NLDC and POSOCO-CC IT infrastructure proposed in this project, however, in case, the personnel is not able to solve the issues then necessary back-end support of relevant expert shall be provided from back-office of the contractor. The resident engineer shall have following qualifications:

- 1) Basic educational qualification of resident engineer shall be “Regular BCA” or “Regular B.Sc. (IT/computer Science)” or “DOEACC 'A' level” or equivalent or higher.
- 2) At least three (03) years’ experience in maintaining servers, ADS, MS Exchange, database, DHCP, SCCM Server etc.
- 3) Microsoft Certified Technology Specialist with MS-Exchange certification and adequate knowledge of implementing & managing Active Directory, Lync, SCCM.
- 4) CCNSE & Storage Architect & MS Exchange & CCNA certification.
- 5) Engineer must have adequate knowledge of networking, routing with relevant experience.
- 6) Engineer must have knowledge/certifications to implement and manage virtualized IT environment infrastructure.

Resident Engineer shall also perform following activities along-with mentioned in aforesaid para of technical specification:

1. Shall monitor & maintain the complete IT infrastructure of POSOCO-CC and NLDC locally and remotely respectively.
2. Shall be available on all working days specified under the contract.
3. Shall be accessible on all working and holidays (in case of critical situation). The Resident Engineer shall respond to Engineer-in-charge or his/her authorized representative even during off-hours in case of urgency.

4. Shall submit daily/weekly/monthly reports as per format decided by Engineer-in-charge or his/her authorized representative.
5. Shall perform preventive maintenance of the system for proper upkeep of the system.
6. To carry out any other work, not specifically mentioned in this specification whereas required during pendency of contract and assigned by Engineer-in-Charge.
7. Support such as logging complaints to the respective OEMs, follow up with the OEMs, etc.
8. Shall attend any IT related complaint, informed by the users and resolve the same.
9. Shall extend software support for the PCs, Printers, Network components, Servers etc. which is not covered under this AMC but has a valid Warranty support from respective OEMs.

If any engineer is found to be not having requisite qualification or skill or his performance or conduct is not found satisfactory, he shall be summarily removed within 48 hours of being given notice in writing. The Vendor shall provide a substitute within a period of 72 hours from the time of receipt of notice, failing which the Vendor shall be liable for non-performance deduction for entire period of absence.

4.3. Preventive Maintenance

The Vendor shall undertake preventive maintenance of all equipment and modules under the scope of this contract, in accordance with this section. Activities shall include but not limited to:

- a. Cleaning and blowing for removal of dust from Servers, Workstations, printers, etc. - once every three (03) months. The preventive maintenance would include checking and diagnostic functions for software also.
- b. Physical inspection to check the machines for rat droppings, lizards or other vermin - once every three (03) months.
- c. Physical hardware checks to ensure proper working of cooling fans, etc. - once every three (03) months.
- d. Connection test of LAN cables for identifying potential loose contacts in machines and routers - once every three (03) months.
- e. Online diagnostics for servers and workstations - once every three (03) months.
- f. Monitoring of machines with reference to error reports and logs every week and necessary corrective action.
- g. CPU, LAN, & Disk average and peak loading/usage - once every month.
- h. Taking an Image back-up of all the critical servers – once every month. At any time Last four (04) image back-up shall be maintained. Back-up image shall be tested once in three (03) months using spare servers. Two (02) copies of back-up shall be maintained out of which one shall remain with Owner and other with Vendor. Owner shall provide the hard disks for the back-up mentioned in this point.

- i. On demand scan shall be initiated on weekly basis in all the servers/workstations.
- j. Checking of daily status of the system in the prescribed format provided by the Owner.
- k. Arranging/Connecting Video-Conferencing in the office premises.
- l. All the above mentioned periodically generated preventive maintenance reports (a to k), shall be submitted to Engineer In-charge or his/her authorised representative, as and when asked.

4.4. Working Hours

The standard hours of service for standard support shall be **Monday to Saturday (six days per week), 09:00 am to 05:30 pm local time (IST)** with ½ hour lunch break, excluding public and Owners official holidays. However, Emergency Support shall be 24 hours a day, 7 days a week throughout the year. Total working days envisaged is six per week, Owner at his discretion can use any days of the week considering the work requirements.

4.5. Response and Resolution Time

In order to calculate the Response and Resolution time, all the equipments supplied under the contract are categorised as follows:

- (a) **Category-1:** Servers, Routers, UTMs, Switches, Network Equipments, SAN, WiFi, NAS, Video Conferencing, Critical Services etc.
- (b) **Category-2:** Laptops, PCs/Workstations, AMS, LFDs, Printers & peripherals etc.

All breaks down calls shall be attended immediately during the working hours in order to provide interruption free service to the Owner, however, following response and resolution times are allowed to resolve the issue from lodging the complaint:

Sl. No.	Description	During Working Hours		During Non-working Hours	
		Response Time	Resolution Time	Response Time	Resolution Time
1	Category-1	½ hours	4 hours	2 hours	8 hours
2	Category-2	½ hours	8 hours	Next Working Day	8 hours

Resolution time mentioned herein above shall be calculated from the response time, whereas response time shall be calculated from the lodging of complaint to the Vendor.

In case of hardware(s) failures, if resolution is dependent on OEM then the resolution time of OEM shall also be added to it. In case the Vendor provides suitable temporary equivalent (with basic minimum functionality same as the original device) replacement on a stand-by basis, it shall be considered as available.

4.6. Availability Calculation:

It is the endeavour of both the Vendor and Owner to maximize system availability to the extent possible. The Vendor shall provide guaranteed availability for various types of Systems supplied under the project.

The non-availability hours for availability calculation shall be counted from the end of the allowed Resolution time. A standardized register shall be maintained containing full details of each outages, actions taken by Owner to correct the problem, time of reporting to the Vendor, allowed Response time, actual Resolution time and signature of Engineer-in-charge (or his authorised representative) as well as the Vendor's engineer deputed at site.

Duration of outages over and above the Resolution time shall be counted for the non-availability computation and shall be clearly brought out in the register.

For the purpose of calculating non-availability hours of the equipments, equipments under the category-1 shall be considered on actual hour basis (24x no. of days), whereas, equipments under the category-2 shall be considered working hours basis.

4.7. Applicable Penalty:

1. **Equipments under Category-1:** In the event of non-availability of the equipments, categorised under this category, penalty of Rs 500 per hour shall be levied to the vendor. In the case when non-availability of equipments during the quarter is more than 5 hours (collective non-availability of all equipments under this category), an additional penalty of Rs 2,000 per hour shall be applicable.
2. **Equipments under Category-2:** In the event of non-availability of the equipments, categorised under this category, penalty of Rs 2000 per day shall be levied to the vendor. In the case when non-availability of equipments during the quarter is more than 5 days (collective non-availability of all equipments under this category), an additional penalty of Rs 2,000 per day shall be applicable.
3. **Absence of Resident Engineer:** If the Resident Engineers (RE), posted at POSOCO, fails to attend POSOCO office without suitable replacement being provided by the Vendor, a penalty of Rs. 1,000/- per day per engineer shall be imposed on the Vendor and the same will be deducted from the quarterly bill of the Vendor. A resident engineer is entitled to avail 14 days leave in a year with prior approval from POSOCO. However such leave may not be more than six days at a stretch.
4. In case of simultaneous failure of multiple equipments, it shall be considered as a single incident for the calculation of availability and charges shall be deducted accordingly.
5. **In case of AMC Vendor failing to provide the replacement or fails to repair original equipment within seven (07) days, POSOCO shall be at a liberty to get the system repaired/replaced through alternate source and debit the cost including 15% overhead charges from the consolidated AMC charges payable. POSOCO shall entertain no correspondence or counter claim in this regard.**

5. General Requirements

The Vendor is encouraged to offer standard products and designs. However, the Vendor must conform to the requirements and provide any special or additional equipment(s) or software necessary to meet the requirements stated in the specification.

The Owner reserves the right of execution of works within the stipulated quantity variation provision other than those indicated in the annexure(s) at the same rates, terms and conditions. The Vendor's proposal shall address all functional and performance requirements within this specification and shall include sufficient information and supporting documentation in order to determine compliance with this specification without further necessity for enquiries.

An analysis of the functional and performance requirements of this specification and/or site surveys, design, and engineering may lead the Vendor to conclude that additional items and services are required that are not specifically mentioned in this specification. The Vendor shall be responsible for providing, at no added cost to the Owner, such materials and services which shall be considered to be within the scope of the contract.

The Vendors are advised to visit sites (at their own expense with no reimbursement from the owner), prior to the submission of proposal, and make surveys and assessments as deemed necessary for proposal submission. The successful Vendor (Vendor) is required to visit sites at its own expense and shall not be entitled for any reimbursement for it. The site visits/routes shall include all necessary surveys to allow the Vendor to perform the design and implementation functions. The Vendor shall inform their site survey schedule to the Owner/Owner well in advance.

Vendor shall be responsible for supplying and laying down all the desired cables i.e. power cables, LAN cables, etc.

