



Bharat Heavy Electricals Limited
Electronics Division
Mysore Road, Bangalore – 560 026

NOTICE INVITING TENDER

- | | |
|---|---|
| 1. Tender Reference | : BHEL/ITS/CCTV/2013-14/01 |
| 2. Name of the work | : Supply, Installation and Maintenance of Video Surveillance System |
| 3. Duration of Contract | : Five Years – 5 year Financial Lease |
| 4. Earnest money deposit | : Rs. 2,00,000 (Rs. Two Lakhs only) |
| 5. Last date and time for the receipt of completed tender | : March 12, 2014 1300 hrs |
| 6. Date and time for tender opening | : March 12, 2014 1330 hrs |
| 7. Place of submission of Completed tender | : To be dropped in the IT&S (Box No. 2)
Tender Box kept in the Reception Area at BHEL,
Electronics Division, Mysore Road, Bangalore – 560 026. |

This tender document contains Instructions to bidders, Scope of work, Price schedule etc. as follows.

1. Scope of Work and Instructions & Guidelines to bidders – Annexure I
2. Pre-Qualification Criteria – Annexure II
3. General Terms and Condition – Annexure III
4. Commercial Terms & Conditions and Compliance Format – Annexure IV
5. Technical Specifications & Compliance Format - Annexure V
6. Price Bid Format/Declarations/Certificate – Annexure VI

Note: The bidder shall return the duly filled in Tender Documents after affixing signature and seal on all pages.



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Annexure - I

1. SCOPE OF WORK:

1.1. The scope includes design, supply, installation, testing, training, maintaining of CCTV surveillance systems at

- a) Electronics Division(hereafter referred as EDN), Mysore Road, Bangalore
 - b) Electronics Systems Division(hereafter referred as ESD), Electronics City, Bangalore
- for a **period of 5 years** on Financial Lease(Rental and Maintenance Charges) basis.

1.2. The systems at EDN and ESD will be independent of each other.

1.3. The systems have been detailed in document. However all accessories and licenses required for implementation of the systems shall be in Vendor scope within the quoted price, whether these are specifically mentioned herein or not. Any other equipment, module required for the safe and satisfactory operation, control, protection, monitoring, testing and maintenance of the system shall also be in vendor's scope.

1.4. The systems supplied shall be complete in all respects for reliable performance. The Vendor shall submit the detailed BOM, block schematic, video / control signal / network topology / power wiring diagram, along with the System Requirement Specification (technical write-up) and data sheets of quoted components describing the implementation as part of the offer.

2. INSTRUCTIONS & GUIDELINES TO BIDDERS:

2.1. DEFINITIONS:

- a) **BIDDER:** Bidder means the Original Equipment Manufacturer/System Integrator who is offering the CCTV surveillance system for this tender. Bidder should be single entity and not a consortium.
- b) **VENDOR:** The successful bidder who will be installing and maintaining the CCTV surveillance system during the entire lease period.
- c) **OEM:** OEM means Original Equipment Manufacturer whose equipment is being offered by the bidder for this tender.
- d) **LESSOR:** The owner of CCTV surveillance system that is to be leased under an agreement to the lessee.
- e) **LESSEE:** BHEL



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2.2. BIDDER TO INFORM HIMSELF FULLY:

- a) The bids for this tender are solicited only from Original Equipment Manufacturer/System Integrator who is offering the CCTV surveillance system. Bidder should be single entity and not a consortium. Financing agencies are not eligible for bidding.
- b) In case bidder brings any third party financing agencies, details are to be furnished as part of the techno-commercial bid.
- c) The bidder shall closely peruse all the clauses, specifications and requirements etc., indicated in the tender documents, before quoting. Should the bidder have any doubt about the meaning of any portion of the tender specifications or find discrepancies or omissions in the specifications or if the tender documents are found to be incomplete or require clarifications on any of the technical aspects, scope of work etc. he shall at once contact the official inviting the tenders, for clarifications, before submission of the tender.
- d) Bidders are advised to study all the tender documents carefully. Any submission of tender by the bidder shall be deemed to have been done after careful study and examination of the tender documents and with the full understanding of the implications thereof.

2.3. EXPECTATIONS FROM BIDDER

Bidder is required to give a total solution & services as per specifications enclosed. The Bidder is fully responsible for the services and the total solution. In case any extra item is required for complete functioning of the system, the same must be quoted.

3. SITE SURVEY

It may be noted that the detailed bill of quantities is provided as part of the document. However locations of equipment, measurements are not provided for installation related activities. Hence bidders are invited to conduct site survey of both locations (EDN and ESD) prior to submission of bids to assess the actual site condition and arrive at actual requirement like excavation, road cutting, installation, cabling, cable length required etc. Bidders are required to quote based on the survey for civil and installation activities.



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ANNEXURE – II

1. PRE- QUALIFICATION CRITERIA

- 1.1. Bidder should be either Original Equipment Manufacturer or should be Authorized System Integration Partner for security surveillance (CCTV) system components like cameras, software, switches, servers and storage systems.

In case the bidder is a System Integration Partner of the OEM, a valid certificate/Authorization Letter and Agreement copy (if any) by the OEM, clearly stating the relationship, guaranteeing support for offered components for a period of at least 7 (entire 5 years Financial Lease Period & additional 2 years subsequent to the lease period) years and authorizing the Partner to quote for this tender is to be furnished. The Certificate / Authorization Letter specific to this tender must be issued by Authorized Representative of the OEM.

- 1.2. The Bidder should have Registered and Incorporated office in India for last 3 years. Alliance/liaison office in India shall not be accepted.
- 1.3. The Bidder should have local presence in Bangalore with office having supporting staff for servicing and maintenance of the system.
- 1.4. The Bidder should be ISO: 9000 certified and valid certificate should be submitted along with technical bid.
- 1.5. Bidder and OEM should have a clean track record, i.e. the bidder should not be under hold or blacklist by any of the BHEL units as on bid opening date. To this effect, a declaration should be given by the bidder
- 1.6. The Bidder's Average Annual financial turnover during the last 3 years, ending 31st March of the previous financial year, should be at least 30% of the estimated cost. Certificate from bankers/chartered accountant/IT return in this regard should be submitted along with the offer.
- 1.7. The bidder should have experience in successfully executing similar works, not necessarily on lease rental basis during last 7 years ending last day of month previous to the one in which applications are invited. The experience should be either of the following:
- Three similar completed works costing not less than the amount equal to 40% of the estimated cost.



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OR

b. Two similar completed works costing not less than the amount equal to 50% of the estimated cost.

OR

c. One similar completed work costing not less than the amount equal to 80% of the estimated cost.

“**Similar works**” means installation of IP based CCTV Surveillance System with video analytics in industrial environment or city surveillance.

2. The proof of successful installation of CCTV Surveillance system should be attached with the technical bid.
3. Bidder shall provide customer references with number of equipment supplied and year of commissioning including details such as: Name of the unit / company, Name of the contact person; Address/ e-mail id, Mobile and Office phone of contact person, Month & year of commissioning of the CCTV System, Capacity, Design, Configuration, System Guarantee, Service Support provided etc. for verification.
4. The reference purchase order should be on the name of the bidder. The order copies of referred projects and successful completion/ performance certificate from the customer along with the offer is to be submitted.
5. Relaxation of the above pre-qualification and eligibility criteria will not be entertained under any circumstance. Bidders who do NOT comply with one or more of the above eligibility criteria NEED NOT quote. The bidders who do NOT comply with one or more of the above eligibility criteria will be rejected.



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ANNEXURE – III

1. GENERAL TERMS AND CONDITIONS

1.1. SUBMISSION & OPENING OF BIDS

The offer shall be submitted in **Two** parts as follows in separate sealed envelopes.

1.2. PART-I : EMD & TECHNO-COMMERCIAL BID

This part shall consist of the following:

- a) EMD in the form of Pay Order/ Bank Draft in favour of “Bharat Heavy Electricals Limited” payable at Bangalore. In the absence of submission of EMD, the offer is liable for rejection. The Earnest Money will be refunded to the unsuccessful bidders after finalization of the award of work. In the case of successful bidder, the Earnest Money will be retained as part of the Security Deposit.
- b) Technical offer/ details including literature/leaflets. The bidder can offer only as per technical specifications of the equipment.
- c) Authorization letters from OEMs.
- d) Certificates enlisted in technical specifications.
- e) Technical Compliance Statement as per enclosed format only.
- f) Commercial terms compliance statement as per enclosed format only.
- g) Unpriced copy of price bid as per enclosed format only.
- h) Documentary evidence as mentioned in the prequalification criteria.

1.3. The Lessee reserves the right to accept or reject the technical offer. Price bids of only techno-commercially short listed bidders will be opened. **The technical & commercial bid should not include prices.**

1.4. PART-II: PRICE BID

- a) Price bid containing PRICES only is to be submitted (in the enclosed Price Schedule format only). Prices shall be quoted in Indian Rupees only. Bidder has to give details of applicable Duties and Taxes.
- b) **Price Bid should not contain any technical details and/or Commercial Terms & Conditions** as the same are supposed to be contained in PART-I only so that the same can be evaluated before opening of Price Bid(s).

1.5. BHEL reserves the right to resort to **Reverse Auction** procedure to decide the lowest price bid among techno-commercially cleared bids. The bidders should provide consent letter agreeing for Reverse Auction. In case BHEL does not resort to Reverse Auction, the price bids submitted shall only be opened as per BHEL’s standard practice without seeking revised quotes on account of BHEL not going for reverse auction.



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1.6. **MARKING ON ENVELOPE:** Part-I and Part-II offers shall be submitted in two separate envelopes with bidder's distinctive SEAL and super-scribed as follows.

PART – I: 1. TENDER ENQUIRY NUMBER AND ITEM DESCRIPTION
2. DUE DATE OF OPENING
3. “TECHNO-COMMERCIAL BID”

PART – II: 1. TENDER ENQUIRY NUMBER AND ITEM DESCRIPTION
2. DUE DATE OF OPENING
3. “PRICE BID”

1.7. Tenders should be addressed to the **AGM (IT&S), Electronics Division, Bharat Heavy Electricals Limited, Mysore Road, Bangalore – 560 026**. The full name and address of the bidder, the name of the work and date of opening should be indicated on the cover.

1.8. Tenders submitted by post should be sent by “**Registered Post with Acknowledgement Due**”. These should be posted with due consideration for any delay in postal delivery. Tenders received after the due date and time of opening of tenders are liable to be rejected.

1.9. If in any case, the date of tender opening falls on Holiday, the tender will be opened on the next working day.

2. General Instructions and Guidelines

2.1. The local address of the bidder, the name of the person to whom all the correspondence are to be addressed should be indicated with telephone number and FAX / E-mail address.

2.2. Bidder shall fill in all the required particulars in the format provided for this purpose in the tender documents and also sign each and every page of the tender document including the drawings attached there to before submitting tender.

2.3. Bidder shall not increase their quoted rates, once the bidder has submitted his quotation and during execution of the entire contract period in case his tender is accepted.

2.4. In case, bidder finds discrepancies or omissions in the drawings / specification / details attached to the tender documents or should be in doubt as to their meaning he should at once address to the authority inviting the tender for clarifications. Every endeavor is made to avoid any error which can materially affect the basis of the tender but the successful bidder shall take upon himself to provide for the risk of any error which may be subsequently discovered and shall make no subsequent claim on account thereof.



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- 2.5. In the event of tender being submitted by a firm the tender must be signed separately and legibly by each partner or member of the firm or in their absence, by the person holding the power of Attorney on behalf of the firm concerned.
- 2.6. If after opening of tenders, a bidder revokes his tender or increases his earlier quoted rates or after acceptance of his tender does not commence the work in accordance with the contract/order, the Earnest Money deposited by him will be forfeited and acceptance of his tender withdrawn.
- 2.7. Tenders are liable for rejection, If tender is:
- a) conditional and unsigned
 - b) containing absurd rates and amounts
 - c) incomplete or otherwise considered defective
 - d) not in accordance with the tender conditions.
 - e) not submitted in the prescribed forms.
 - f) received after due date and time (late offer).
- 2.8. If the bidder deliberately gives wrong information in his tender, BHEL reserve the right to reject such tenders at any stage. Further the bidder will be liable for any damage caused.
- 2.9. Words imparting the singular number shall also be deemed to include the plural number and vice-versa where the context so requires.
- 2.10. No correspondence shall be entertained from the bidders after the opening of Price Bid(s).
- 2.11. Unsolicited revised Price Bids shall not be entertained at any stage of the tendering process and will lead to automatic disqualification of the party's bid.
- 2.12. In case, the bidder opt to finance the leasing through a third party financier, the bidder shall furnish details in the technical offer.