- a. In case of any discrepancy between the provisions of this section and provisions of other section of tender documents, the provisions of this section shall prevail.
- b. All IT equipment shall be IPv6 ready from day one; requisite licenses, etc. for the same shall be included in the quoted price. The entire system under IT package shall be configured on IPv6 with suitable NAT64 provisions at the gateway level.
- c. All the Equipment provided under this contract shall be supplied with 3-pin, 5A OR 15A plug tops complying with Indian Electrical standards. The Equipment shall operate on 230 volts, 50 Hz single phase AC power supply.
- d. The Equipment to be supplied under this contract shall be the industry proven products and not the R&D models. The equipment shall conform to the requirements of relevant Indian & International Standards.
- e. The Vendor shall ensure that product/technologies/services quoted under this project are latest and it shall have more than five (05) years of life (i.e. end of life declared by the respective OEM shall be at least 05 years) from the OBD of the project.
- f. The VENDOR shall ensure that the spares and upgrades for the product shall be available for five (05) years from the date of OBD.
- g. All the components of the main system shall be from the same Original Equipment Manufacturer (OEM).
- h. Assembled products of different makes or refurbished products shall NOT be accepted. (Example: In case of computer system like Monitor, Keyboard and Mouse. The internally used sub-components like Hard Disk, DVD Drives, LAN card, Memory cards etc. shall bear the OEM part no. of the manufacturer of the computer).

- i. The BOQ estimated by POSOCO is NOT exhaustive. Any additional items/ components as required for the successful completion of the work under taken may be assessed by the Vendor and the same may be incorporated in the offer. The BOQ as assessed by the Vendor as above shall be clearly indicated in the offer. Even at the time of execution, if any additional items/components are required to complete the system, notwithstanding the BOQ as identified by the party as above, the same shall be provided free of cost by the Vendor.

5.1. Confidentiality of Information

- a. All information or data of and about POSOCO shall be kept confidential by the Vendor and its employees. Also, all information or data of and about POSOCO acquired, used or applied during the contract period regarding systems, procedures, and infrastructure shall be kept highly confidential by the Vendor and its employees.
- b. The successful Vendor has to sign NDC (Non-Disclosure Agreement) and shall not disclose any information even in parts with respect of POSOCO IT infrastructure details to any person/organization without the consent of POSOCO.
- c. Vendor shall ensure that their personnel working under this contract are strictly abiding with the requirements of confidentiality of Information. He shall devise and put in place suitable mechanism to monitor & ensure the said requirement. Breach of this agreement may invite the forfeit of Bank Guarantee.

5.2. Vendor Responsibilities and Obligations

Vendor responsibility shall include the following:

- a. Supply and installation of all the hardware(s) and software(s) items as per the scope of work and detailed technical specifications. All these equipment/accessories shall be warranted and must operate at or above the guaranteed values with regard to availability.
- b. The system spare parts, as and when required and complete maintenance support of the system in future shall be with back-to-back guarantee from OEM for a period of five (05) years from the date of successful taking over of the system by the owner.
- c. One (01) copy of Hardware(s) and Software(s) documentation shall be provided along with the supply of equipment.
- d. The vendor shall arrange for all tools, tackles, testing instruments etc., as required during all operations such as transportations, installation, testing and commissioning, etc., for completing the scope of work as per this specification. These tools and tackles and testing instruments etc., shall be allowed to be taken back by the vendor. The vendor shall undertake all testing and commissioning activities and shall provide assistance during inspection and acceptance testing by the owner.
- e. Vendor shall provide all required equipment and services, whether explicitly mentioned in these specifications or not, to fulfil the intent of the specification and to ensure completeness, operability and maintainability of the system at no extra cost to the owner.

- f. Vendor shall furnish the Part No/Product Identification Number for all products as provided by the original manufacturer.
- g. Vendor shall provide a clear and explicit activity-wise action plan and schedule of completion of work.

5.3. Site Preparation, Supervision and Installation

- a. It shall be the responsibility of the vendor to supervise the site preparation by the owner to ensure that the site is prepared as per the requirements such as environmental conditions, power requirements, etc. The vendor shall ensure that their system operates efficiently under these conditions.
- b. The vendor shall furnish along with its offer a list of facilities and other necessities required by them, if any, for site preparation, etc. The vendor shall be fully responsible for installation and commissioning of the equipment including cabling related to installed equipment and other related activities such as unpacking, uncarting, inspection, etc., for which the owner shall provide the required space at the premises, the vendor shall have to arrange by itself all testing equipment and tools required for maintenance and make its own transport arrangements.
- c. Special requirements, if any, of operating parameters like the range of temperature, humidity, dust level and power requirement should be intimated prior to installation to Engineer-in-charge or his/her authorised representative.
- d. The Vendor must address all the above aspects in the same order and must indicate very specifically any deviation taken on account of make/configuration/technical and other particulars in a separate schedule included in the bid documents. Unless specifically brought out in the specific schedule as mentioned above, the bid shall be deemed to be in-line with the technical and other particulars mentioned in the tender specifications.

5.4. Verification & Acceptance by POSOCO

- a. All the items supplied under this contract shall be verified by Engineer-in-Charge or his/her authorized representative to confirm its compatibility to the requested specification prior to installation.
- b. Any other test(s), as POSOCO may deem fit so as to confirm the performance OR to establish the technical specifications of either individual hardware item OR for the integrated operation of network, shall be done by Supplier at the Site. If the results of these test(s) show any deficiency from the corresponding specifications or operation is not up to the desired level of performance, the Vendor shall do the necessary replacement so as to make the Hardware items to function at the desired level of performance. All costs for such replacements shall be borne by Vendor.
- c. POSOCO also reserves the right to conduct any testing/benchmarking of previously approved materials at any stage before taking over the system and if the same reveal non-compliance to the specifications, the Vendor shall take necessary action so that the material/system/software conforms to the specifications to the satisfaction of the owner.

- d. Acceptance or waiver of tests shall NOT relieve the Vendor from the responsibility to furnish material in accordance with the specifications.
- e. After satisfactory completion of acceptance tests and installation of the equipment/systems/software by the Vendor, the Taking over Certificate shall be issued by Engineer In-charge or his/her authorised representative.

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

Hardware Specifications for CC-POSOCO, Nehru Place

A-1 Rack Mounted Server (Type-I)			
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
	General Requirements :		
	The server should have advanced management capabilities, It shall be the responsibility of the vendor to configure 02 server in HA mode in order further extend current Active Directory Domain POSOCO-CC (Nehru Place).		
1	Processors	Intel® Xeon® Processor E5 Family series processor family, minimum 2.10 GHz base frequency and minimum 20MB L3 cache or better.	
		The server should be supplied with 02 processors.	
2	Chipset	Suitable Intel C600 chipset or better.	
3	No. of Cores	Up to 08 cores per processor	
	Memory Configuration	The server should be supplied with 64 GB (4 X16GB) RDIMM, 2400MT/s, minimum 16 DIMM Slots. It shall be expandable to 128 GB.	
4	RAID Controller	RAID controller should support RAID Level 0,1,5,6,10	
5	HDD	The server shall be supplied with 02 x 600GB SAS HDD RAID 1, 10K RPM or better.	
6	Network	2x 1Ge Copper ports on two different controllers.	
		Both controllers shall be in Active-Active mode.	
		1Ge Copper port for Server Heart-Beat check.	
7	Form Factor	Max. 2U, Rack Mountable.	
8	USB	Minimum 2 USB 3.0 ports	
	Operating System	Shall support Microsoft® Windows Server® 2016 standard, x64.	
	Power Supply	Hot pluggable redundant power supply with redundant Fans.	
9	System Management	To be provided with systems and server management software	
10	Certification	<ul style="list-style-type: none"> For Linux & Windows. Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years. 	
11	Accessories	The server shall be supplied with suitable Rack mountable kit & cable management arm, and suitable cables and accessories as required.	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-2 16 TB NAS Storage			
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
1	CPU	• Intel® Xeon E5-2600 v3 (min) Family series processor, minimum 2.40 GHz base frequency, minimum 8 cores and minimum 20MB L3 cache or better.	
		• CPU shall be virtualization enabled and supports Hyper Threading.	
2	Memory Configuration	Min 32 GB RDIMM, 2400MT/s.	
3	Hard Drive Bays	Up to 12x3.5” SATA 7.2K RPM, NL-SAS 7.2K RPM, SAS 10K RPM, SAS 15K RPM drive Min.	
4	Storage Capacity	☑ For data storage, 4x4 TB SAS RAID 5 negotiated/ & capable speed minimum 6Gbps, minimum 7.2K RPM.	
		☑ For Operating System, 2x300 GB SAS RAID 1 minimum 7.2K RPM	
5	RAID Support	Supported RAID Level 0,1,5,10, 5+1 (hot spare)	
6	Network	☑ 4x 1Ge Copper ports on two different controllers, i.e. 2 ports on one controller.	
		☑ Shall support NIC Teaming for increased throughput.	
7	USB	Minimum 2 Nos USB 3.0 ports.	
8	Form Factor	Rack Mountable.	
9	Operating System	To be supplied with OEM (or) Microsoft Windows Storage Server 2016 Standard edition pre-installed.	
10	Protocol Supported	Support for protocols like SMB 3.0,SMB direct (RDMA), CIFS,NFS,HTTP, iSCSI, FTP, Microsoft Active Directory, LDAP, Windows DFS.	
11	Management Software	To be provided with OEM.	
12	Client OS supported	Windows 7, Windows 8, Windows 8.1, Windows 10, Windows Server 2008, Windows 2008 R2, Windows 2012, Windows 2012 R2 and Windows 2016(x86/x64)	
13	Power Supply	Hot plug redundant power supply with minimum 750W PSU.	
14	Certification	<ul style="list-style-type: none"> • For Linux & Windows. • Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years. 	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-3	Layer 3 Switch : Core Switch (Type-I)	
	Name of Manufacturer	
	Proposed Model No.	
S. No.	Description	Compliance (Y/N)
1	Interface	
1.1	Switch should have minimum 24x1Ge Copper ports with auto-negotiation & Full Duplex. 4 x 1G/10G SFP+ to support 1000 Base-T, SX, LX, SR, LR transceivers.	
1.2	Switch must have dedicated Stack ports for support Stacking / High-Availability with another switch.	
1.3	Switch should be supplied with stacking module, necessary stacking cable to enable stacking across 02 no. of switches and all accessories complete in all respect.	
2	Management	
2.1	Console port for configuration of software features	
2.2	Shall able to manage the switch through Command-line interface; Web browser; SNMP etc.,	
3	Performance	
3.1	Min. 200 Gbps switching capacity	
4	Layer 2 and 3 features should be available from day1	
4.1	OSPF for IPv4 (OSPFv2) and IPv6 (OSPFv3)	
4.2	Border Gateway Protocol 4 with support for IPv6 addressing	
4.3	Policy-based routing	
4.4	IPv6 tunneling to allow IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet.	
4.5	Dynamic Host Configuration Protocol (DHCP) client, Relay and server.	
4.6	Should provide for mini. 8K MAC Address Table	
4.7	Should have facilities such as IPv6 to IPv4 tunneling, DHCPv6, ICMPv6	
5	Security	
5.1	Access Control Lists for both IPv4 and IPv6 for filtering traffic to prevent unauthorized users from accessing the network	
5.2	Port-based rate limiting and access control list (ACL) based rate limiting	
5.3	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port	
5.4	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address	
5.5	Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers	
5.6	Port security and port isolation	
6	Proposed solution must be in Gartner's Leader Quadrant at least once in last two years	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-4 All in One Desktop PC			
S. No.	Description		Compliance (Y/N)
1	Processor	Intel Core i5-7500 family, minimum 3.4 GHz base frequency, Quad core, 6 MB Cache or its higher version OR equivalent processor.	
2	Chipset	Intel Q270 series chipset or better.	
3	RAM	Minimum 8GB DDR4 at 2400MHz expandable up to 32GB.	
4	Hard disk drive	Min. 1TB SATA or above capacity Hard Disk	
5	Optical Drive	Desktop should to have internal DVD+RW	
6	Display Controller	Integrated Intel HD Graphics 630 or better.	
7	Audio	Integrated Audio with Internal speaker.	
8	Webcam	Integrated 2.0 Megapixel 1080P FHD with privacy cover.	
9	Networking	Integrated intel i219-LM Ethernet LAN 10/100/1000 Mbps.	
10	I/O interfaces	☐ USB3.0 x 2 (side, one with Power-Share) USB3.0 x 2 (rear), USB2.0 x 2 (rear) HDMI 1.4 Out (rear) DisplayPort 1.2 (rear) Universal Audio Jack (side) Audio Line-Out (rear) RJ-45 (rear).	
		OEM Multimedia USB Keyboard & OEM Optical USB Mouse.	
11	Display	Minimum 21.5” Wide Viewing Angle WLED, Full HD 1920x 1080 resolution with anti-glare coating, non-touch.	
12	Operating system	Preinstalled OEM Licensed Microsoft Windows 10 Pro 64-bit or latest with media DVD (or) Recovery DVD.	
13	Certifications and Rating	Energy Star 6.1 Compliant or equivalent	
14	OS Certifications	Windows/Linux OS certification	
15	Power Management	Screen blanking, Hard disk & System Idle mode in POWER on, setup password, Power supply SMPS surge protected.	
16	Security	TPM2.0	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-5	Managed 24 Port Layer 2 Switch (with VLAN pass feature) (Type-II):	
	Name of Manufacturer	
	Proposed Model No.	
Sr. No.	Description	Compliance (Y/N)
1	Interface	
1.1	Switch should have min 24 RJ-45 autosensing – 10/100/1000 Mbps Copper Gigabit Ports And 4 x 1G/10G SFP+ Ports	
2	Management	
2.1	Console port for configuration of software features	
2.2	Shall able to manage the switch through Command-line interface; Web browser; SNMP etc.,	
3	Performance	
3.1	Min. 128 Gbps switching capacity	
4	Layer 2 features should be available from day1	
4.1	IPv6 tunneling to allow IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet.	
4.2	Should provide for mini. 8K MAC Address Table	
4.3	VLAN pass feature shall be available	
5	Security	
5.1	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port	
5.2	Port security	
6	Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-6 Managed 24 Port Basic Layer 3 Switch : Distribution/Access Switch PoE+ min (370W) (Type-III)		
	Name of Manufacturer	
	Proposed Model No.	
S. No.	Description	Compliance (Y/N)
1	Interface	
1.1	Switch should have min 24 RJ-45 autosensing – 10/100/1000 Mbps Copper Gigabit Ports And 4 x 1G/10G SFP+ ports	
2	Management	
2.1	Console port for configuration of software features. Switch shall support external /internal redundant power supply	
2.2	Shall able to manage the switch through Command-line interface; Web browser; SNMP etc.,	
3	Performance	
3.1	Min. 128 Gbps switching capacity	
4	Layer 2 and 3 features should be available from day1	
4.1	Static Routing for IPv4 and IPv6, RIPv1, RIPv2 for IPv4 and IPv6	
4.2	Switch shall support 1000 port based VLAN	
4.3	Switch shall support 802.3ad Link aggregation Control Protocol (LACP)	
4.5	Dynamic Host Configuration Protocol (DHCP) client, Relay and server.	
4.6	Should provide for mini. 8K MAC Address Table	
4.7	DHCPv6, ICMPv6	
5	Security	
5.1	Access Control Lists for both IPv4 and IPv6 for filtering traffic to prevent unauthorized users from accessing the network	
5.2	Port-based rate limiting and access control list (ACL) based rate limiting	
5.3	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port	
5.4	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address	
5.5	Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers	
5.6	Port security and port isolation	
6	Total power to be supported – 370 Watt	
7	Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-7 Heavy Duty Multi-Functional Printer (Monochrome) (Type-I)			
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
	A4 sized Multi-function device having integrated Laser Printing, Copying , FAX & Scanning,		
	Capabilities with mini. 6" touch screen control panel.		
1	Integrated Printer Specifications :		
1.1	Printing Speed (A4)	Minimum 60 ppm	
1.2	Paper Sizes supported	A4, Letter, Legal	
1.3	Duplexing	Automatic two-sided printing	
1.4	Memory	Minimum 1.5 GB or more	
	First page out	8.0 sec or better.	
	Processor speed	1.2 GHz or more.	
2	Integrated Copier Specifications :		
2.1	Copy Speed	Up to 60 cpm	
2.2	Copy Reduction / Enlargement/ Zoom	50 to 200%	
3	Integrated Scanner Specifications:		
3.1	Scan Speed	Min 65 ppm for black, 65 ppm for color.	
3.2	Scanner Type	Flatbed, Integrated A4 size with Automatic Document Feeder (ADF)	
3.3	Network Scan	Scan to e-mail (PC less), Scan to Network Folder, Scan to USB.	
3.4	Scanned file format	Digital Send: PDF, JPEG, TIFF, MTIFF, XPS, PDF/A	
		Scan to easy access USB: PDF, JPEG, TIFF, MTIFF, XPS, PDF/A	
3.5	Scan resolution, optical	Up to 600 dpi	
3.6	Duplex ADF scanning	Yes, single pass duplexing ADF.	
4	Paper Handling :		
4.1	Input Trays	Min 500 sheet input tray min 50 sheet multipurpose tray	
4.2	Output tray	Min 500 sheet output bin	
4.3	Connectivity ports	1 Hi-Speed USB 2.0 port; 1 Gigabit Ethernet 10/100/1000Base-TX network port wireless.	
4.4	Operating System Support	Full software installs supported on: Microsoft Windows 10, Microsoft® Windows® 8 32-bit and 64-bit, Windows Vista® 32-bit and 64- bit, Windows® XP 32-bit (SP2 or higher); Driver only installs supported on: Microsoft® Windows® Server 2012 32-bit and 64-bit, Windows® Server 2008 32-bit (SP3 or higher); Mac OS X v 10.5, v 10.6 and above; "	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-8	Color Laser Printer (Type-II)		
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
1	A4 sized Multi-function device having integrated Laser Printing, Copying , FAX & Scanning, Capabilities with mini. 6" touch screen control panel.		
2	Printing Speed	Minimum 47ppm in black and 47 ppm A-4 pages per minute	
3	Memory	Minimum 1 GB	
4	First page out		
5	Paper Sizes supported	A4, Letter, Legal	
6	Duplexing	Automatic	
7	Processor speed	1.2 GHz or more.	
8	Connectivity	USB 2.0 and 10/100 Base -TX built-in Fast Ethernet networking.	
9	Operating System Support	Full software installs supported on: Microsoft Windows 10, Microsoft® Windows® 8 32-bit and 64-bit, Windows Vista® 32-bit and 64- bit, Windows® XP 32-bit (SP2 or higher); Driver only installs supported on: Microsoft® Windows® Server 2012 32-bit and 64-bit, Windows® Server 2008 32-bit (SP3 or higher); Mac OS X v 10.5, v 10.6; and above "	
10	Scanned file format	Digital Send: PDF, JPEG, TIFF, MTIFF, XPS, PDF/A	
		Scan to easy access USB: PDF, JPEG, TIFF, MTIFF, XPS, PDF/A	
11	Scan resolution, optical	Min 600 dpi	
12	Input Trays	Min 500 sheet input tray, 100 sheet multipurpose tray	
13	Output tray	Min 500 sheet output bin	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-9 Multi-Functional Printer (Monochrome) (Type-III)			
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
	A4 sized Multi-function device having integrated Laser Printing, Copying , FAX & Scanning,		
	Capabilities with 3” touch screen control panel.		
1	Integrated Printer Specifications :		
1.1	Printing Speed (A4)	Minimum 38 ppm	
1.2	Paper Sizes supported	A4, Letter, Legal	
1.3	Duplexing	Automatic two-sided printing	
1.4	Memory	Minimum 256 MB or more	
	First page out	6.0 sec or better.	
	Processor speed	Min 1200 MHz .	
2	Integrated Copier Specifications :		
2.1	Copy Speed	Up to 36 cpm	
2.2	Copy Reduction / Enlargement/ Zoom	25 to 400%	
3	Integrated Scanner Specifications:		
3.1	Scan Speed	25 ppm for black, 20 ppm for color.	
3.2	Scanner Type	Flatbed, Integrated A4 size with Automatic Document Feeder (ADF)	
3.3	Network Scan	Scan to e-mail (PC less), Scan to Network Folder, Scan to USB.	
3.4	Scanned file format	Digital Send: PDF, RAW(BMP), TIFF, PDF	
		Scan to easy access USB: JPEG, TIFF	
3.5	Scan resolution, optical	Up to 1200x1200 dpi	
3.6	Duplex ADF scanning	Yes, single pass duplexing ADF.	
4	Paper Handling :		
4.1	Input Trays	300 pages in total	
4.2	Output tray	150 sheet output bin	
4.3	Connectivity ports	1 Hi-Speed USB port, 1 Host USB, 1 Gigabit Ethernet 10/100/1000T network port, 1 Wireless 802.11 b/g/n	
4.4	Operating System Support	Full software installs supported on: Microsoft Windows 10, Microsoft® Windows® 8 32-bit and 64-bit, Windows Vista® 32-bit and 64- bit, Windows® XP 32-bit (SP2 or higher); Driver only installs supported on: Microsoft® Windows® Server 2012 32-bit and 64-bit, Windows® Server 2008 32-bit (SP3 or higher); Mac OS X v 10.5, v 10.6 and above "	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-10 Unified Threat Management (UTM) device (Type-I)		
	Name of Manufacturer	
	Proposed Model No.	
S. No.	Description	Compliance (Y/N)
1	Hardware	
1.1	The UTM should be Hardware based, Reliable, purpose-built security appliance with hardened operating system that eliminates the security risks associated with general purpose operating systems.	
1.2	Appliance should be 1U size and rack mountable.	
1.3	Appliance should have the following major regulatory certifications FCC Class A, CE (EMC, LVD, RoHS)	
1.4	UTM Appliance should have minimum space /flash to store the firmware image and the UTM policies and AntiVirus + IPS signatures.	
1.5	UTM Appliance with Unrestricted users.	
1.6	The Unit should have minimum 2 Gb RAM or Higher.	
1.7	The UTM should have 8 Copper Gigabit Network Interface Ports, 2 x 10-GbE SFP+, 4 x 1-GbE SFP, 1 Console Interface, the Appliance should have at least two USB interface to connect a USB modem / 3GDatacard based USB modem which can be configured as a WAN link or redundant link for a primary link.	
1.8	Should have LED's indicating Status (Power, Test, Alarm) LAN (Link, Activity) WAN (Link, Activity) DMZ (Link, Activity)	
1.9	Unit should have Multi Core processing with specialized security processing	
1.10	Should have upgradeable Firmware	
1.11	Should support Deep Packet Inspection technology	
1.12	Gateway Antivirus should be able to scan the 50+ Protocols including HTTP, FTP, SMTP, POP3 and IMAP.	
1.13	Should support Virtual Private Network (VPN) technology	
1.14	Should support 15000+ signatures in the Gateway Antivirus (GAV), Dual Anti Virus if it is not available then quote separately.	
2	Firewall + IPSEC VPN + SSLVPN	
2.1	The UTM System shall comply with RFC 1918 with support for Static & Dynamic Network Address Translation and Port Address Translation.	
2.2	UTM Should have IPsec and SSL functionality in the same unit.	
2.3	The UTM should support 802.1QTrunking and should support minimum 256 VLANs.	
2.4	Support for deployment of the UTM in a secure Layer 2 bridging mode, providing rich Layer 2-7 UTM security services for the protected network while remaining "invisible" to devices on each side of it.	
2.5	UTM should have access control and deep inspection UTM services for native IPv6 network environments and mixed IPv4 and IPv6 network environments through dual- stack support.	