3. RATES

- 3.1. Rates to be quoted are net F.O.R. destination inclusive of freight, handling and packing charges, transit insurance, installation, insurance during the entire lease period and on-site comprehensive maintenance including spares and deployment of service engineers during the entire lease period and shall remain FIRM without any variation till completion of the lease contract. However, all applicable taxes like Service Tax, Lease Tax/ Right-To-Use (RTU) Tax will be reimbursed extra as per actuals.



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- 3.2. Rates are to be quoted as per Price Bid Format only providing details of prevailing rates of taxes and duties. Bidders, in their own interest, are requested to check up the different tax tariff like “Right to use” etc. After opening of Price Bid, no request for any change in rates/tariff due to above will be entertained.
- 3.3. Unit rates should be quoted in figures as well as in words in Indian Currency only, i.e. Rupees and Paise with reference to each model. The rates shall include taxes and duties payable on account of Octroi, Sales Tax, Tax on works Contract etc.
- 3.4. In quoting their rates, the bidders are advised to take into account all factors including any fluctuations in market rates. No claim for enhanced rates will be entertained on this account after acceptance of the tender or during the currency of the contract.
- 3.5. The one time charges like installation, project management etc will be paid on completion of installation and acceptance. **Installation charges like excavating, road cutting, cable laying etc. will be at actual limited to quoted figure.**

4. TENDER EVALUATION

4.1. Stage-I: Evaluation of Technical & Commercial Bid

- a) Only those Bidders who meet all the requirements as per Qualification Criteria (**Annexure-II**) for Bidders will be considered for further evaluation.
- b) Technical and commercial bid of the bidder shall be evaluated for acceptability of Technical offer, technical suitability and acceptance of technical and commercial terms.
- c) During the Technical Evaluation of the bid, clarification and queries requested by BHEL shall be responded to within the reasonable time in order to avoid delay in evaluation of technical bid. Failure to do so may result in rejection of the bid.

4.2. Stage –II: Evaluation of the Price Bid:

- a) Technically cleared offers will be considered for price evaluation.
- b) Evaluation of the offer will be based on L1 of the total value for the entire scope of work (delivered cost (or) Net cash outflow to BHEL).



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- c) The Total Price shall be for the complete scope as per technical specifications, inclusive of comprehensive on-site maintenance including repair/replacement of parts during the entire Financial Lease(Rental and Maintenance Charges) period, all taxes & duties, insurance, Freight & insurance charges, Packing & forwarding charges, any other incidental charges, etc. Applicable % of taxes& duties should be clearly indicated in price bid format.
- d) The contract will be awarded to a single party for the total scope (EDN & ESD), based on the above evaluation.
- e) Discrepancy in Words & Figures - quoted in price bid
 - 4.2.e.1. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
 - 4.2.e.2. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
 - 4.2.e.3. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (4.2.e.1) and (4.2.e.2) above.
 - 4.2.e.4. If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date up to which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored
- f) The bidder shall quote the quarterly financial lease charges (Rental and Maintenance Charges) for the system for 5 years and one time installation charges. Breakup of rental and maintenance charges shall be mentioned. Bidder shall also indicate all the applicable taxes.
- g) BHEL reserves the right to go for a Reverse Auction (RA) instead of opening the submitted sealed price bid, which will be decided after techno-commercial evaluation.



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5. ETHICAL STANDARD:

- 5.1. Bidders are expected to observe the highest standard of ethics during the procurement and execution of this contract. In pursuit of this policy, BHEL will reject a proposal for award if it determines that the vendor being considered for award has engaged in corrupt or fraudulent practices in competing for the contract. For the purposes of this provision, the terms set forth below are defined as follows: a) “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action in the procurement process or in contract execution; and b) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process including collusive practices designed to establish bid prices at artificial, non-competitive levels to deprive the benefits of competition to BHEL. By signing the bid forwarding letter, the bidder represents that for the software it supplies, it is the owner of the intellectual property rights. Willful misrepresentation of these facts shall be considered a fraudulent practice without prejudice to other remedies that BHEL take.



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ANNEXURE – IV

1. COMMERCIAL TERMS & CONDITIONS

1.1. ORDER ACKNOWLEDGMENT

Letter of acceptance of the Order / Contract is to be submitted within one week.

1.2. PERIOD OF CONTRACT:

The period of contract is for Five years on Financial (Rental and Maintenance Charges) lease.

1.3. VALIDITY OF OFFER :

The offer should be valid for 3 months from the date of opening of technical bid.

1.4. PERFORMANCE BANK GUARANTEE :

The successful Bidder (herein after referred to as vendor) should furnish a bank Guarantee from an Indian Bank approved by BHEL, at no extra cost in a pro-forma prescribed by BHEL for an amount equivalent to 10% (Ten percent) of the value of the contract. The PBG shall be valid for throughout the contract period of Five years. If PBG is issued by a Foreign counter part of the BHEL consortium Indian Bank, in case of claim against the PBG, it will be lodged in any one of the Indian counters of the Foreign bank's COUNTER PART of BHEL's consortium Indian Bank.

1.5. SUPPLY CONDITION:

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

1.6. INSPECTION:

Ordered items shall be offered for pre-dispatch inspection before shipment. BHEL reserves the right to exercise the option to inspect the components on receipt at BHEL or give dispatch clearance based on vendor's inspection and other reports.

1.7. DELIVERY & INSTALLATION

- a) The vendor shall be responsible for timely delivery, installation and commissioning of all the hardware/software given in the scope of supply at BHEL's premises.
- b) Delivery period shall start from the date of placement of firm order.
- c) Delivery Period: **10 weeks from the date of order.**
- d) Installation Period: **12 weeks.**
- e) Items related to EDN scope shall be delivered at stores EDN.
- f) Items related to ESD scope shall be delivered at stores ESD.



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1.8. PENALTY FOR LATE DELIVERY

For the delay in delivery, penalty shall be levied at the rate of 0.5% per week subject to maximum of 5% of the total lease rent for the entire lease period for the equipment(s) not delivered in time as per delivery schedule. The penalty will be deducted from the first quarter rental charges, the same will be adjusted from the subsequent quarters.

1.9. PENALTY FOR LATE INSTALLATION

For the delay in installation owing to the reasons attributable to the vendor, penalty shall be levied at the rate of 0.5% of the total lease rent per week subject to maximum of 5% of the total lease rent for the entire lease period. The penalty will be deducted from the first quarter rental charges, the same will be adjusted from the subsequent quarters.

1.10. PAYMENT TERM

Lease period will start after issue of Commissioning Certificate by BHEL EDN. The payment of Financial Lease (Rental and Maintenance Charges) contract charges will be made on quarterly basis after completion of each quarter and submission of invoice(s) in triplicate. Payment will be released after submission of verified invoices and on certification by BHEL.

An installation certificate will be issued by BHEL after completing the Acceptance Test Procedure (ATP) terms. Thereafter, payment will be made at the end of each quarter.

The one time charges like installation, project management etc will be paid on completion of installation and acceptance. Installation charges like excavating, road cutting, cable laying etc. will be at actual but limited to quoted figure.

The first quarter Financial Lease (Rental and Maintenance Charges) payment will be due after completion of the quarter from the date of successful completion of installation & acceptance by BHEL (calendar quarterly basis).

Payment will be through Electronic Fund Transfer (EFT) only. Details regarding bank account shall be provided in BHEL's standard format. The EFT or Paylink Direct Credit Form is enclosed. Bidder needs to fill the details as per the EFT or Paylink Direct Credit Form and attach a copy of Cancelled Cheque with it.

Invoices shall be submitted for surveillance systems of EDN and ESD separately as follows:

- 1.10.a.1. Equipment leasing to be billed by Vendor/Lessor(Financing Agency)
- 1.10.a.2. Maintenance charges to be billed by Vendor.



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1.11.ACCEPTANCE TEST PROCEDURE (ATP)

- a) Complete system supply, installation and running of system as per requirements and technical specifications must be fulfilled.
- b) Soft copy and 3 sets of hard copies of complete system documentation, technical literature including the technical catalogues, maintenance and service manual, user manual of all the components like the cameras, network components, servers, client workstations, storage, software to be submitted.
- c) Details of configuration, various wiring diagrams, layout, Marking and labelling of all cameras, switches, all networking components involved, cables , ports , terminations, running instructions etc. to be submitted.(3 sets)
- d) Vendor should provide the complete technical specification and the vendor address for all the bought-out components including cameras, network components, cables, servers, client workstations, storage, software etc.
- e) Complete lay-out of the network architecture as built of the total system should be submitted by the vendor.
- f) Newness certificate: The Vendor has to submit the newness certificate of all the equipment supplied.
- g) OEM support: The Vendor has to submit the certificate from the Original equipment manufacturer of the system components for their back to back support. Back to back support should be available during the entire lease period.
- h) Certificate: Vendor has to submit certificates as per technical specifications and any other relevant statutory documents.
- i) After the installation and commissioning of the system as per the technical specification following are to be done.
 - Demonstration of system in on line mode to prove the camera's performance during day and night. Demonstration of cameras working on backup in case of power failure.
 - Demonstration of various reporting features of the system.
 - Demonstration of smooth working of all software modules and interfacing with other components as per specification.
 - Demonstration of all the analytics and other features in each camera is to be proved through the video management and recording software.



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- Demonstration of the total system in online mode for 1 day continuously to prove the maximum transmission and reception data rate.
- For demonstrating the health of the system in online mode, continuous video data transmission from all the cameras without any delay in the screen to be shown for a day.

1.12. BANK CHARGES

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

1.13. WARRANTY & MAINTENANCE

- a) The warranty and maintenance of equipment shall be undertaken, for Five years from the date of installation.
- b) The warranty and maintenance will be comprehensive with spares and labour. The maintenance will be inclusive of replacement of all defective components during the warranty period. The defective component may be permitted out of BHEL premises with BHEL's permission.
- c) The maintenance shall include installation / maintenance of all system components and software patches.
- d) At least one qualified and experienced service engineer, after screening by BHEL, shall be stationed in EDN by the vendor for providing the desired levels of service at both EDN and ESD. The posted engineer shall be available during the normal working hours and working days of EDN.

1.14. DEDUCTION FOR DOWNTIME

- a) QUARTERLY DOWNTIME CALCULATION FOR THE SUPPLIED EQUIPMENT & SERVICES

Vendor shall be responsible for running the system at the uptime of 100%. System here means Monitoring, Analyzing and Recording of video captured from cameras. Vendor shall also be responsible for at least 98% uptime of each component of the system. The deduction for downtime will be as mentioned below. Deduction from quarterly payments to the vendor will be made for non-availability of the system and any of the components for not meeting the above uptime requirements. The amount exceeding the quarterly payment to the vendor will be deducted from Performance Bank Guarantee.



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b) DOWNTIME CALCULATION

System (as total/full):

If full system is down for 5 hours in a quarter.

Quarterly Financial Lease (Rental and Maintenance Charges) amount of **entire system** is Rs. A Then the deduction will be: Rs. $(A / 90) * (5/24)$

Component:

If any of the component is down for 10 hours beyond 2% of grace downtime in a quarter.

Quarterly Financial Lease (Rental and Maintenance Charges) amount of **the component** is Rs. B Then the deduction will be: Rs. $(B / 90) * (10/24)$

Note:

- 1) Vendor has to provide component wise break-up of lease rental charges. For arriving at the lease rental charges of a component the prorate of outright price (of entire system) provided, will be considered.
- 2) Vendor has to provide quarterly uptime report of the system and components.
- 3) If any equipment is down continuously for a month in spite of being serviced, the equipment shall have to be replaced by the Vendor, without any extra charge.

1.15. TRAINING

Training of BHEL/CISF/Security personnel shall be part of the contract. During installation at respective locations the associated BHEL users shall be trained on the configuration and usage. Training will be provided separately for EDN and ESD personnel at EDN & ESD respectively.