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-10	Unified Threat Management (UTM) device (Type-I)	
2.6	The UTM should support standard routing protocols like RIP, OSPF and BGP in addition to static and policy based routing.	
2.7	UTM should support for SSHv2, HTTP and HTTPS based management	
2.8	UTM should Support for RADIUS, Active Directory &LDAP for the user authentication protocols in addition to local authentication.	
2.9	UTM should support Active / Passive High Availability deployment.	
2.10	The UTM should have bandwidth allocation functionality.	
2.11	The UTM System shall comply with RFC 1918 with support for Static &Dynamic	
2.12	Network Address Translation and Port Address Translation.	
3	Intrusion Prevention System (IPS)	
3.1	UTM should have Integrated IPS Solution	
3.2	Support Behaviors analysis and signature based analysis with online download support of newer signatures for at least 1500 and shall be demonstrated by the firm during inspection and registration.	
3.3	There should be an option to create User-specified / exclusion of object option.	
3.4	The software on the IPS should support online software reconfiguration to Ensure that changes made to IPS configuration take place with immediate effect.	
3.5	The IPS should have high availability, so that in case if the primary fails the secondary appliance will become active without any manual intervention	
3.6	IPS solution should have capability to protect against Denial of Service (DOS) and DDOS attacks. Should have flexibility to configure threshold values for each of the Anomaly.	
3.7	IPS solution should be flexible enough to configure, enable/disable signatures and have different actions for the IPS signature at the UTM policy level and not configured at GLOBAL or interface level	
3.8	DOS and DDOS protection should be applied and attacks stopped before UTM policy lookups, AV scan. Option to configure and set DOS threshold values at a IP and Subnet level should be possible	
3.9	IPS signatures should have a configurable actions like terminate a TCP session by issuing TCP Reset packets to each end of the connection, or silently drop traffic in addition to sending an alert and logging the incident	
3.10	Signatures should have categorized based on High /medium /low on the appliance	
3.11	Can export reports to other formats. Should be able to output report data into a variety of different file formats like HTML/PDF /Doc etc.	
4	Anti-Virus	
4.1	UTM should have integrated gateway level Anti-Virus Solution	
4.2	Virus gateway should provide real-time detection of viruses and malicious code at the gateway for SMTP, IMAP/ POP3, HTTP, HTTPS and FTP Internet traffic. IM protocols (MSN, Yahoo etc.). The solution should detect and block viruses in HTTPS traffic.	
4.3	UTM Should support flow based AV scanning Technology for better performance	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-10	Unified Threat Management (UTM) device (Type-I)	
4.4	The proposed solution should be licensed per Hardware/Appliance as against per user	
4.5	Virus Gateway should have option to configure to respond to virus detection in Several ways i.e. delete the file or quarantine the file/discard the connection and alert e-mail /popup	
4.6	Frequent updates of virus pattern files should be available from the Web and option for scheduling for automatic update thru a secure communication as well as for manual update should be available.	
4.7	Should have facility to block files based on file extensions or original file type over HTTP, HTTPS, FTP, SMTP, POP3	
4.8	solution should support the sandbox module from day 1 to detect and prevent any zero day threats and it should support at least 3 scan engine	
4.9	The solution should support load balancing for the AV scanning, so that the traffic which needs to be scanned can be load balanced across the boxes in the cluster. Should have reporting facility to generate reports on virus detected over different protocols, top sources for viruses, destination for viruses, top viruses etc.	
4.10	UTM should have integrated category based URL filtering solution which should be capable of filtering HTTP and HTTPS based URLs	
4.11	The proposed solution should be licensed per unit as against per user	
4.12	Should be able to block different categories/sites based on users for at least 20 million sites under 50 categories with block, passphrase, confirm, allow options and same shall be demonstrated by the firm during registration and inspection	
4.13	Should have configurable parameters to block/allow unrated sites	
4.14	Should have configurable options to allow/deny access to web sites in case if the URL rating service is unavailable	
4.15	Should have options to customize the block message information send to end users	
4.16	Should have facility to configurable policy options to block web sites based on Banned words.	
4.17	Should have configurable policy options to block URLs based on web patterns (e.g. Mail.* to block web mail related sites)	
4.18	Should have configurable policy options to define the URLs what needs to be blocked as well as the exempt list	
5	Application Control	
5.1	The proposed system shall have the ability to detect, log and take action against network traffic based on over 1,000 application signatures	
5.2	The application signatures shall be manual or automatically updated	
5.3	The administrator shall be able to define application control list based on selectable application group and/or list and its corresponding actions	
5.4	The proposed system shall have the ability to identify, block or rate limit the following common P2P applications: Gnutella (Napshare, iMesh, Mldonkey, morph, Xolox, BearShare, FOXY), Bittorrent, Kaaza, WinY, edonkey	
5.5	The proposed system shall have the ability to manage and control Instant messaging	

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Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-10	Unified Threat Management (UTM) device (Type-I)	
5.6	The proposed system shall have the ability to detect, log and take action against network traffic based on over 1,000 application signatures	
5.7	The application signatures shall be manual or automatically updated	
5.8	The administrator shall be able to define application control list based on selectable application group and/or list and its corresponding actions	
5.9	The proposed system shall have the ability to identify, block or rate limit the following common P2P applications: Gnutella (Napshare, iMesh, Mldonkey, morph, Xolox, BearShare, FOXY), Bittorrent, Kaaza, WinY, edonkey	
6	Link and Load Balancing/sharing & Router	
6.1	The proposed system shall be able to operate on either Transparent (bridge) mode to minimize interruption to existing network infrastructure or NAT/Route mode.	
6.2	The system must be able to support routing protocols including, RIPv1&v2, OSPF, BGP.	
6.3	The system shall be able to provide Wan link redundancy using ping probes	
6.4	UTM should support Multiple links(more than 2) load sharing / balancing with failover cum redundancy	
7	Performance	
7.1	Firewall throughput shall be at least 3.4 Gbps or better.	
7.2	IPS throughput should be more than 1.1 Gbps.	
7.3	Minimum concurrent firewall sessions supported shall be 750000.	
7.4	Minimum new fire wall sessions supported shall be 20000.	
7.5	Minimum Antivirus throughput shall be 600 Mbps.	
7.6	Application Inspection throughput should be more than 1.1 Gbps.	
7.7	Should support DPI SSL connection 2000 or more for scanning the https protocol for any threats.	
7.8	Solution should have high availability (active/passive) from day 1	
7.9	UTM should at least be comprised of following 7 security functionalities 1) UTM + IPsec VPN +SSLVPN 2)Intrusion Prevention system 3)Antivirus 4) geo IP filtering 5) Web Content Filtering 6) Application Control 7) Link Load balancing & Router	
7.10	UTM appliance should at least support 2 x 10-GbE SFP+,	
	4 x 1-GbE SFP,	
	12 x 1 GbE,	
	Should have management port capability	
	1 Console	
8	Certification	
8.1	Proposed solution must be in Gartner leader quadrant at least once in last two years	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-11	Laptop (Type-I)	
	Name of Manufacturer	
	Proposed Model No.	
Sr. No.	Description	Compliance (Y/N)
1	Specification:	
1.1	Intel Core i5-6200U Processor (3MB Cache, up to 2.80 GHz)	
1.2	Intel HD Graphics 520 or better	
1.3	Minimum 8GB DDR4 Memory 2133 MHz	
1.4	500GB HDD SATA	
1.5	14-inch FHD (1920 x 1080)	
1.6	Intel(R) Dual Band Wireless-AC 7265 2x2 + Bluetooth 4.0	
1.7	720p HD Camera	
1.8	Primary 3-cell 42W/HR Battery	
1.9	45 Watt AC Adaptor	
1.10	Windows 10 Professional (64bit)	
1.11	English keyboard (Optional backlight)	
1.12	Wireless Mouse (Same as OEM Make)	
1.13	Laptop Bag	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-12 VC System		
	Name of Manufacturer	
	Proposed Model No.	
Sr. No.	Description	Compliance (Y/N)
1	Connectivity	
1.1	5+1 support simultaneous connection.	
2	Video standards and protocols	
2.1	supports H.261, H.263, H.264 AVC, H.264 High Profile, H.264 SVC, RTV	
3	Video input	
3.1	supports 1 x HDCI, 1 x HDMI 1.3, 1 x VGA	
4	Video out	
4.1	supports 2 x HDMI 1.3	
4.2	People video resolution	
4.3	1080p, 60 fps from 1740 Kbps	
5	Input	
5.1	- HD (1920 x 1080i), HD (1920 x 1080p), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), SXGA (1280 x 1024), WXGA (1280 x 768), HD (1280 x 720p), XGA (1024 x 768), SVGA (800 x 600)	
5.2	Content video resolution	
5.3	5–60 fps (up to 1080p resolution at 60 fps)	
6	Content frame rate	
6.1	1 x Real Presence Group microphone array input port (supporting a total of 4 microphone arrays), USB headset support, 1 x HDCI (camera), 1 x HDMI, 1 x 3.5 mm stereo line-in	
7	Audio input	
7.1	1 x HDMI, USB headset support, 1 x 3.5 mm stereo line-out	
8	Audio output	
8.1	2 x USB 2.0, 1 x RS-232, 8-pin mini-DIN	
8.2	Other interfaces	
8.3	H224/H.281, H.323 Annex Q, H.225, H.245, H.241, H.239, H.243, H.460, BFCP (RFC 4582), TIP	
9	Other supported standards	
9.1	IPv4 and IPv6 support, 1 x 10/100/1G Ethernet, Auto-MDIX, H.323 and/or SIP up to 6 Mbps	
10	Network	
10.1	1080p license, providing up to 1080p60 for people and content, Multipoint license for up to 6 sites at 720p30, or 4 sites at 1080p30	
11	Mic	
11.1	Three wired mic	
12	Speaker	
12.1	Speaker type	2-way, indoor surface mount speaker

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-12	VC System		
12.2	Frequency range	70 Hz to 20 kHz, -10 dB, half space	
12.3	Power capacity	75 W continuous pink noise 150 W continuous program	
12.4	Nominal sensitivity	90 dB SPL, 1W, 1m, half space	
12.5	Nominal impedance	8 ohms	
12.6	Crossover frequency	2.3 kHz	
12.7	Woofers	6.5" (165 mm) polypropylene cone with moisture resistant coating	
12.8	Tweeter	1.0" (25 mm) aluminum dome	
12.9	Overload protection	Full range power limiter, protecting the tweeter, woofer, and crossover	
12.10	Input connector	2 pin spring terminals	
12.11	Mounting	Wall mountable with wall mountable V-lock brackets (not on the display wall)	
12.12	Enclosure type	Plastic, trapezoidal, with metal grille and bass reflex ports	
12.13	Enclosure outer dimensions	13.0" H x 8.5" W x 6.75" D (33.0 cm H x 21.6 cm W x 17.1 cm D)	
13	Amplifier		
13.1	Voltage Gain	16 x (24 dB)	
13.2	Stereo Channel Separation	>75 dB @ 1 kHz	
13.3	CMRR	75 dB @ 1 kHz	
13.4	Audio Input/Signal Type	1 Stereo Balanced	
13.5	Connectors	3.5 mm Captive Screw Connector, 5 Pole	
13.6	Impedance	>10k ohms unbalanced/balanced, DC coupled	
13.7	Nominal Level	+4 dBu (1.23 Vrms), balanced	
13.8	Maximum Level	+20 dBu (7.75 Vrms), balanced	
13.9	Input Sensitivity	+4 dBu (1.23 Vrms)	
13.10	Audio Output/Signal type	1 stereo, 4- or 8-ohm direct	
13.11	Connectors	(1) 5 mm screw lock captive screw connector, 4 pole	
13.12	Load Impedance	4 ohms minimum	
13.13	Output Power	60 watts rms per channel, 8 ohms, 1 kHz, <0.05% THD	
13.14	Frequency Response	20 Hz to 20 kHz, ± 1 dB THD + Noise	
13.15	THD + Noise	0.05% @ 20 Hz-20 kHz, 8 ohms, at 3 dB below clipping	
13.16	S/N	105 dB, 20 Hz - 20 kHz, unweighted	
13.17	Damping Factor	>100 @ 8 ohms	
13.18	High Pass Filter	80 Hz, 12 dB per octave rolloff (switch selectable)	

Annexure - I**Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”**

A-12	VC System		
14	HD Camera	<ul style="list-style-type: none">i. Shall support HD 1080p or better resolution.ii. Shall have both auto or manual options in setting Focus and Brightnessiii. Shall support 12 x or above optical zoom minimum +/- 80 degree PAN & +/- 20 degree Tilt capability to operate in normal room illumination conditions.iv. It should support minimum 50 lux, with IR Detectors, Signal to noise ratio 50db, I/O – HDCI.v. Shall support far end camera control.vi. Camera should be controllable from hand held remote of proposed VC system.vii. Camera and Codec should be from same OEM.	
15	Integration		
15.1	It shall be possible to integrated with existing MCU device; i.e. Polycom Real Presence Collaboration Server (RMX) 1500		