1.16. INDEMNITY

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



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

1.17.INSURANCE

Insurance for the complete Systems/Goods shall be arranged by the Vendor/Lessor at his own risk and cost throughout the period of lease. Purchaser/Lessee, under any circumstances, will not be responsible for any loss/damage/theft of any Systems/goods, due to any reasons, whatsoever. Claim(s) etc., if any, will be dealt with the underwriters directly by the Vendor/Lessor. The insurance policy shall be assigned to BHEL.

1.18.CONFIDENTIALITY

Vendor/Lessor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents, etc. belonging to the Purchaser/Lessee and also of the Systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/or finalized during the course of execution of the order/contract. A third party non-disclosure agreement has to be submitted by the Vendor as per the following sample format.



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THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company),

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

I warrant and agree as follows:

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

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

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

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

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

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

Dated at _____, this ____ day of _____, 20 .

Name
Company
Signature



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1.19. FORCE MAJEURE

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

1.20. RISK PURCHASE

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

1.21. ARBITRATION:

All disputes or differences whatsoever which may arise at any time during execution of the Contract shall be mutually settled by BHEL and Vendor as per provision of the Contract. However, in the event such disputes cannot be settled mutually, such disputes shall be settled as per the Arbitration and reconciliation Act, 1996 of the Govt. of India and its subsequent amendments. In case of disputes with the Central PSUs, the same shall be settled at Bangalore as per the Guidelines of the Govt. of India. However, during the period such disputes are settled either by mutual discussions between the parties or by legal means, Vendor shall continue to do the work as per terms & conditions of Contract.

1.22. SUB-CONTRACTING

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

1.23. ADDITIONAL FACILITY REQUIRED IN FUTURE ON EQUIPMENT

In case any additional facility, relocation, upgrade is required on the equipment the Vendor shall provide the same at mutually agreed terms.

1.24. TERMINAL PAYMENT

BHEL shall have the right to acquire or surrender all the systems at the end of the lease period. In case BHEL decides to acquire the systems, a nominal charge of Re.1.00/- (Re One only) per equipment will be paid as terminal payment.



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In case of termination or surrender of systems by BHEL at the end of the lease period, Vendor/ Lessor will remove the equipment from Purchaser/Lessee's premises at his own risk and cost after due permission from BHEL.

1.25. LIMITATION OF LIABILITY

The Vendor/ Lessor's liability will be limited to the scope of this contract only.

1.26. COMPLIANCE TO ESI / PF ACTS

- a) The vendor shall comply with the provision of Employees Provident Fund and Miscellaneous Provisions Act 1952 and rules, regulations and other orders issued thereunder. He as an employer shall be liable to pay employer's contribution/deductions towards PF under the PF Act in respect of all labour employed by him for the execution of the contract in accordance with the provisions of the Employees Provident Funds and Miscellaneous Provisions Act, 1952 as amended from time to time. For this purpose he shall indicate the code number obtained from the Regional Provident Fund Commissioner or he should obtain a code number if he has not and produce the Photostat copy of the challan / receipt of monthly remittance of the contribution made by him to the PF Commissioner. Final payments due to him will be released only on production of a "No due certificate" from the Regional Provident Fund Commissioner if applicable. He shall also furnish such returns as are due, under the Act, to be sent to the appropriate authorities through the Principle Employer".
- b) The Vendor should get himself registered with the E.S.I Authorities as an independent Employer, obtain a separate code number and remit the dues in respect of the labour employed by him for the work and produce the challans / Receipts of remittance of the ESI contributions due under the E.S.I Act to the Company authorities. He shall also furnish such returns, as are due under the Act, to be sent to the appropriate authorities through the Principal Employer.
- c) If any action is brought in by P.F. Commissioner/ESI authorities on BHEL for the work done by the Vendor for his labourers regarding PF/ESI amount due, short remittances, non-remittances etc., the Vendor shall defend the case on behalf of BHEL and/or reimburse BHEL the expenses so incurred.
- d) If applicable, the vendor shall insure all his labourers and materials. Any claim by his employees for damages shall be settled by the vendor even if action is against BHEL or to reimburse the legal expenses incurred by BHEL.
- e) Vendor shall produce necessary records, documents, explanation whenever he is called upon to by any Government agencies like ESI, PF, VIGILANCE etc.



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1.27. SECURITY DEPOSIT:

- a) Security Deposit shall be submitted by the vendor. The rate of Security Deposit will be as below:
Up to Rs. 10 lakhs: 10%
Above Rs. 10 lakhs up to Rs.50 lakhs: Rs.1 lakh + 7.5% of the amount exceeding Rs. 10 lakhs.
Above Rs. 50 lakhs: Rs 4 lakhs + 5% of the amount exceeding Rs. 50 lakhs.
The security Deposit should be submitted before start of the work by the vendor.
- b) Security Deposit may be furnished in any one of the following forms:
- i) Cash (as permissible under the Income Tax Act)
 - ii) Pay Order, Demand Draft in favour of BHEL
 - iii) Local cheques of scheduled banks, subject to realization.
 - iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Vendor furnishing the security and duly pledged in favour of BHEL and discharged on the back).
 - v) Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
 - vi) Fixed Deposit Receipt issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the vendor, A/C BHEL, duly discharged on the back.
 - vii) Security deposit can also be recovered at the rate of 10% from the running bills.
However in such cases at least 50% of the Security Deposit should be submitted before start of the work and the balance 50% may be recovered from the running bills.
 - viii) EMD of the vendor can be converted and adjusted against the security deposit.
 - ix) The security deposit shall not carry any interest.



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(Note: Acceptance of Security Deposit against Sl. No. (iv) and (vi) above will be subject to hypothecation or endorsement on the documents in favour of BHEL.

However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith).

- c) Security deposit shall not be refunded to the vendor except in accordance with the terms of the contract.
- d) Security deposit will be returned to the vendor after successful execution of the project by the vendor. Security deposit will be forfeited in case the vendor doesn't complete the project successfully.

1.28. Electronic Funds Transfer (EFT) OR Paylink Direct Credit Form:

**Electronic Funds Transfer (EFT) OR
Paylink Direct Credit Form**

Please Fill up the form in **CAPITAL LETTERS** only.

TYPE OF REQUEST(Tick one): _____CREATE_____CHANGE

BHEL Vendor / Supplier Code:	<input type="text"/>
Company Name :	<input type="text"/>
Permanent Account Number(PAN):	<input type="text"/>
Address	<input type="text"/>
	<input type="text"/>

City:	PINCODE	STATE
<input type="text"/>	<input type="text"/>	<input type="text"/>

Contact Person(s)	<input type="text"/>
Telephone No:	<input type="text"/>
Fax No:	<input type="text"/>
e-mail id:	<input type="text"/>

1 Bank Name:	<input type="text"/>
2 Bank Address:	<input type="text"/>
	<input type="text"/>
3 Bank Telephone No:	<input type="text"/>
4 Bank Account No:	<input type="text"/>
5 Account Type: Savings/Cash Credit	<input type="text"/>
6 9 Digit Code Number of Bank and branch appearing on MICR cheque issued by Bank	<input type="text"/>
7 Bank swift Code(applicable for EFT only)	<input type="text"/>
8 Bank IFSC code(applicable for RTGS)	<input type="text"/>
9 Bank IFSC code(applicable for NEFT)	<input type="text"/>

- A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.
- B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
- C This authority remains in full force until BHEL, EDN, Bangalore receives written notification requesting a change or cancellation.
- D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:

Designation:

Telephone NO. with STD Code

Company Seal

Bank Certificate

We certify that _____ has an Account No _____ with us and we confirm that the bank details given above are correct as per our records.

Date:

(.....)

Place:

Signature

Please return completed form along with a blank cancelled cheque or photocopy thereof to:

Bharath Heavy Electricals Ltd,

Attn:

Electronics Division, Mysore Road,

BANGALORE - 560 026

In case of any Query, please call : 080-26998xxx/ 2674xxxx or fax no. 080-2674xxxx



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1.29. COMMERCIAL TERMS COMPLIANCE STATEMENT

S No	Description	Agreed / Yes	Not Agreed / No
1.29.1	Scope of Work: Whether the bidder has understood the scope work and indicated in the tender (If there is any clarification required, the same may be got cleared from the Executive in charge before submitting the offer).		
1.29.2	Period of Contract: The period of contract is for 5 years. However BHEL reserves the right to terminate the contract at any time without any prior notice or reasons whatsoever if in our judgment the performance is not satisfactory without any liability whatsoever on the part of BHEL.		
1.29.3	Validity of the Offer: Whether the bidder agrees to that offer should be valid for 3 months from the date of opening of technical bid.		
1.29.4	Performance Bank Guarantee: Whether the bidder agrees for furnishing PBG as per clause 1.4 of Annexure -IV.		
1.29.5	Earnest Money Deposit: Whether the bidder has agreed to submit EMD as per terms and conditions and submitted along with Technical Bid.		
1.29.6	Supply Condition: Whether the bidder has agreed to supply and install all NEW equipment and agreed to furnish certificate of newness as per clause 1.5 of Annexure -IV.		
1.29.7	Inspection: Whether the bidder has agreed to offer all components for pre-dispatch inspection at bidder works before shipment.		
1.29.8	Delivery & Installation: Whether the bidder has agreed to deliver and install equipment at BHEL as per clause, sub clauses of 1.7 of Annexure -IV.		



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1.29.9	Penalty for Late Delivery: Whether the bidder agrees for the penalty by BHEL in case of late delivery as per clause 1.8 of Annexure –IV.		
1.29.10	Penalty for Late Installation: Whether the bidder agrees for the penalty by BHEL in case of late installation as per clause 1.9 of Annexure – IV.		
1.29.11	Payment Term: Whether the Bidder/Lessor agrees for Payment terms as per clause 1.10 of Annexure- IV.		
1.29.12	Acceptance Test Procedure: Whether the bidder has agreed for procedures as per clause, sub clauses 1.11 of Annexure –IV.		
1.29.13	Bank Charges: Whether the Bidder/Lessor has agreed to bear the Bank charges, if any as per clause 1.12 of Annexure -IV.		
1.29.14	Warranty & Maintenance: Whether bidder has agreed to terms and conditions, as mentioned in clause, sub clauses of 1.13 of Annexure - IV.		
1.29.15	Deduction in Downtime: Whether the bidder has agreed for deduction in case of downtime as per clause, sub clauses of 1.14 of Annexure –IV.		
1.29.16	Training: Whether the bidder has agreed to provide training on usage for BHEL users, per clause 1.15 of Annexure- IV.		
1.29.17	Indemnity: Whether the Bidder/Lessor agrees for indemnity terms as per clause 1.16 of Annexure- IV.		



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1.29.18	Insurance: Whether the Bidder/Lessor has agreed to arrange Insurance, as per Clause 1.17 of Annexure -IV, for the complete Systems/Goods for any loss/damage/theft at his own risk and cost throughout the lease period. Claims, if any, will be dealt with the underwriters directly by Bidder/Lessor.		
1.29.19	Confidentiality: Whether Bidder/Lessor has agreed to maintain confidentiality as per Clause 1.18 of Annexure –IV. Bidder shall execute a third party non-disclosure agreement as per the sample format, in case of award of order.		
1.29.20	Risk Purchase: Whether the Bidder/Lessor agrees for risk purchase as per clause 1.20 of Annexure –IV.		
1.29.21	Sub-Contracting: Whether the Bidder/Lessor has agreed that the order/contract or any part thereof shall not be sub-contracted, assigned or otherwise transferred without prior written consent of the Purchaser/ Lessee.		
1.29.22	Additional facility required in future on IT equipment: Whether bidder agrees for Additional Facility in future as per clause 1.23 of Annexure- IV.		
1.29.23	Terminal Payment : Whether the Bidder/Lessor agrees for Terminal Payment terms as per clause 1.24 of Annexure- IV.		
1.29.24	Limitation of Liability : Whether the Bidder/ Lessor has agreed for Limitation of Liability term as per clause 1.25 of Annexure- IV.		