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-13 Biometric System cum Attendance Solution		
	Name of Manufacturer	
	Proposed Model No.	
Sr. No.	Description	Compliance (Y/N)
1	Specification for Multi-Biometric & Access Control with Face Recognition (Time & Attendance System)	
1.1	Minimum 3" TFT color LCD/LED Multimedia Display	
1.2	Minimum 2000 Finger print & 800 Face Templates User Capacity	
1.3	Minimum 100,000 Transaction Storage	
1.4	Reads Fingerprints and Face in any combination	
1.5	Identification time <=2 Seconds	
1.6	Communication RS232. RS 485, TCP/IP (standard),USB Host	
1.7	Voice Guided Message in English	
2	Specification for Finger Print- Time & Attendance System	
2.1	Minimum 3000 Finger Templates User Capacity	
2.2	Minimum 100,000 Transaction Storage	
2.3	Communication RS232. RS 485, TCP/IP (standard), USB Host	
2.4	TFT LDC Display	
2.5	Identification time <=2 Seconds	
2.6	Voice Guided Message in English	
2.7	Algorithm version v9.0/10.0	
2.8	Access Control Interface: 3rd party electric lock, door sensor, exit button, alarm, Door Bell	
3	System Features	
3.1	Battery Backup upto minimum 4 hours	
3.2	Biometric attendance software must be GUI based Windows application software	
3.3	Different combinations of reports format must be available with software	
3.4	Report should be generated in word and excel format	
3.5	Biometric Attendance software must be linked with existing Attendance software of POSOCO	
3.6	Daily, monthly and other kinds of reports must be generated	
3.7	Complete system must be under onsite OEM warranty for 5 years from the date of taking over by Engineer in charge	
3.8	Database should support SQL Database above 2012 & above to store the attendance data	
3.9	Push/Exit Button	
3.10	Manage it centrally from NLDC these devices will be synchronized with same devices installed at NLDC and will be integrated with the existing Attendance System hosted at NLDC.	
4	Product shall be STQC and UIDAI certified/approved.	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-14	Wi-Fi Solution	
A-14.1	Wi-Fi Controller	
	Name of Manufacturer	
	Proposed Model No.	
Sr. No.	Description	Compliance (Y/N)
1	Interface	
1.1	WLAN Controller should have minimum-2 10/100/1000 Ethernet of SFP port. WLAN Controller Must support upto 25 AP's from day one (minimum 25 AP licenses must be installed in controller from day one) and should be scalable up to 50 (without changing hardware) campus connected access points in a single 1 RU chassis.	
1.2	Controller should support 100+ WLAN's	
1.3	Controller must Support Wireless Intrusion Prevention feature.	
1.4	High Availability: Controller shall be configured in redundant mode and shall also N+1 redundancy models. Must support redundancy functionality for all the Access points to move from primary to backup Controller.	
2	Management	
2.1	RF Management: Must support an ability to dynamically adjust channel and power settings based on the RF environment. Radio coverage algorithm must allow adjacent APs to operate on different channels; in order to maximize available bandwidth and avoid interference Must support interference detection and avoidance. Must support coverage -hole detection and correction.	
2.2	IPv6 features WLAN Controller should support IPv4,IPv6 and Dual stack. WLC should support Guest-access functionality for IPv6 clients	
2.3	Should support SSH, SSL, CLI, WEB GUI	
3	Performance	
3.1	Controller performance must remain the same if encryption is on or off for wireless SSIDs.	
4	Security	
4.1	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 and Radius server. Controller should support integrated or External AAA server. System should provide DOS attacks and Intrusion Detection & Prevention and Control for any Rogue Access Points. The AP should be able to scan for rogue access points and the controller should be able to locate them on a floor map. The controller should be able to send a notification to the administrator when a rogue AP has been detected.	
4.2	Shall support VLAN mapping of guest access traffic for secure passage through corporate network	
4.3	Shall have Captive portal for guest user authentication	
4.4	Guest credential delivery should be done via SMS and e-mail, via the controller or by a third party appliance (need to be supplied by the vendor free of cost)	
4.5	Should be able to set per-user bandwidth limit on a per user/SSID basis.	
4.6	Must support user load balancing across Access Points	

Annexure - I**Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”**

A-14	Wi-Fi Solution	
A-14.1	Wi-Fi Controller	
4.7	Controller must provide Mesh capability for Mesh supported AP.	
4.8	Must support seamless client roaming across controller on L2 or L3. Solution proposed must support clients roaming across at least 50 campus connected APs.	
4.9	System should provide the faster clients should not starve airtime fairness between these different speed clients —slower clients and faster clients should not adversely affected by slower clients.	
4.10	Must support 802.11e WMM	
4.11	Should be able to set per-user bandwidth limit on a per user/SSID basis.	
5	Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-14.2 PoE powered Wi Fi Access Points		
	Name of Manufacturer	
	Proposed Model No.	
S. No.	Description	Compliance (Y/N)
1	Specification	
1.1	Access Points proposed must include radios for both 2.4 GHz and 5 GHz.	
1.2	Must have a robust design for durability.	
1.3	Should be able to handle up to 250 Concurrent users.	
1.4	Must support 3 x 3 multiple-input multiple-output (MIMO) with three spatial streams	
1.5	Must support simultaneous 802.11a/b/g/n/ac wave-2.	
1.6	Must support data rates up to 300 Mbps on 2.4GHz Radio and 867 Mbps (min) on 5GHz.	
1.7	AP should provide minimum 18 dBm transmission power for 2.4Ghz and 5 Ghz for 5Ghz. (EIRP should limited as per govt regulation for indoor AP's).	
1.8	For better performance on Smart devices like phones and tablets, the access point should support diverse multiple polarization of integrated antennas.	
1.9	The Wireless AP should have the technology to improve downlink performance to all mobile devices including one and two spatial stream devices on 802.11n. The technology should use advanced signal processing techniques and multiple transmit paths to optimize the signal received by 802.11 clients in the downlink direction without requiring feedback and should work with all existing 802.11 clients.	
1.10	Must support AP enforce load-balance between 2.4Ghz and 5Ghz band.	
1.11	Should support receiver's sensitivity of -92dBm or better.	
1.12	Must have Channel selection based on measuring throughput capacity in real time and switching to another channel should the capacity fall below the statistical average of all channels without using background scanning as a method. Should also support coverage-hole detection and performance optimization.	
1.13	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.	
1.14	Should support locally significant certificates on the APs using a Public Key Infrastructure (PKI)	
1.15	Must support IDS/IPS.	
1.16	Access Points must support a distributed encryption/decryption model.	
1.17	Access Points must support encryption on IPSec/GRE or equivalent Standard. Monitoring	
1.18	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.	
1.19	Must support 16 WLANs per AP for SSID deployment flexibility.	
1.20	Must support HTTP/S, telnet and/or SSH login to APs directly for troubleshooting flexibility.	
1.21	Must support Power over Ethernet, local power, and power injectors.	
1.22	802.11e and WMM	
1.23	WiFi Alliance Certification for AP.	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-14.2	PoE powered Wi Fi Access Points	
1.24	Must support Reliable Multicast Video to maintain video quality.	
1.25	Must support QoS and Call Admission Control capabilities.	
1.26	Should be able to work with a controller or standalone mode	
1.27	Should be able to work with a controller or standalone mode.	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-15	46” Standalone LFD (Large Format Display) (Type-I)		
	Name of Manufacturer		
	Proposed Model No.		
Sr. No.	Description	Compliance (Y/N)	
	Specification		
1	Screen Size	46 inch	
2	Aspect Ratio	16:09	
3	Native Resolution	1920 X 1080 (FHD)	
4	Brightness	Minimum 450 cd/m2	
5	Contrast Ratio	Minimum 5000:1	
6	Dynamic CR	10000:1	
7	Viewing angle (H x V)	178 X 178	
8	Input Response Time	Maximum 10ms	
9	Operating Hours	On an average 16 hours in a day	
10	Input	HDMI	2
		Display Port	1
		Audio	1
		USB	1
11	Output	Display Port	1
		Audio	1
12	Power Supply	100 -240V~, 50/60Hz	
13	Energy Star	Yes 6.0	
14	Orientation	Portrait & Landscape	
15	Media Player Compatibility OPS Type Compatible	Yes	
16	External Media Player Attachable	Yes	
17	External Windows based Media Player (CPU)	1. Windows base media player (CPU) shall be provided which shall have Minimum 2 GB RAM and 128 GB storage (Min) 2. It shall be installed in back-side of monitor. 3. Installation of Third party software in media player shall be possible.	
18	Wall Mount	Necessary wall mount accessories shall be provided	

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-16 Screen for VC System (Type-II)				
	Name of Manufacturer			
	Proposed Model No.			
S. No.	Description			Compliance (Y/N)
1	Screen Size	Min 97 inch		
2	Aspect Ratio	16:09		
3	Native Resolution	3840 x 2160 (UHD)		
4	Brightness	Minimum 500 cd/m2		
5	contrast Ratio	Minimum 1300:1		
6	Dynamic CR	Min 500000:1		
7	Lifetime	Minimum 50000 Hours		
8	Viewing angle (H x V)	178 X 178		
9	Input Response Time	Maximum 8ms		
10	Operating Hours	On an average 8 hours in a day		
11	Input	HDMI	2x Type A (Up to 4K@50/60 Hz)	
			2x Type A (Up to 2K@50/60 Hz)	
		Display Port	1x DP1.2a	
		Audio	1x Stereo Mini Jack	
12	Output	Audio	1x Stereo Mini Jack	
			20W [10w + 10W]	
13	Height of panel including Bezel Width	Max 52 inch		
14	Power Supply	100-240V, 50/60 Hz		
15	Power Consumption (W/H)	Maximum 700W		
16	Safety Regulation	UL / cUL / CB / TUV / KC or equivalent		
17	Wall Mount	Necessary wall mount accessories shall be provided		

Annexure - I

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

A-17 Licenses		
Sr. No.	Description	Compliance (Y/N)
1	Windows Server Standard 2016	
	Supply and installation of 64-bit operating system with all desired license.	
2	User-based CALs	
	Supply of Windows Server user- based Client Access Licenses (CALs).	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

Hardware Specifications for NLDC, Katwaria Sarai

B-1	Rack Mounted Server (Type-I)		
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
	The server shall have advanced management capabilities, The server shall be supplied with redundant fans & Power Supplies.		
1	Processors	• Intel® Xeon® processor with minimum 3.20 GHz base-frequency and minimum 20MB L3 cache.	
		• The server should be supplied with 02 processors.	
2	Chipset	Suitable Intel C600 chipset or better.	
3	No. of Cores	Minimum 8 cores per processor.	
4	Memory Configuration	512 GB DDR4 2400 MT/s ECC Memory (Should be expandable to 768 GB RAM).	
5	RAID Controller	RAID controller should support RAID Level 0,1,5,10,6	
6	HDD	The server shall be supplied with 02 nos. x 600GB SAS HDD, 10K RPM or better.	
7	Network	Shall have minimum 2 nos. of 10/100/1000 Mbps Ethernet port.	
8	Form Factor	Rack Mountable.	
9	USB	Minimum 2 USB ports	
10	Accessories	The server should be supplied with suitable Rack mountable kit & cable management arm, and suitable cables and accessories as required.	
11	Operating System	Microsoft® Windows Server® 2016 Standard x64	
12	Power Management	Hot plug redundant power supply.	
13	System Management	To be provided with systems and server management software	
14	Certification	• For Linux & Windows. • Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years.	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-2	30 TB SAN Enclosure Storage		
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description	Compliance (Y/N)	
	Specification		
1	30 TB of usable space in RAID 5 from day 1		
2	Should have 1 Hard Drive in Hot spare from day 1		
3	Enclosure should have space available for future upgrade, for minimum 5 drives.		
4	Dual Redundant Power Supply		
5	Dual Redundant Controllers with automatic failover to each other in case of one/any controller failure		
6	<i>Storage should be compatible with existing SAN structure (Dell MD3820f + Dell MD1200)</i>		

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-3 24x7 Workstations			
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
1	Processor	Minimum Intel® Xeon® E5-1680 v4 (3.2 GHz, 15 MB cache, 8 cores) or better OR equivalent processor,	
2	Chipset	Intel C612 Chipset or better OR equivalent,	
3	RAM	16GB 2133MHz DDR4, up to 64GB 2133Mhz Non-ECC/ECC DDR4 Memory	
4	Hard disk drive	128GB SSD primary storage (or better) & 1TB SATA HDD secondary storage	
5	Graphic Card	Integrated Graphics	
6	Optical Drive	Should have internal DVD+RW	
7	Audio	Integrated Audio with Internal Speaker	
8	Networking	Min. 1no. 10/100/1000 Mbps onboard Ethernet port.	
9	I/O interfaces	<ul style="list-style-type: none"> Front 2 – USB 2.0; 2 – USB 3.0; 1 – Microphone 1 – Headphone 	
		<ul style="list-style-type: none"> Internal 2 – USB 2.0, 4 – SATA 6Gb/s, 1-Full Height PCIe x16 Gen3, 1-Full Height PCIe x16 Gen 3 (wired x4), 1-Full Height PCIe x1 Gen3, 1-Full Height PCI, 1-M.2 (22x80 mm) 	
		<ul style="list-style-type: none"> Rear 4 – USB 3.0; 2 – PS2, 2 – DisplayPort, 2 – HDMI, 1 – RJ45 Network Connector, 1 – Serial; 1 – Audio Line in/Microphone; 1 – Audio Line out 	
10	Display	Minimum 21.5" or more LED Backlit Monitor.	
11	Easy Serviceability	Tool-less chassis design	
12	Operating system	Preinstalled OEM Licensed Microsoft Windows 10 Pro 64-bit in Primary SSD hard-drive.	
13	Certifications and Rating	Energy Star Compliant or equivalent	
14	OS Certifications	Windows/Linux OS certification	
15	Power Management	365W 90% efficient PSU (80PLUS Gold Certified Certified)	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-4 Unified Threat Management (UTM) device (Type-II)		
	Name of Manufacturer	
	Proposed Model No.	
S. No.	Description	Compliance (Y/N)
1	Hardware	
1.1	The UTM should be Hardware based, Reliable, purpose-built security appliance with hardened operating system that eliminates the security risks associated with general purpose operating systems.	
1.2	Appliance should be 1U size and rack mountable.	
1.3	Appliance should have the following major regulatory certifications FCC Class A, CE (EMC, LVD, RoHS)	
1.4	UTM Appliance should have minimum space /flash to store the firmware image and the UTM policies and Antivirus + IPS signatures.	
1.5	UTM Appliance with Unrestricted users.	
1.6	The Unit should have minimum 2 Gb RAM or Higher.	
1.7	The UTM should have 12 Copper Gigabit Network Interface Ports, 2 x 10-GbE SFP+, 4 x 1-GbE SFP, 1 Console Interface, the Appliance should have at least two USB interface to connect a USB modem / 3GDatacard based USB modem which can be configured as a WAN link or redundant link for a primary link.	
1.8	Should have LED's indicating Status (Power, Test, Alarm) LAN (Link, Activity) WAN (Link, Activity) DMZ (Link, Activity)	
1.9	Unit should have Multi Core processing with specialized security processing	
1.10	Should have upgradeable Firmware	
1.11	Should support Deep Packet Inspection technology	
1.12	Gateway Antivirus should be able to scan the 50+ Protocols including HTTP, FTP, SMTP, POP3 and IMAP.	
1.13	Should support Virtual Private Network (VPN) technology	
1.14	Should support 15000+ signatures in the Gateway Antivirus (GAV), Dual Anti-Virus if it is not available then quote separately.	
2	Firewall + IPSEC VPN + SSLVPN	
2.1	The UTM System shall comply with RFC 1918 with support for Static &Dynamic Network Address Translation and Port Address Translation.	
2.2	UTM Should have IPsec and SSL functionality in the same unit.	
2.3	The UTM should support 802.1QTrunking and should support minimum 256 VLANs.	
2.4	Support for deployment of the UTM in a secure Layer 2 bridging mode, providing rich Layer 2-7 UTM security services for the protected network while remaining "invisible" to devices on each side of it.	
2.5	UTM should have access control and deep inspection UTM services for native IPv6 network environments and mixed IPv4 and IPv6 network environments through dual- stack support.	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-4	Unified Threat Management (UTM) device (Type-II)	
2.6	The UTM should support standard routing protocols like RIP, OSPF and BGP in addition to static and policy based routing.	
2.7	UTM should support for SSHv2, HTTP and HTTPS based management	
2.8	UTM should Support for RADIUS, Active Directory &LDAP for the user authentication protocols in addition to local authentication.	
2.9	UTM should support Active / Passive High Availability deployment.	
2.10	The UTM should have bandwidth allocation functionality.	
2.11	The UTM System shall comply with RFC 1918 with support for Static &Dynamic	
2.12	Network Address Translation and Port Address Translation.	
3	Intrusion Prevention System (IPS)	
3.1	UTM should have Integrated IPS Solution	
3.2	Support Behaviors analysis and signature based analysis with online download support of newer signatures for at least 1500 and shall be demonstrated by the firm during inspection and registration.	
3.3	There should be an option to create User-specified / exclusion of object option.	
3.4	The software on the IPS should support online software reconfiguration to Ensure that changes made to IPS configuration take place with immediate effect.	
3.5	The IPS should have high availability, so that in case if the primary fails the secondary appliance will become active without any manual intervention	
3.6	IPS solution should have capability to protect against Denial of Service (DOS) and DDOS attacks. Should have flexibility to configure threshold values for each of the Anomaly.	
3.7	IPS solution should be flexible enough to configure, enable/disable signatures and have different actions for the IPS signature at the UTM policy level and not configured at GLOBAL or interface level	
3.8	DOS and DDOS protection should be applied and attacks stopped before UTM policy lookups, AV scan. Option to configure and set DOS threshold values at a IP and Subnet level should be possible	
3.9	IPS signatures should have a configurable actions like terminate a TCP session by issuing TCP Reset packets to each end of the connection, or silently drop traffic in addition to sending an alert and logging the incident	
3.10	Signatures should have categorized based on High /medium /low on the appliance	
3.11	Can export reports to other formats. Should be able to output report data into a variety of different file formats like HTML/PDF /Doc etc.	
4	Anti-Virus	
4.1	UTM should have integrated gateway level Anti-Virus Solution	
4.2	Virus gateway should provide real-time detection of viruses and malicious code at the gateway for SMTP, IMAP/ POP3, HTTP, HTTPS and FTP Internet traffic. IM protocols (MSN, Yahoo etc.). The solution should detect and block viruses in HTTPS traffic.	
4.3	UTM Should support flow based AV scanning Technology for better performance	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-4	Unified Threat Management (UTM) device (Type-II)	
4.4	The proposed solution should be licensed per Hardware/Appliance as against per user	
4.5	Virus Gateway should have option to configure to respond to virus detection in Several ways i.e. delete the file or quarantine the file/discard the connection and alert e-mail /popup	
4.6	Frequent updates of virus pattern files should be available from the Web and option for scheduling for automatic update thru a secure communication as well as for manual update should be available.	
4.7	Should have facility to block files based on file extensions or original file type over HTTP, HTTPS, FTP, SMTP, POP3	
4.8	solution should support the sandbox module from day 1 to detect and prevent any zero day threats and it should support at least 3 scan engine	
4.9	The solution should support load balancing for the AV scanning, so that the traffic which needs to be scanned can be load balanced across the boxes in the cluster. Should have reporting facility to generate reports on virus detected over different protocols, top sources for viruses, destination for viruses, top viruses etc.	
4.10	UTM should have integrated category based URL filtering solution which should be capable of filtering HTTP and HTTPS based URLs	
4.11	The proposed solution should be licensed per unit as against per user	
4.12	Should be able to block different categories/sites based on users for at least 20 million sites under 50 categories with block, passphrase, confirm, allow options and same shall be demonstrated by the firm during registration and inspection	
4.13	Should have configurable parameters to block/allow unrated sites	
4.14	Should have configurable options to allow/deny access to web sites in case if the URL rating service is unavailable	
4.15	Should have options to customize the block message information send to end users	
4.16	Should have facility to configurable policy options to block web sites based on Banned words.	
4.17	Should have configurable policy options to block URLs based on web patterns (e.g. Mail.* to block web mail related sites)	
4.18	Should have configurable policy options to define the URLs what needs to be blocked as well as the exempt list	
5	Application Control	
5.1	The proposed system shall have the ability to detect, log and take action against network traffic based on over 1,000 application signatures	
5.2	The application signatures shall be manual or automatically updated	
5.3	The administrator shall be able to define application control list based on selectable application group and/or list and its corresponding actions	
5.4	The proposed system shall have the ability to identify, block or rate limit the following common P2P applications: Gnutella (Napshare, iMesh, Mldonkey, morph, Xolox, BearShare, FOXY), Bittorrent, Kaaza, WinY, edonkey	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-4	Unified Threat Management (UTM) device (Type-II)	
5.5	The proposed system shall have the ability to manage and control Instant messaging	
5.6	The proposed system shall have the ability to detect, log and take action against network traffic based on over 1,000 application signatures	
5.7	The application signatures shall be manual or automatically updated	
5.8	The administrator shall be able to define application control list based on selectable application group and/or list and its corresponding actions	
5.9	The proposed system shall have the ability to identify, block or rate limit the following common P2P applications: Gnutella (Napshare, iMesh, Mldonkey, morph, Xolox, BearShare, FOXY), Bittorrent, Kaaza, WinY, edonkey	
6	Link and Load Balancing/sharing & Router	
6.1	The proposed system shall be able to operate on either Transparent (bridge) mode to minimize interruption to existing network infrastructure or NAT/Route mode.	
6.2	The system must be able to support routing protocols including, RIPv1&v2, OSPF, BGP.	
6.3	The system shall be able to provide Wan link redundancy using ping probes	
6.4	UTM should support Multiple links(more than 2) load sharing / balancing with failover cum redundancy	
7	Performance	
7.1	Firewall throughput shall be at least 3.4 Gbps or better.	
7.2	IPS throughput should be more than 1.1 Gbps.	
7.3	Minimum concurrent firewall sessions supported shall be 750000.	
7.4	Minimum new fire wall sessions supported shall be 20000.	
7.5	Minimum Antivirus throughput shall be 600 Mbps.	
7.6	Application Inspection throughput should be more than 1.1 Gbps.	
7.7	Should support DPI SSL connection 2000 or more for scanning the https protocol for any threats.	
7.8	Solution should have high availability (active/passive) from day 1	
7.9	UTM should at least be comprised of following 7 security functionalities 1) UTM + IPsec VPN +SSLVPN 2)Intrusion Prevention system 3)Antivirus 4) geo IP filtering 5) Web Content Filtering 6) Application Control 7) Link Load balancing & Router	
7.10	UTM appliance should at least support 2 x 10-GbE SFP+,	
	4 x 1-GbE SFP,	
	12 x 1 GbE,	
	Should have management port capability	
	1 Console	
8	Certification	
8.1	Proposed solution must be in Gartner’s Leader Quadrant at least once in last two years.	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-5	Laptop (Type-II)		
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
1	Processor	7th Generation Intel® Core™ i5-7200U Processor (3M Cache, up to 3.1 GHz)	
2	System Unit	Intel® HD Graphics 620	
3	Total Memory	8GB LPDDR4 2133MHz	
4	Internal Drive	500 GB (or better) Solid State Drive (Expandable upto 1 TB)	
5	Display Panel	Min 13.3” FHD AG (1920 x 1080) Infinity Edge display, Silver	
6	Wireless	Killer 1535 802.11ac 2x2 Wi-Fi and Bluetooth 4.1	
7	Camera	Widescreen HD (720p) webcam with dual array digital microphones	
8	Battery	60WHr Integrated Battery	
9	Operating System	Windows 10 Professional (64bit)	
10	Keyboard	Full size, backlit chiclet keyboard; 1.3mm travel	
11	Mouse	Wireless Mouse (Same as OEM Make)	
12	Bag	Laptop Bag	