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1.29.25	Compliance to ESI / PF Act: Whether the Bidder/ Lessor agreed to comply with applicable ESI/PF rules and regulations as per clause 1.26 of Annexure- IV.		
1.29.26	Security Deposit: Whether the bidder has agreed to submit security deposit as mentioned in clause and sub clauses of 1.27 of Annexure -IV.		
1.29.27	Patents & Trademarks: Bidder/Lessor shall at all times indemnify the Purchaser/Lessee against all claims which may be made in respect of the Systems/goods/Software supplied by the Bidder/Lessor, for infringement of any right protected by patent, registration of designs or trademarks and legality of usage of Software. In the event of any such claims being made against the Purchaser/Lessee, Purchaser/Lessee will inform the Bidder/Lessor who shall at his own cost either settle any such dispute or conduct any litigation that may arise there from.		
1.29.28	Test Certificates: Whether the bidder has furnished relevant test certificates, certificates of newness of equipment, certificates as per technical specifications and any other statutory documents required.		
1.29.29	Submission of Certificates , Supporting Documents: Whether the bidder has enclosed all required documents supporting qualification criteria, certificates etc.		
1.29.30	EFT or Paylink Direct Credit Form: Whether bidder has filled EFT or Paylink Direct Credit details (Clause 1.28 of Annexure IV) and attached a copy of Cancelled Cheque (Clause 1.10 of Annexure IV)		



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ANNEXURE –V

1. TECHNICAL SPECIFICATIONS & COMPLIANCE FORMAT

1.1. General terms and conditions

- a) Scope of supply would also include cables, cable trays, junction boxes, earth wire and other accessories like standard brackets, nut-bolts, glands, lugs, conduit sleeves, etc., as required. Network Enclosures for housing power supplies etc., at Camera locations and also complete supply, routing, installation, termination and supply of Fiber optic cables required for the above. All required Software along with required licenses to be supplied
- b) Vendor shall consider licensed version of all application and system software required for completeness of the system. Vendor shall include warranty for satisfactory performance of the equipment under stipulated variations of voltage and frequency.
- c) Similar type of equipment shall be of same make. Mixing of different makes is not acceptable.
- d) Technical specifications have been detailed below. However all accessories and licenses required for implementation of the system shall be in Vendor scope within the quoted price, whether these are specifically mentioned herein or not. Any other equipment, module required for the safe and satisfactory operation, control, protection, monitoring, testing and maintenance of the system shall also be included by the Vendor within the quoted price.
- e) The system supplied shall be complete in all respects for reliable performance. The Vendor shall submit the detailed BOM, block schematic, video / control signal / network topology / power wiring diagram, along with the System Requirement Specification (technical write-up) and data sheets of quoted components describing the implementation as part of the offer.
- f) The system shall have an exclusive network for video surveillance at each location (EDN and ESD).



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1.2. Bill of Quantities

Bill of Quantities					
Sl. No.	Item Code	Item Description	Quantity		
			EDN	ESD	Total
1	CCTV01	PTZ camera	17	4	21
2	CCTV02	Box camera	21	16	37
3	CCTV03	Dome camera	23	28	51
4	CCTV04	Core switch	2	2	4
5	CCTV05	PoE switch	3	0	3
6	CCTV06	SFP Access Switch	6	8	14
7	CCTV07	100Base-FX Multi Mode Rugged SFP	44	31	75
8	CCTV08	1G LX SM SFP Trans receiver(Module)	18	16	34
9	CCTV09	100Mbps SFP RJ45 Module	25	22	47
10	CCTV10	Storage Switch	1	1	2
11	CCTV11	Server	2	2	4
12	CCTV12	Storage	1	1	2
13	CCTV13	Media convertors MM 100Mbps	44	31	75
14	CCTV14	Junction box	40	20	60
15	CCTV15	Network enclosure	4	6	10
16	CCTV16	UPS 2KVA	4	5	9
17	CCTV17	UPS 5KVA	1	1	2
18	CCTV18	Multi-mode fibre cable	As required	As required	As required
19	CCTV19	Single mode fibre cable	As required	As required	As required
20	CCTV20	Power cable	As required	As required	As required
21	CCTV21	Monitor	6 (4 No. of 42" & 2 No. 21")	6 (4 No. of 42" & 2 No. 21")	12
22	CCTV22	Workstation	4	4	8



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23	CCTV23	VMS	1	1	2
24	CCTV24	Analytics	1	1	2
25	CCTV25	LIU	As required	As required	
26	CCTV26	Cat6 cable	As required	As required	
27	CCTV27	Other Accessories	As required	As required	
28	CCTV28	Joy Stick and Keyboard (for Monitors)	As required	As required	

Note: The locations of the Control Room for CCTV Surveillance System in EDN and ESD will be intimated during the site survey. In case BHEL decides to relocate them during the lease period, vendor needs to shift associated equipment. The communication links will be provided.



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1.3. Technical Specifications and Compliance

A) Camera

Only following make(s) of camera can be quoted: **Bosch/Honeywell/Pelco/Sony/Axis/Panasonic**

1.3. A.1. PTZ

CCTV01: PTZ Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder / Remarks (to be filled by bidder)
1	Camera type	PTZ		
2	Make Offered	Vendor to specify		
3	Model Offered	Vendor to specify		
4	Certifications and Approvals	FCC, CE, UL,EN		
5	Camera 20x (or better) Day/Night	20x (4.7 to 94 mm)		
6	Imager	1/3" CCD or 1/3" CMOS (progressive scan)		
7	Television System	PAL		
8	Lens	F-1.6 ~ 3.5 , Focal length = 4.7 to 94 mm		
9	Optical Zoom	20x		
10	Digital zoom	12x		
11	Focus Mode	Auto ,Manual		
12	Iris	Automatic with Manual override		
13	Gain Control	Automatic/Manual		
14	Horizontal viewing angle	2.9° to 54.1°		
15	Electronic Shutter	1/4 ~ 1/10000 Sec		
16	Wide Dynamic Range	80 dB		
17	White Balance	Automatic with mode selection options		
18	Signal to noise ratio	>50dB (AGC off)		
19	Minimum Illumination (at F1.6 and 30 IRE, slow shutter off)	Color: 0.8 lux and for B/W: 0.6 lux		



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CCTV01: PTZ Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder / Remarks (to be filled by bidder)
20	AGC	On/Off Switch/ Automatic		
21	Backlight compensation	Required		
22	Motion detection	In conjunction with VMS(Video Management System)		
23	Unattended object detection	In conjunction with VMS		
24	Day & Night Operation	Yes		
25	Pan angle	360 degree continuous/endless		
26	Tilt angle	0° to 90°		
27	Pan speed	0.1 ~ 280 Deg/Sec		
28	Tilt speed	0.1 ~ 160 Deg / Sec		
29	Power Supply	230VAC, 50Hz, *No separate DC line will be provided.		
30	Compression	M JPEG, H.264/MPEG-4 (with dual streaming)		
31	Resolution(PAL) in pixels	minimum 720p HD or higher		
32	Privacy Zones	4 or more		
33	Presets	Minimum 90 presets and 4 predefined tour		
34	Number of simultaneous clients	5		
35	Alarm Inputs	Minimum 4 or more		
36	Alarm Outputs	Minimum 1 or more		
37	Environment	IP66, metal casing (aluminium), (with heater and blower)		
38	Humidity	15-100% , relative, Condensing		



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CCTV01: PTZ Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder / Remarks (to be filled by bidder)
39	Operating temperature	0 to 50° Celsius		
40	View material	Impact resistant polycarbonate (PC) clear dome		
41	Mounting	Shall be Pole or with Stand / wall mounted / ceiling mounted / steel structure mounting		
42	ONVIF	ONVIF Profile-S		



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1.3. A.2. Box Camera

CCTV02: Box Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Camera type	BOX		
2	Make/Model Offered			
3	Certifications and Approvals	FCC, CE, UL,EN		
4	Sensor Type	1/3" CCD or 1/3" CMOS		
5	Image Readout	Progressive scan		
6	Active Pixels (in pixels)	720p HD		
7	Television System	PAL		
8	Video Compression	M JPEG, H.264/MPEG-4 (with dual streaming)		
9	Video Frame rate	1 to 25 (PAL)		
10	Sensitivity (at F1.2 at 30IRE) (at F1.6 and 30 IRE, slow shutter off)	Color: 0.25 Lux		
11		Mono: 0.09 Lux		
12	Day & Night Operation	Yes		
13	Signal to noise ratio	>50dB (AGC off)		
14	Electronic Shutter	1/50 to 1/10000 PAL or Auto		
15	Backlight compensation	Required On/Off		
16	Motion detection	In conjunction with VMS (Video Management System)		
17	Unattended object detection	In conjunction with VMS		
18	Local storage	SD/SDHC/SDXC slot supporting memory card (32GB)		
19	Environment	IP66, metal casing (aluminium), (with heater and blower)		
20	Humidity	20-93% , relative, Condensing		
21	Operating temperature	0 to 50° Celsius		



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CCTV02: Box Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
22	Lens Focal length	IR corrected f=5 to 50 mm, Varifocal, Auto Iris		
23	Lens Connector to camera	"C" or "CS"		
24	Power Supply	230VAC, 50Hz, *No separate DC line will be provided.		
25	Privacy Zones	4 or more		
26	Number of simultaneous clients	5		
27	View material	Impact resistant polycarbonate (PC) clear dome/ tempered glass		
28	ONVIF Conformance	ONVIF Profile-S		



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1.3. A.3. Dome Camera

CCTV03: Dome Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Camera type	Dome		
2	Make Offered			
3	Model Offered			
4	Certifications & Approvals	FCC, CE, UL,EN		
5	Environmental	Indoor Pendant Housing		
6	Sensor Type	1/3" CCD or 1/3" CMOS		
7	Image Readout	Progressive scan		
8	Active Pixels (in pixels)	720p HD		
9	Television System	PAL		
10	Compression	M-JPEG, H.264/MPEG-4 (with dual streaming)		
11	Frame rate	1 to 25(PAL)		
12	Video output	1.0 V P-P / 75 Ohms (BNC Connector)		
13	Sensitivity (at F1.2 at 30IRE) (at F1.6 and 30 IRE, slow shutter off)	Color: 0.2 Lux		
14		Mono: 0.03 Lux		
15	Signal to noise ratio	>50dB (with AGC off)		
16	Electronic Shutter	1/50 to 1/8000 PAL or Auto		
17	Backlight compensation	Required On/Off		
18	Motion detection	In conjunction with VMS (Video Management System)		
19	Unattended object detection	In conjunction with VMS		
20	Local storage	SD/SDHC/SDXC slot supporting memory card (32GB)		
21	Environment	Indoor IP 54		



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CCTV03: Dome Camera				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
22	Humidity	20-80% , relative, Condensing		
23	Operating temperature	0 to 50° Celsius		
24	Lens Type	Auto focus zoom lens and manual		
25	Lens Focal length	3.8 to 9 mm / 2.8 to 12mm (as per site requirement) Varifocal, Auto Iris		
26	Power Supply	230VAC, 50Hz, *No separate DC line will be provided.		
27	PoE supply	IEEE 802.3 AF compliant		
28	Number of simultaneous clients	5		
29	View material	Vandal Proof		
	Mounting	Shall be Pole or with Stand / wall mounted / ceiling mounted / steel structure mounting		
30				
31	ONVIF Conformance	ONVIF Profile-S		



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B) Switches

Only following make(s) of Switches can be quoted: Cisco/Juniper/Dell/HP/IBM/Extreme

Note: All switches should be of same make (OEM).

1.3. B.1. Core Switch

CCTV04: Core Switch			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Switch Make Quoted		
2	Switch Model Quoted		
3	General Features		
3.1	The switch should support a minimum of 16 nos. Gigabit Ethernet SFP ports		
3.3	At least 4 ports can be populated with 10-Gig transceivers		
3.4	Switch should support 4 x 1 Gig and 4 x 10-Gig SFP+ Ports		
3.5	All SFP based ports should be hot swappable		
3.6	Switch should support Integrated Redundant power supply and fan. Power supply and fan should be field replaceable. In case of power supply failure single power supply should be able to handle the complete load.		
4	Performance and Scalability		
4.1	Switch should be 1 RU rack mountable stackable in nature with minimum of 8 switches in a stack with single IP management.		
4.2	Minimum Switching capacity of the device should be 144 Gbps.		
4.3	Shall have minimum 65 Mpps throughput		
4.4	Switch should provide stacking speed of 24 Gbps		
4.5	The switch should support 1000 VLANs		
4.6	The switch should support 4000 VLAN IDs		
4.7	The switch should support Jumbo frames of 9216 bytes		
4.8	The switch should support 12000 Unicast MAC addresses		



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CCTV04: Core Switch			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
5	L3 Features		
5.1	Should have capability to upgrade to Routing Protocols: Static Route, RIP (Version 1 & 2), RIPng, OSPF, BGPv4 and IPv6 routing such as OSPFv3 and EIGRPv6.		
5.2	Policy-based routing (PBR), Protocol Independent Multicast (PIM) for IP multicast routing, including PIM sparse mode (PIM-SM).		
6	Quality of Service (QoS) & Control		
6.1	Should support DiffServ / TOS Marking & Policing		
6.2	Shall have at least 4 Queues to differentiate and prioritize different applications (Voice / Video / Data)		
6.3	Should Support for IGMP v1, v2 and v3		
7	Management		
7.1	Should support 4 Groups of RMON I		
7.2	Minimum Configuration deliverable		

The core switch & Storage switch are interchangeable.

The storage switch will be connected to 10 Gig SFP+ port of VMS sever, Video Analytics server and Storage. So 4 Nos of 10 Gig SFP+ ports are required in Storage switch and hence 4 nos of 10gig SFP+ transceivers or/and necessary cables for four 10gig SFP+ ports needs to be considered by bidder with this switch so that there should not be any communication related problems among Storage, VMS server and Video Analytics server.

The storage switch will be connected with Video analytics server, VMS server and Storage trough 10g SFP+ ports. So necessary 10G SFP+ transceivers and cables for server, storage and switch needs to be provided by the bidder.



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1.3. B.2. PoE Switch

CCTV05. PoE Switch			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Switch Make Quoted		
2	Switch Model Quoted		
3	Switch required details		
3.1	Should have 24 No's 10/100base PoE Ethernet Ports		
3.2	Should support a minimum of 2 Nos of 1Gig SFP Uplinks		
3.3	Should support Auto-negotiation for speed, duplex mode and flow control		
3.4	2 Nos of stacking Module with 1 Mtr Cable in each switch. Required Modules and Licenses should be considered where ever it is mandate in the proposed Solution		
4	Performance& Scalability		
4.1	The switch should support Forwarding bandwidth of 88 Gbps		
4.2	The switch should support Full-duplex Switching bandwidth of 176 Gbps		
4.3	The switch should support Stacking. Required Modules and Licenses should be considered wherever it is mandate in the proposed Solution		
4.4	MAC Address Should be able to support : 8k,		
4.5	Should be able to Support jumbo frames of up to 9,216 bytes		
4.6	Full complement of standards-based Layer 2, IPv4 and IPv6 features for unicast and Multicast applications.		
5	PoE & PoE+		
5.1	The switch should support PoE (IEEE 802.3af)		



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CCTV05. PoE Switch			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
5.2	The switch may support PoE+ (IEEE 802.3at)		
5.3	The switch should support flexible power allocation across all ports		
5.4	The switch should have 24 ports of 15.4W or higher		
6	VLAN		
6.1	Support up to 1024 VLANs		
6.2	Should support GVRP		
6.3	Should support Port based VLAN		
6.4	Should support Private Edge VLAN		
6.5	Should support MAC Based VLAN		
6.6	Should support Double Q Tagging		
6.7	Should support IP Subnet-based VLANs		
6.8	Should support Voice-VLAN		
7	Quality of Service		
7.1	Should deliver 4 priority queues per port		
7.2	Flow-Based QoS Services Mode (BW limiting, BW guarantee)		
7.3	Port-Based QoS Services Mode (BW limiting, BW guarantee)		
7.4	MAC-Based CoS Assignment		
8	Link Aggregation		
8.1	Should support link aggregation adhering to IEEE 802.3ad standards		
8.2	Should be able to support 8 links per group, 128 groups per stack		
9	Layer 3		
9.1	The switch should support Inter-VLAN routing		
9.2	The switch should support IPv4 unicast Static Routing		
9.3	The switch should support 16 IPv4 Static routes		



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1.3. B.3. Access Switch

CCTV06:24 Port SFP Access Switches			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Switch Make Quoted		
2	Switch Model Quoted		
3	Switch required details		
3.1	Should have 24 10/100BASE-X ports,		
3.2	Should have 24 or 16 Fast Ethernet SFP FX ports,		
3.3	Should have at least 2 dual-purpose Gigabit Ethernet uplink ports (1Gig LX SFP Ports). (each dual-purpose uplink port has one 10/100/1000 Ethernet port and one SFP-based Gigabit Ethernet port, one port active)		
3.4	Should support Auto-negotiation for speed, duplex mode and flow control		
3.5	a) Each Switch should support required Nos of 1 Gig SM LX Trans-receivers, 100Mbps MM FX Transceivers, 100Mbps Copper Trans-receivers.		
3.6	b) Support for 2 Nos of 1Gig LX Transceivers in each switch		
4	Performance		
4.1	8.8 Gbps of Switching Fabric		
4.2	MAC Address Should be able to support : 8k,		
4.3	Should be able to Support jumbo frames of up to 9,216 bytes.		
4.4	Full complement of standards-based Layer 2, IPv4 and IPv6 features for unicast and Multicast applications.		



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CCTV06:24 Port SFP Access Switches			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
5	VLAN		
5.1	Support up to 1024 VLANs		
5.2	Should support GVRP		
5.3	Should support Port based VLAN		
5.4	Should support Private Edge VLAN		
5.5	Should support MAC Based VLAN		
5.6	Should support Double Q Tagging		
5.7	Should support IP Subnet-based VLANs		
5.8	Should support Voice-VLAN		
6	Quality of Service		
6.1	Should deliver 4 priority queues per port		
6.2	Flow-Based QoS Services Mode (BW limiting, BW guarantee)		
6.3	Port-Based QoS Services Mode (BW limiting, BW guarantee)		
6.4	MAC-Based CoS Assignment		
7	Link Aggregation		
7.1	Should support link aggregation adhering to IEEE 802.3ad standards		
7.2	Should be able to support 8 links per group, 128 groups per stack		
8	Layer 3		
8.1	VLAN routing, OSPFv1/v2/v3, RIPv1/v2, VRRP, BootP/DHCP Relay, ECMP		
8.2	IGMPv2, IGMPv3, IGMP Proxy, PIM-SM		
8.3	Ability to manage and route IPv6 traffic via static routes and OSPFv3 learned routes		
8.4	Support for LLDP-Med		



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1.3. B.4. Storage Switch

CCTV10: Storage Switch			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Switch Make Quoted		
2	Switch Model Quoted		
3	General Features		
3.1	The switch should support a minimum of 16 nos. Gigabit Ethernet SFP ports		
3.3	At least 4 ports can be populated with 10-Gig transceivers		
3.4	Switch should support 4 x 1 Gig and 4 x 10-Gig SFP+ Ports		
3.5	All SFP based ports should be hot swappable		
3.6	Switch should support Integrated Redundant power supply and fan. Power supply and fan should be field replaceable. In case of power supply failure single power supply should be able to handle the complete load.		
4	Performance and Scalability		
4.1	Switch should be 1 RU rack mountable stackable in nature with minimum of 8 switches in a stack with single IP management.		
4.2	Minimum Switching capacity of the device should be 144 Gbps.		
4.3	Shall have minimum 65 Mpps throughput		
4.4	Switch should provide stacking speed of 24 Gbps		
4.5	The switch should support 1000 VLANs		
4.6	The switch should support 4000 VLAN IDs		
4.7	The switch should support Jumbo frames of 9216 bytes		
4.8	The switch should support 12000 Unicast MAC addresses		



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CCTV10: Storage Switch			
Sl. No	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
5	L3 Features		
5.1	Should have capability to upgrade to Routing Protocols: Static Route, RIP (Version 1 & 2), RIPng, OSPF, BGPv4 and IPv6 routing such as OSPFv3 and EIGRPv6.		
5.2	Policy-based routing (PBR), Protocol Independent Multicast (PIM) for IP multicast routing, including PIM sparse mode (PIM-SM).		
6	Quality of Service (QoS) & Control		
6.1	Should support DiffServ / TOS Marking & Policing		
6.2	Shall have at least 4 Queues to differentiate and prioritize different applications (Voice / Video / Data)		
6.3	Should Support for IGMP v1, v2 and v3		
7	Management		
7.1	Should support 4 Groups of RMON I		
7.2	Minimum Configuration deliverable		

The core switch & Storage switch are interchangeable.

The storage switch will be connected to 10 Gig SFP+ port of VMS sever, Video Analytics server and Storage. So 4 Nos of 10 Gig SFP+ ports are required in Storage switch and hence 4 nos of 10gig SFP+ transceivers or/and necessary cables for four 10gig SFP+ ports needs to be considered by bidder with this switch so that there should not be any communication related problems among Storage, VMS server and Video Analytics server.

The storage switch will be connected with Video analytics server, VMS server and Storage trough 10g SFP+ ports. So necessary 10G SFP+ transceivers and cables for server, storage and switch needs to be provided by the bidder.



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1.3. C. Server

CCTV11:Video Management System & Video Analytics Server				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Server make quoted			
2	Server model quoted			
3	Processors	Two * Intel® Xeon® E5-2650 (2.0GHz/8-core)		
4	Processor Cache Memory	20 MB L3 Cache per Processor		
5	Chipset	Intel® C600 Series Chipset		
6	Memory	Should be populated with 2 * 8GB DDR-3 RDIMMs. The Server memory should be expandable to at least 256GB & above at 1600MHz		
6.1		The memory should support Advanced ECC		
7	RAID Controller	Latest generation Embedded hardware SAS Raid Controller with at least 512MB Flash or Battery backed cache and support for RAID 0, 1, 1+0, 5		
8	Hard Drive bays	Should be populated with 2 * 600GB 10K rpm 2.5” 6Gbps Hot-Plug SAS HDDs		
8.1		Server should support at least 4 Hot-plug 2.5” SFF HDD bays		
9	Ethernet Ports	2 * 1Gbps ports & 2 * 10Gbps SFP+ Ports on separate Network Adapters for redundancy Required cables need to be provided to connect the 10G cards to the compatible external switches		
9.1		1 * Dedicated Remote Management Port for Remote Management		
10	Other Ports	At least 5 * USB 2.0 Ports; 1 * Serial Port; 1 * VGA Port/DB-15 ports		



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CCTV11:Video Management System & Video Analytics Server				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
11	Optical Drive	Internal DVD-RW		
12	Power Supply and Fans	Hot-plug Redundant PSUs		
13	Efficient Power	The PSUs should be 80Plus Certified Platinum Power Efficient (94% efficiency)		
14	Redundant Fans	Hot-Plug Redundant Fans		
15	Remote Management	Should be IPMI compliant		
15.1		Should be able to provide full out of band remote management capabilities, troubleshoot and remediate the Server from any location		
15.2		Should be able to power on & off the Server remotely		
15.3		Should be capable of remotely deploying, updating, monitor and maintaining servers with or without a systems management software agent installed and provide virtual KVM functionality		
15.4		Should be capable of remotely doing firmware, BIOS updates, independent of the OS installed		
16	Power Monitoring	Should be capable of providing power monitoring at server hardware level for power savings		
17	Single OEM	Server management software should be from the same OEM brand as that of the server		
18	Operating System	Should support latest Microsoft Windows, RedHat Linux & VMware Operating Systems		
18.1		Microsoft Windows 2008/2012 License (Standard/Enterprise) should be included as part of the Server		



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CCTV11:Video Management System & Video Analytics Server				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
19	Security	Power-on password		
19.1		Administrator's password		
20	Antivirus software	Latest software at the time of supply. Updates to be provided during the entire support period.		
21	Mouse	Optical mouse with scroll		
22	Monitor for Console/Rack	21” HD LED Monitor		
23	Rack Support	Should be of rack form factor with required rack rails		

Note: In case the VMS server fails, the whole system should keep on running with video analytics server

The storage switch will be connected with Video analytics server, VMS server and Storage through 10g SFP+ ports. So necessary 10G SFP+ transceivers and cables for server, storage and switch needs to be provided by the bidder.