Annexure - II

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

B-6 Managed 24 Port Basic Layer 3 Switch : Distribution/Access Switch PoE+ min (370W) (Type-IV)		
	Name of Manufacturer	
	Proposed Model No.	
S. No.	Description	Compliance (Y/N)
1	Interface	
1.1	Switch should have min 24 RJ-45 autosensing – 10/100/1000 Mbps Copper Gigabit Ports And 4 x 1G/10G SFP+ ports	
2	Management	
2.1	Console port for configuration of software features. Switch shall support external /internal redundant power supply	
2.2	Shall able to manage the switch through Command-line interface; Web browser; SNMP etc.,	
3	Performance	
3.1	Min. 128 Gbps switching capacity	
4	Layer 2 and 3 features should be available from day1	
4.1	Static Routing for IPv4 and IPv6, RIPv1, RIPv2 for IPv4 and IPv6	
4.2	Switch shall support 1000 port based VLAN	
4.3	Switch shall support 802.3ad Link aggregation Control Protocol (LACP)	
4.4	Dynamic Host Configuration Protocol (DHCP) client, Relay and server.	
4.5	Should provide for mini. 8K MAC Address Table	
4.6	DHCPv6, ICMPv6	
5	Security	
5.1	Access Control Lists for both IPv4 and IPv6 for filtering traffic to prevent unauthorized users from accessing the network	
5.2	Port-based rate limiting and access control list (ACL) based rate limiting	
5.3	IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port	
5.4	Media access control (MAC) authentication to provide simple authentication based on a user's MAC address	
5.5	Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers	
5.6	Port security and port isolation	
6	Proposed solution must be in Gartner's Leader Quadrant at least once in last two years.	

Annexure - II**Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”**

B-7	Laptop (Type-III)		
	Name of Manufacturer		
	Proposed Model No.		
S. No.	Description		Compliance (Y/N)
1	Processor	Intel Core i7-7200U Processor (3MB Cache, up to 2.80 GHz)	
2	System Unit	Intel HD Graphics 520 or better	
3	Total Memory	16GB DDR4 Memory 2133 MHz	
4	Internal Drive	1 TB SSD	
5	Display Panel	Min 14-inch FHD (1920 x 1080)	
6	Wi-Fi wireless LAN adapter	Intel(R) Dual Band Wireless-AC 7265 2x2 + Bluetooth 4.0	
7	Camera	720p HD Camera	
8	Battery	Primary 3-cell 42W/HR Battery	
9	Operating System	Windows 10 Professional (64bit)	
10	Keyboard	English keyboard, Backlight	
11	Mouse	Wireless Mouse (Same as OEM Make)	
12	Bag	Bag	
13	Weight	Light Weight	

B-8	Licenses	
S. No.	Description	Compliance (Y/N)
1	<u>Windows Server Standard 2016</u> Supply and installation of 64-bit operating system with desired license.	
2	<u>External-Connector Licenses</u>	

Annexure - III

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

Bill of Quantity (BOQ)

Sl. No.	Product Description	H/W Conf. ref. no of TS	Unit	Qty.
A.1	IFCI Tower CC-POSOCO, Nehru Place office			
1	Rack Mounted Server (Type-I)	A-1	Nos.	2
2	16TB Network Attached Storage (NAS)	A-2	No	1
3	L-3 Core Switch (Type-I)	A-3	Nos.	2
4	All-in-One (AiO)	A-4	Nos.	30
5	Distribution L-2 Switch (Type-II)	A-5	Nos.	6
6	L3 PoE+ Switch (Type-III)	A-6	Nos.	2
7	Heavy-Duty Black-and-white Multi Function Printer (Type-I)	A-7	Nos.	3
8	Color Multi Function Printer (Type-II)	A-8	Nos.	2
9	Black-and-White Multi Function Printer (Type-III)	A-9	Nos.	6
10	Unified Threat Management (UTM) (Type-I)	A-10	Nos.	2
11	Laptop (Type-I)	A-11	No	1
12	Video-Conferencing System (with a license for 5 + 1)	A-12	Set	1
(i)	Wired speakers		Nos.	2
(ii)	Wired Mic		Nos.	2
(iii)	Camera		Nos.	1
(iv)	Amplifier		Set	1
13	Biometric Access-cum-Attendance Solution (including S/W)	A-13	Set	1
(i)	Biometric Access Points (Face Recognition + fingerprint) including push button		Nos.	5
(ii)	Biometric Access Points (fingerprint) including push button		Nos.	3
14	Wi-Fi Solution	A-14	Set	1
(i)	Controller (HA mode)		Nos.	2
(ii)	Access Point (APs)		Nos.	8
15	46" LFD Screen (Type-I)	A-15	Nos.	6
16	Screen for VC System (Min 97") (Type-II)	A-16	Nos.	1
17	Windows Server Standard 2016	A-17	Nos.	2
18	Windows Server user- based Client Access Licenses (CALs)	A-17	Nos.	50
A.2	NLDC-POSOCO, Katwaria Sarai			
1	Rack Mounted Server (Type-I)	B-1	No	1
2	30 TB Storage Area Network (SAN)	B-2	No	1
3	24x7 Workstation	B-3	Nos.	4
4	Unified Threat Management (UTM) (Type-II)	B-4	Nos.	2

Annexure - III

Augmentation of existing IT Infrastructure located at “NLDC, Katwaria Sarai, Delhi” and establishment of basic IT Infrastructure for “POSOCO-CC located at IFCI Tower, Nehru Place, New Delhi”

5	Laptop (Type-II)	B-5	Nos.	2
6	L3 PoE+ Switch ((Type-IV)	B-6	No	1
7	Laptop (Type-III)	B-7	No	1
8	Windows Server Standard 2016	B-8	No	1
9	External-Connector Licenses	B-8	Nos.	5
A.3	Maintenance and Support for 05 years including Resident Engineer.			
A.4	02 years (06 th & 07 th years extended comprehensive AMC Charges for all the supplied system (with Back-to-Back OEM Support) including Resident Engineer)			