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1.3. D. Storage

Only following make(s) of Storage can be quoted: **IBM, Dell, HP, EMC, Hitachi, Netapp**

CCTV12:Storage				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Storage Make Quoted			
2	Server Model Quoted			
3	Storage Capacity	EDN: Storage system should be configured with 90TB of usable capacity in RAID-5 using 2TB NL-SAS Drives. At least one global hot-spare drive should be allocated to 15-drives		
3.1		ESD: Storage system should be configured with 70TB of usable capacity in RAID-5 using 2TB NL-SAS Drives. At least one global hot-spare drive should be allocated to 15-drives		
4	Storage Scalability	Storage should be scalable to at least 120TB for future expandability using the configuration mentioned in Storage capacity		
5	Supported Drives	Should Support SAS, SATA or Near line SAS (NL-SAS) Drives		
6	RAID Support	Support for RAID level 0, 1, 1+0, 5		
7	Host Interface	The bidder should quote with min 2 * 10 Gbps SFP+ ports per controller		
8	Cache per Controller	2GB Cache per controller		
9	Controller	The Storage array should have dual Active-Active controllers mirroring each other's cache. Should support load balancing across both controllers		



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CCTV12:Storage				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
10	Cache Protection	The storage array must provide complete cache data protection with battery backup for up to 72 hours or more.		
11	Operating System Support	The storage array should support minimum Microsoft Windows 2008, RedHat Linux, VMware Operating Systems		
12	Power Supplies and FANS	Fully redundant and hot-plug Power Supplies & Fans		
<i>The storage switch will be connected with Video analytics server, VMS server and Storage through 10g SFP+ ports. So necessary 10G SFP+ transceivers and cables for server, storage and switches needs to be provided by the bidder.</i>				



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1.3. E. VMS

CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1	Make offered			
2	Model offered			
3	General	Shall be an enterprise class IP-enabled security software solution. It shall support seamless unification of remote IP ONVIF compliant video management systems (VMS) & Third Party Systems like Video Analytics.		
4	Storage period	The recording shall be stored for at least 90 days 25 frames per second for all cameras.		
5	Certification	Shall support industry standard (ONVIF) for the interface of IP-based physical security products and shall be based on a server/client model.		
6	Open Architecture	Shall be based on a true open architecture that shall allow for use of non-proprietary workstation and server hardware, non-proprietary network infrastructure and non-proprietary storage.		
7	Scalability	Shall offer a complete and scalable video surveillance solution which allows cameras to be added on a unit-by-unit basis. The database shall support at least 250 cameras.		
8	Compatible with third party Product	Shall support ONVIF compatible cameras from different manufacturers.		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
9	Windows Based	Shall be a Windows service that can be configured to start when the operating system is booted and run in the background irrespective of whether a user is logged onto the machine or not. The VMS Software shall be compatible with a Windows®2008 /Windows 2012 Server operating system.		
10	Role-based architecture	Shall consist of a role-based architecture, Roles shall move from one server to another without disturbing the regular operations.		
11	I-frame	Shall have ability to configure the key frame interval (I-frame) per second to minimise network traffic.		
12	Multicasting	Shall have the ability to manage multi-cast directly from the camera to minimize network traffic. Shall support dynamically switching the video resolution according to the Tile Size on Monitoring Screen. High Resolution Video feed while watching single camera on screen and Low Resolution Video feed while watching Cameras in Multiple tiles.		
13	Automatic Configuration	Shall allow direct configuration of IP camera or IP camera encoder with no requirement to ever directly connect via web page of IP camera or encoder to configure these parameters: Discover on IP network and set IP Address, Frame Rate, Resolution, Motion detection: within camera or server based, Bit Rate, Key frame interval, Digital I/O, Audio Inputs/Outputs, Ability to update firmware of IP camera or encoder. Any configuration changes do not require the server services to be restarted.		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
14	Independent Camera controls	Each camera shall be settable independently. Any alteration to settings of one camera should not affect the recording and display settings of other cameras		
15	Keyboard control	Shall be able to use multiple CCTV keyboards to operate the entire set of cameras throughout the system, including cameras of various manufacturers, including their PTZ functionalities.		
16	Multiple Video Streaming	Shall be capable of handling multiple video streams from the same camera; users shall be free to use any one of them based on their assigned usage. The standard video stream usages are: Live, Recording, Remote Monitoring.		
17	Prevention from data corruption	Shall avoid corruption of the recorded video that introduces delay when the servers become operational after a hardware or power failure.		
18	Fail-over redundancy	Shall have built-in Failover / Redundancy Feature with hot stand-by for the management & recording servers without requiring a third party custom Windows Cluster.		
19	Logs for audit trails	Shall support the generation of audit trails. Audit trails shall consist of logs of operator/administrator additions, deletions, and modifications.		
20	Health Monitoring	Shall monitor health and log health-related events. A Health Monitoring task and Health History reporting task shall be available for live and historical reporting.		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
21	Audit Reports	Shall support Audit trails report generation. They shall be able to track changes made within specific time periods. Querying on specific users, changes, affected entities, and time periods shall also be possible.		
22	Incident Reports	Shall support Incident reports, which shall allow the security operator to create reports of incidents that occurred during a shift. Incident reports shall allow entities, events, and alarms to be added to support the report's conclusions.		
23	Storage	Storage of captured video shall be on industry-standard storage devices. Aggregate storage shall scale independently and without limit to meet extensive video application requirements. The recording shall be stored for at least 90 days and should be flexible to scale upto 120 days recording for future requirements.		
24	Mobile devices compatibility	Shall support mobile apps for various off-the-shelf smartphones and tablets (iPAD / iPhone / Blackberry & Android-Compatible Smartphones). The mobile apps shall communicate with the VMS's Mobile Server over any Wi-Fi or wireless IP connection.		
25	VMS Functionalities	SDK shall be available to support custom development for the platform. Integration with external applications and databases shall be possible with the SDK. Functionalities available shall include		
25.1		Configuration of embedded systems.		
25.2		Live event monitoring.		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
25.3		Live video monitoring and playback of archived video.		
25.4		Alarm management.		
25.5		Reporting, including creating custom report templates and incident reports		
25.6		Dynamic graphical map viewing.		
26	Remote Administration	Shall allow the administrator or users with appropriate privileges to change the system configuration. The VMS shall provide decentralized configuration and administration of the VMS system from anywhere on the IP network.		
27	Authentication and Access right	Shall provide an authentication mechanism, which verifies the validity of the user. As such, the administrator (who has all rights and privileges) can define specific access rights and privileges for each user in the system.		
28	Monitoring capability	Shall allow monitoring more than 16 cameras and shall support multiple monitors to be connected to a single computer.		
29	Uninterrupted video Monitoring	Shall provide the uninterrupted video Monitoring for Operator. The live monitoring of Operator remains available even if the Main Server becomes unavailable.		
30	Digital Zoom	Shall support Digital Zoom on Live & Playback Video Streams also the operator shall be able to control pan-tilt-zoom, iris, focus, and presets.		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
31	Bookmarking	Shall allow operators to bookmark the concerned videos & browse through a list of all bookmarks created on the system and select any bookmarked event for viewing.		
32	Image Front	Shall provide still image export to PNG, JPEG, GIF, and BMP format with Date and Time stamp, and Camera Name on the image (snapshot). The SOFTWARE shall also provide tools to export video on various media such as a CD-ROM.		
33	Monitoring capability	Shall support multiple monitors to be connected to a single computer (Upto 4 monitors) & will allow monitoring at least 16 live feeds on each Monitor.		
34	Recording On-Event	Shall be able to record any video input in response to an hard association of alarm to camera . Any alarm can trigger recording on any or all cameras.		
34.1		Optionally, any camera shall be programmable to record at up to the maximum capture rate (FPS) available from the system in response to an alarm		
35	Recording on Schedules	Shall be capable of executing any number of internal recording schedules defined by the administrator. Schedules shall be remotely configurable and control the following actions:		
35.1		Amount of allocated storage (any combination of cameras for any duration from 1 hour to 30 days).		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
35.2		Monitoring of physical alarms (during specified periods)		
35.3		Monitoring of motion alarms (during specified periods)		
35.4		The VMS shall be able to support Variable Bit Rate (VBR) and Constant Bit Rate (CBR) for optimum bandwidth utilization.		
35.5		Moving of a PTZ unit to a predefined position		
36	Playing Back Video	Retrieved video shall be displayed automatically in a window. It shall be possible to display the playback window beside the live video window. A date/time stamp shall be shown with the video and updated for each frame that is displayed. It shall be possible to playback multiple cameras simultaneously for all cameras at the highest recorded resolution.		
37	Playback Controls	When a playback window is selected, the following controls shall be made available to control the playback of the video:		
37.1		Play – forward and reverse.		
37.2		Pause.		
37.3		Single frame – forward and reverse.		
37.4		Move to beginning to ending of video segment		
37.5		The speed of playback shall be variable, including or 1/2x, 1/4x, 2x, and 4x normal speed. The recorded video shall also be capable of being navigated quickly using a shuttle search (slide bar). Video frames shall be displayed while the slide bar is being moved to assist in finding the frame of interest.		



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CCTV23: VMS (Video Management System)				
Sl. No	Features	Qualifying Minimum BHEL Requirement	Complied (Yes /No)	Specifications offered by bidder/Remarks (to be filled by bidder)
38	Time Synchronization	Shall allow for clock synchronization to occur manually or from a central location through a network time protocol (NTP) server or enterprise management server.		
38.1		Shall allow the cameras to time sync with its clock.		
39	Video Loss Detection	Shall constantly monitor all video inputs for a synchronization signal and, if enabled, notify the administrator if a signal loss is detected.		
Note: In case the VMS server fails, the whole system should keep on running with video analytics server				



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1.3. F. Video Analytics

CCTV24: Video Analytics					
Sl. No	Features	Qualifying Minimum BHEL Requirement	No of cameras where particular VA is required	Complied (Yes/No)	Specifications offered by bidder/Remarks (to be filled by bidder)
		Make offered			
		Model Offered			
1	General Features				
1.1		Should support both indoor and outdoor environment			
1.2		Should support setting of minimum and maximum object size for detection			
1.3		Should support Object classification			
1.4		Should support open VMS			
1.5		Should be able to stream the Analytics video to VMS using open interface protocol like ONVIF			
1.6		Shall be able to store all alarm details in its own database			
1.7		Security Sealing Video Evidence: A video clip from a live or playback video window shall be capable of being saved to the local PC or other network storage location in native format. The captured information shall include the video clip itself, any audio data if recorded, and associated location, camera, time, date and event details.			



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CCTV24: Video Analytics					
Sl. No	Features	Qualifying Minimum BHEL Requirement	No of cameras where particular VA is required	Complied (Yes/No)	Specifications offered by bidder/Remarks (to be filled by bidder)
1.8		Integration of Site Maps			
1.8.1		Shall be capable of importing two dimensional (2D) images of floor plans, building or campus layouts or other facility or site geometries. 2D images shall be supported in .bmp or .wmf formats. Also should support Auto CAD, SHP, JPG.			
1.8.2		A series of interactive icons shall be provided to deploy on top of the imported map images and support the following functions:			
1.8.3		These icons shall indicate the location of each physical camera and its approximate field of view, and of alarm inputs and other security equipment deployed within that map area.			
1.8.4		These icons shall be positionable using simple drag-and-drop movement.			
1.8.5		The camera icons shall have a point-and-click interface to launch on demand a live video window from the selected fixed or PTZ camera.			
1.8.6		The alarm icons shall provide an immediate, visual means of identifying incident locations and when clicked shall provide relevant alarm and site/location details.			
1.8.7		It shall be possible to layer or nest multiple maps within the primary client screen to leverage these virtual representations across even very large or complex facilities and surveillance deployments			
1.8.8		Maps should support video pop-ups			



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CCTV24: Video Analytics					
Sl. No	Features	Qualifying Minimum BHEL Requirement	No of cameras where particular VA is required	Complied (Yes/No)	Specifications offered by bidder/Remarks (to be filled by bidder)
2	VA Features				
		The following events should give alerts			
2.1	<i>Intrusion detection features</i>				
2.1.1		Tripwire/Line crossing: Shall detect people or vehicle crossing virtual line in either direction. Shall have capability to mark object size with mouse Configurable for multi-segment tripwire location, direction of line crossing, definable maximum and minimum object sizes, colour of objects, speed of objects	20		
2.1.2		Tailgating : Shall detect a person (individual) or vehicle crossing the line within a specified time of a person or vehicle crossing the line in front	24		
2.1.3		Trespass: Shall detect people or vehicle entering or exiting virtual area in either direction. The virtual area can be of any shape.	42		
2.1.4		Camera Tampering: Shall detect camera tampering by vandals. The tampering can be obstruction of camera, changing the direction of camera or blinding the camera with strong light by vandals	Applicable to all cameras		
2.1.5		Camera Movement Stop: Shall trigger an alert when a Pan-Tilt-Zoom (PTZ) camera stops moving. Wait time before triggering alarm shall be configurable.	Applicable to all PTZ cameras		



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CCTV24: Video Analytics					
Sl. No	Features	Qualifying Minimum BHEL Requirement	No of cameras where particular VA is required	Complied (Yes/No)	Specifications offered by bidder/Remarks (to be filled by bidder)
2.2	<i>Suspicious incidence detection features</i>				
2.2.1		Motion Detection Alert: Shall detect motion in a specified region of the camera's field of view. Shall have capability to mark object size with mouse Configurable for minimum and maximum object sizes, minimum number of frames motion should last, minimum number of objects.	7		
2.2.2		Region Alert: Shall detect various types of object behaviours within a zone, such as starting, stopping, entering, leaving, etc. Shall have a number of choices regarding how the moving object interacts with the region of interest. Shall have capability to mark object size with mouse. Configurable for minimum and maximum object size.	21		
2.2.3		Loitering: Shall detect a person moving around the region beyond a pre-defined period.	12		
2.2.4		Left out baggage detection\Abandoned Object detection: Shall detect object left out or abandoned beyond certain pre-defined period. Configurable for minimum object size, maximum object size and wait time before triggering alarm.	9		
2.2.5		Missing object detection: Shall detect object removed by the person beyond a certain pre-defined period. Configurable for minimum object size, maximum object size and wait time before triggering alarm.	2		



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CCTV24: Video Analytics					
Sl. No	Features	Qualifying Minimum BHEL Requirement	No of cameras where particular VA is required	Complied (Yes/No)	Specifications offered by bidder/Remarks (to be filled by bidder)
2.2.6		Directional Motion: Shall detect movement of objects in a specified direction. Shall have capability to mark object size with mouse Configurable minimum object size, maximum object size, colour of objects, speed of objects, tolerance range for direction.	9		
2.2.7		Object Classification : Shall be able to classify objects like human and vehicles	5		
2.4	Alerts and Events				
2.4.1		Shall send alert Meta data with the following information so that alerts can be searched and categorized based on this information in the viewer.: a. Timestamp (date & time) b. Alert Name c. Alert Type d. Alert location e. Text Description f. Region associated		Applicable for all Cameras	
2.4.2		Shall be able to store the alarm videos and images for export			
2.4.3		The activities that can be triggered automatically in response to alarms shall include:			
2.4.3.1		Pop-up of live incident video on defined workstations or video wall monitors.			
2.4.3.2		Orientation of PTZ cameras to specified preset positions.			



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CCTV24: Video Analytics					
Sl. No	Features	Qualifying Minimum BHEL Requirement	No of cameras where particular VA is required	Complied (Yes/No)	Specifications offered by bidder/Remarks (to be filled by bidder)
2.4.3.3		A single mouse click shall allow monitoring personnel to immediately view live video associated with an alarm incident. The option to display emergency response procedures, security or other contact information, and this information shall be modifiable as necessary for multi-site installations.	Applicable for all Cameras		
2.4.3.5		Initiation of preset camera and map (see following Section) viewing sequences. Each alarm shall also cause an automatic record of all operator response actions to be logged in an interactive folder system that contains links to the specific audio (if applicable) and video record of the incident. Clicking on an alarm shall cause that data to be rendered on screen automatically. The log shall also include a record of all operator screen activity for post-alarm analysis, personnel reviews or training.			
2.5		VA Performance			
2.5.1		Shall have the ability to handle tree swaying, wind and rain	All cameras		
2.5.2		Shall have the ability to handle sudden and gradual illumination changes	All cameras		
3		People Search: Shall identify individuals with specific features and store these characteristics into the metadata repository. Shall have ability to search for features of a person.	47		



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1.3. G. Joystick and keyboard (CCTV28)

Joystick and keyboard for controlling the video should be provided if required.

1.3.H. Monitor Unit (CCTV21)

Only following make(s) of Monitor unit can be quoted: **Samsung, LG, HP, Dell, Sony**
Monitor Size and type: 42” or higher, LED

Monitor Size and type: 21” or higher, LED

There shall LED monitors supplied along with the workstation. Necessary cables between switch, decoders & monitor of necessary length should be supplied. The monitors shall be with necessary controls like colour, brightness, contrast adjustment and monitor ON/OFF & remote control.

1.3.I. PC Workstation for Monitoring (CCTV22)

PC Work Station will be used for monitoring of the CCTV system. There should be provision to place the monitor on the free hanging stand on wall or ceiling. Accordingly the cable between CPU & monitor to be considered which may be around 15-20 M as the CPU may have to be placed at different location. The Work stations to be considered with specification such that there should not be any congestion during large data flow of videos. Original operating system to be supplied with proper license along with each work station.

PC workstation should have following features:

S.No.	Feature	Requirement
1.	Base System	4th Gen Intel® Core™ i5-4570 Processor
2.	Operating System	Windows 8 Pro 64-bit
3.	Memory	8GB (2x4GB) 1600MHz DDR3
4.	Primary Hard Drive	500GB 3.5inch Serial ATA (7,200 Rpm) Hard Drive
5.	Hard Drive Configuration	SATA, no RAID, 1 Hard Disk
6.	Graphic Card	1 GB NVIDIA® Quadro® K600 (1DP & 1DVI-I) (1DP-DVI & 1DVI-VGA adapter)
7.	Keyboard	Normal USB Keyboard
8.	Mouse	Normal USB Mouse
9.	Warranty	5 Years 24x7 Comprehensive onsite Warranty



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1.3.J. Media Converters (CCTV13)

It should work on 230V AC.

Only following make(s) of Media convertor can be quoted: **Moxa/N-Tron/Digilink/Digisol/CTC-union/D-Link/MRO-TEK**

1.3.K. UPS (CCTV16 & CCTV17)

UPS WITH BATTERY BACKUP FOR 60 MINUTES :

Application: Power supply requirement for IP CCTV

Rack Form Factor

Only following make(s) of UPS can be quoted: **Emerson, APC, Hitachi-Hirel**

1. Input:

- Nominal AC Input Voltage: 1 Phase 230V AC + Neutral + Earth , 50 Hz
- Line low/ High transfer: + 15%
- Frequency range: + 5%
- Power factor: >0.9

2. Output

- Voltage: 220VAC/ 230VAC/ 240VAC
- Voltage Regulation: + 1%
- Frequency: 50 Hz+/- 0.1%
- Output waveform: Pure sinewave
- Harmonic distortion: < 2% (linear load) / 5 % nonlinear load
- Power factor: 0.7 to unity
- Crest factor: 3:1
- Inverter overload capacity: 110% 15 min./ 125% 10 min./ 150% 1 min./ > 150% 1 sec.
- Efficiency (AC – DC): 90%
- Bypass: Static bypass

3. Battery

- Battery type: SMF

4. Communication interface

- Standard: RS 232 port for software interface

5. Display

- Standard: 2 line x 20 characters, Backlight LCD
- AC input voltage, AC input frequency, Battery voltage, AC output voltage , AC output frequency, AC output, load %, Temperature
 - UPS status(Mains fail, Individual phase fail, Battery low DC high, Overload with shut down time, Output low, Output high, Over temperature, UPS bypass)



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6. General

- Operating temperature: 0 to 50 Deg C
- Humidity: Upto 95% RH, no condensing
- Noise level: < 60 dB @ 1 meter

1.3.L. Installation requirements:

Cables should be laid in HDPE pipes (1") wherever they are underground.

1.3.M. Specification for 3-core Power Cables (CCTV20)

Armoured, 3 core FRLS (red, green & black), conductor of multi-stranded annealed copper with ISI mark.

1.3.N. Specification for OFC Cables (CCTV18 & CCTV19)

Graded Index SM 12 core Fiber cable, in jelly filled uni-tube construction with CST armour, 2 numbers of FRP strength members and double outer PE Jacket with sequential length marking suitable for direct burial and laying in trays / conduits. Should be compliant to EIA/TIA 568B.

1.3.O. Specification for Ethernet Cables (CCTV26)

Ethernet cables should be of Solid 4 pair 23 AWG, Cat 6, UTP Cable and meet the latest TIA/EIA-568-B.2 Category 6 specifications. Current Rating @ 1.5 Amps, Contact Resistance @ 20 mΩ max, Dielectric Strength @ 1000V AC and Insulation Resistance > 500 MΩ

1.3.P. Specification for Fibre Patch Cords and accessories (CCTV07, CCTV08, CCTV09, CCTV27) Fibre Patchcords / Pigtails / Couplers / Connectors to be supplied confirming to EIA/TIA 568b and should be **UL certified/listed**.

1.3.Q. Junction Box (CCTV14)

Weather proof and rodent proof junction box to house LIU and media converter. It should be Pole/wall mounted. Louvers with mesh should be provided at the bottom of doors for ventilation.

1.3.R. Network Enclosure (CCTV15)

Louvers with mesh should be provided at the bottom of doors for ventilation.

Gland plates should be provided to prevent rodent entry.

Network Enclosure of reputed make, with 2 numbers of cooling fans for mounting Ethernet Switch, UPS and LIU as required. Dimension of the enclosure should be as required.



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ANNEXURE VI

PRICE BID FORMAT

The prices shall include EDN and ESD requirements put together.

Annexure A: OUTRIGHT PURCHASE						
IT Equipment						
S.No	Item Description (For Supplying and commissioning at BHEL Bangalore)	Item (Qty)	Unit Price	Total Price	% of Tax & Duties	Total Price including Taxes, Duties (in Rs.)
		A	B	C=A*B	D	E=C+ C*D
1	IT_item1	IT_Qty1				
2	IT_item2	IT_Qty2				
3	IT_item3	IT_Qty3				
4	IT_item4	IT_Qty4				
5	**IT_item5	IT_Qty5				
	Total for IT Equipment			O1		tot_IT
Non-IT Equipment						
S.No	Item Description (For Supplying and commissioning at BHEL Bangalore)	Item (Qty)	Unit Price	Total Price	% of Tax & Duties	Total Price including Taxes, Duties (in Rs.)
		A	B	C=A*B	D	E=C+ C*D
1	Non-IT_item1	Non-IT_Qty1				
2	Non-IT_item2	Non-IT_Qty2				
3	Non-IT_item3	Non-IT_Qty3				
4	Non-IT_item4	Non-IT_Qty4				
5	**Non-IT_item5	Non-IT_Qty5				
	Total for Non-IT Equipment					O2
	Total for IT and Non-IT Equipment					

Note: Categorize the equipment

**Any other equipment, module required for the safe and satisfactory operation, control, protection, monitoring and testing of the system shall also be included by the Vendor within the quoted price



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Annexure B: Lease Rental of IT Equipment						
Equipment Value (Outright) IT		O1	**PTPQ			
Part A: IT Equipment						
Qtr. No	Lease Rental	Principle	Interest Excluding service tax	Lease Tax (if applicable) Say@5.5 %	Service Tax (say @12.36% on 10% of interest portion)	Quarterly Payment (incl. tax) for IT Equipment (in Rs.)
A	B1 = OUTRIGHT (O1) / 1000 * PTPQ	#C1 (from PTPQ distribution)	D1 = B1 - C1	E1 = B1 * 0.055	F1=D1*0.1* 0.1236	G1 = B1+E1+F1
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
Total						

Note: Single PTPQ Factor for entire system (IT Equipment and Non IT Equipment).

#Formula used: **ROUND(VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)X Equipment Value (Outright), 0)**. Please refer to the example given at the end for explanation of formula
 **PTPQ (Per Thousand Per Quarter): Lease Amount Per Thousand Per Quarter. Please refer example at the end.



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Annexure B: Lease Rental of Non IT Equipment and Total Lease							
Equipment Value (Outright with taxes) Non IT			O2	**PTPQ			
Part B: Non IT Equipment							Total Qtrly Payment (in Rs.)
Qtr. No	Lease Rental	Principle	Interest Excluding service tax	Lease Tax (if applicable) Say@0.0 %	Service Tax (say @12.36% on 10% of interest portion)	Quarterly Payment (incl. tax) for Non IT Equipment (in Rs.)	
A	B2 = OUTRIGHT (O2) (with tax) / 1000 * PTPQ	C2 #(from PTPQ distribution)	D2 = B2 - C2	E2 = B2 * 0.00	F2 =D2 *0.1* 0.1236	G2 = B2+E2+F2	H = G1+G2)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Total							Tot_Eqp_Lease

Note: Single PTPQ Factor for entire system (IT Equipment and Non IT Equipment).
 #Formula used: ROUND(VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)X Equipment Value (Outright), 0). Please refer to the example given at the end for explanation of formula.
 **PTPQ (Per Thousand Per Quarter): Lease Amount Per Thousand Per Quarter. Please refer example at the end.



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Annexure C: PTPQ Distribution					
PTPQ (Payment)					
Amount (Pv)			1000		
Interest Rate(Rate) = #Rate (Nper,-Payment,Pv)				Annual Interest (Rate*4)	
Total number of payment periods (Nper)			20		
Qtr. no	PTPQ (Constant payment)	Quarterly Payment on the principal	Interest value	Balance Principal	% Principle
		$PP = \#PMT(Rate, Per, Nper, Pv)$	$I = \text{Payment} - P$	$BP = Pv - (\text{Sum of 'PP' paid till that quarter})$	$PPP = (PP/Pv)*100$
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
Total					

Note: #Standard formula of Excel



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Annexure D : Maintenance Charges				
Sl. No	Item Description	Quarterly Maintenance Price	% of Tax & Duties	Total Price including Taxes, Duties. (in Rs.)
1	Maintenance charges (including service engineer) of the CCTV surveillance system to be paid quarterly in arrears for entire period of 5 years			
	Total Maintenance Charges for 20 qtrs.	M1		

Note: The maintenance charges will be paid quarterly in arrears during entire lease period.

Quarter wise Maintenance charges			
Qtr. No	Maintenance charges per quarter	Service Tax On Maintenance (Say@12.36%)	Quarterly Maintenance Charges (incl. Taxes) (in Rs.)
A	B = Maintenance charges / 20 Qtr.	C = B * 0.1236	D = B+C
1			
2			
3			
4			
5			
6			
7			
8			
.			
.			
.			
18			
19			
20			
Total	M2		

Note: M1 shall be same as M2



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Annexure E: One time charges						
<i>Part A</i>						
Sl.No	Item Description	Item (Qty)	Unit Price	Total Price	% of Tax & Duties	Total Price including Taxes, Duties. (in Rs)
1	Installation Charges			IC_A		
2	Other One-time Charges (if any)					
	Total			Tot_One_Time		
<i>Part B: Installation charges break up</i>						
Sl.No	Item Description	Item (Qty)	Rate (per meter)	Total price	% of Tax & Duties	Total Price including Taxes, Duties.
1	Excavating					
2	Road Cutting					
3	Cable laying					
.	.					
.	.					
.	.					
	Total installation charges			IC_B		

- NOTE:** 1) Bidder to quote for quantity as estimated in site survey.
 2) The value for all works put together is taken as Installation Charges.
 3) IC_A shall be same as IC_B



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NOTE:

1) Evaluation will be based on:

**Total Quarterly Lease for 20 qtrs. (Tot_Eqp_Lease) (Annexure B: Lease Rental of Non
IT Equipment and Total Lease)**

+

Total Maintenance Charges for 20 qtrs. (M1) (Annexure D: Maintenance Charges)

+

Total One Time Charges (Tot_One_Time) (Annexure E: One time charges)

2) The bidder should also provide the two year AMC price with price bid, in case BHEL wants to go for AMC for two years. However, this will not be considered for bid evaluation

Date:

Signature:

Note:

1. Break-up details like basic lease rental, interest, one-time charges like installation, maintenance, etc. for lease shall be provided.
2. Outright purchase rate for each major component (as mentioned in Bill of Quantities) (clause 1.2 of ANNEXURE –V) is to be given. It will not be considered for evaluation. Only lease rental will be considered for evaluation.
3. Unpriced price bid format shall be submitted along with techno-commercial bid.



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EXAMPLE
FOR
PRICE BID WORKING





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Please refer to the example given below for understanding Price Bid Working

EXAMPLE

Bidder need to mention the Per Thousand Per Quarter factor (**PTPQ**) for five year financial lease.

It may be needed to calculate the interest rate on the equipment.

Suppose Bidder XYZ qualifies and becomes L1. The prices quoted by him/her are as follows:

- 1) Total cost of IT equipment *excluding* tax and duties (O1) = Rs. 100,000/- (Rupees One Lakh only).
- 2) Total cost of Non IT equipment *including* tax and duties (O1) = Rs. 110,000/- (Rupees One Lakh ten thousand only).
- 3) Let the PTPQ factor as quoted by Bidder A = 100
- 4) Maintenance charges = Rs. 50,000 /- (Rupees Fifty thousand only). (Excluding tax)
- 5) One Time charges (Installation and Project management) = Rs 10,000 (Rupees ten thousand only) (excluding tax)

So, Total price calculated by Bidder A for the tender is as follows

Note: All the figures mentioned here are indicated. These are used only for understanding how total amount (*lease + one time+ maintenance*) for evaluation can be calculated.



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Annexure A: OUTRIGHT PURCHASE

IT Equipment						
S.No	Item Description (For Supplying and commissioning at BHEL Bangalore)	Item (Qty)	Unit Price	Total Price	% of Tax & Duties	Total Price including Taxes, Duties (in Rs.)
		A	B	C=A*B	D	E=C+ C*D
1	IT_item1	IT_Qty1	IT_P1			
2	IT_item2	IT_Qty2	IT_P2			
3	IT_item3	IT_Qty3	IT_P3			
4	IT_item4	IT_Qty4	IT_P4			
5	**IT_item5	IT_Qty5	IT_P5			
	Total for IT Equipment			1,00,000		tot_IT
Non-IT Equipment						
S.No	Item Description (For Supplying and commissioning at BHEL Bangalore)	Item (Qty)	Unit Price	Total Price	% of Tax & Duties	Total Price including Taxes, Duties (in Rs.)
		A	B	C=A*B	D	E=C+ C*D
1	Non-IT_item1	Non-IT_Qty1	Non-IT_P1			
2	Non-IT_item2	Non-IT_Qty2	Non-IT_P2			
3	Non-IT_item3	Non-IT_Qty3	Non-IT_P3			
4	Non-IT_item4	Non-IT_Qty4	Non-IT_P4			
5	*Non-IT_item5	Non-IT_Qty5	Non-IT_P5			
	Total for Non-IT Equipment					1,10,000
	Total for IT and Non-IT Equipment					

Note: Categorize the equipment

**Any other equipment, module required for the safe and satisfactory operation, control, protection, monitoring and testing of the system shall also be included by the Vendor within the quoted price



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Annexure B: Lease Rental of IT Equipment

Equipment Value (Outright) IT		1,00,000	**PTPQ	100		
Part A: IT Equipment						
Qtr No	Lease Rental	Principle	Interest Excluding service tax	Lease Tax (if applicable) Say@5.5 %	Service Tax (say @12.36% on 10% of interest portion)	Quarterly Payment (incl. tax) for IT Equipment (in Rs.)
A	B1 = OUTRIGHT (O1) / 1000 * PTPQ	C1 # (from PTPQ distribution)	D1 = B1 - C1	E1 = B1 * 0.055	F1 = D1 * 0.1236	G1 = B1 + E1 + F1
1	10000	2245	7755	96	555	10651
2	10000	2419	7581	94	555	10649
3	10000	2607	7393	91	555	10646
4	10000	2809	7191	89	555	10644
5	10000	3027	6973	86	555	10641
6	10000	3262	6738	83	555	10638
7	10000	3515	6485	80	554	10635
8	10000	3787	6213	77	554	10631
9	10000	4081	5919	73	554	10627
10	10000	4397	5603	69	554	10623
11	10000	4738	5262	65	554	10619
12	10000	5106	4894	60	553	10614
13	10000	5502	4498	56	553	10609
14	10000	5929	4071	50	553	10603
15	10000	6388	3612	45	552	10597
16	10000	6884	3116	39	552	10591
17	10000	7417	2583	32	552	10584
18	10000	7993	2007	25	551	10576
19	10000	8612	1388	17	551	10568
20	10000	9280	720	9	550	10559
Total	200000	99998	100002	1236	11068	212304

Single PTPQ Factor for entire system (IT Equipment and Non IT Equipment).

#Formula used: ROUND(VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)X Equipment Value (Outright), 0)

**PTPQ: Per Thousand Per Quarter



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Annexure B: Lease Rental of Non IT Equipment and Total Equipment Lease

Equipment Value (Outright with taxes) Non IT		1,10,000		**PTPQ		100	
Part B: Non IT Equipment							
Qtr. No	Lease Rental	Principle	Interest Excluding service tax	Lease Tax (if applicable) Say@0.0 %	Service Tax (say @12.36% on 10% of interest portion)	Quarterly Payment (incl. tax) for Non IT Equipment (in Rs.)	Total Qtrly Payment (in Rs.)
A	B2 = OUTRIGHT (O2) (with tax) / 1000 * PTPQ	C2 #(from PTPQ distribution)	D2 = B2 - C2	E2 = B2 * 0.00	F2 = D2 * 0.1 * 0.1236	G2 = B2+E2+F2	H = G1+G2)
1	11000	2470	8530	0	105	11105	21757
2	11000	2661	8339	0	103	11103	21752
3	11000	2868	8132	0	101	11101	21747
4	11000	3090	7910	0	98	11098	21742
5	11000	3330	7670	0	95	11095	21736
6	11000	3588	7412	0	92	11092	21729
7	11000	3866	7134	0	88	11088	21723
8	11000	4166	6834	0	84	11084	21715
9	11000	4489	6511	0	80	11080	21708
10	11000	4837	6163	0	76	11076	21699
11	11000	5212	5788	0	72	11072	21690
12	11000	5617	5383	0	67	11067	21680
13	11000	6052	4948	0	61	11061	21670
14	11000	6521	4479	0	55	11055	21658
15	11000	7027	3973	0	49	11049	21646
16	11000	7572	3428	0	42	11042	21633
17	11000	8159	2841	0	35	11035	21619
18	11000	8792	2208	0	27	11027	21603
19	11000	9474	1526	0	19	11019	21587
20	11000	10208	792	0	10	11010	21569
Total	220000	109999	110001	0	1360	221360	433664
Note: Single PTPQ Factor for entire system (IT Equipment and Non IT Equipment).							

#Formula used: **ROUND(VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)X Equipment Value (Outright), 0)**

**PTPQ: Per Thousand Per Quarter



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#Brief Explanation of Formula:

Lookup_value: The value to search in the first column of the table_array.

Here Cell values under column name “*Qtr. No*” in *Annexure B: Lease Rental of IT Equipment or Annexure B: Lease Rental of Non IT Equipment and Total Equipment Lease*

Table_array: Two or more columns of data. Reference to a range.

Here, referring data of all cells (from row of *Qtr. 1* to row of *Qtr. 20*) of “*Annexure C: PTPQ Distribution*”

Col_index_num: The column number in table_array from which the matching value must be returned:
Here, Referring data under column “*% Principle*” of “*Annexure C: PTPQ Distribution*”

Range_lookup: A logical value that specifies whether you want VLOOKUP to find an exact match or an approximate match

Here, *FALSE*, so VLOOKUP will only find an exact match.

Equipment Value: *Equipment Value (Outright) IT/ Equipment Value (Outright with taxes) Non IT*

****PTPQ (Per Thousand Per Quarter):** Lease rental amount per thousand per quarter for a 5 year Financial lease.

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Annexure C: PTPQ Distribution

PTPQ (Payment)		100			
Amount (Pv)		1000			
Interest Rate(Rate) = #Rate (Nper,-Payment,Pv)		7.7547%	Annual Interest (Rate*4)	31.02%	
Total number of payment periods (Nper)		20			
Qtr. no	PTPQ (Constant payment)	Quarterly Payment on the principal	Interest value	Balance Principal	% Principle
		$PP = \#PPMT(Rate, Per, Nper, Pv)$	$I = Payment - P$	$BP = Pv - (Sum\ of\ 'PP'\ paid\ till\ that\ quarter)$	$PPP = (PP/Pv)*100$
1	100.00	22.45	77.55	977.55	2.245%
2	100.00	24.19	75.81	953.35	2.419%
3	100.00	26.07	73.93	927.28	2.607%
4	100.00	28.09	71.91	899.19	2.809%
5	100.00	30.27	69.73	868.92	3.027%
6	100.00	32.62	67.38	836.30	3.262%
7	100.00	35.15	64.85	801.15	3.515%
8	100.00	37.87	62.13	763.28	3.787%
9	100.00	40.81	59.19	722.47	4.081%
10	100.00	43.97	56.03	678.50	4.397%
11	100.00	47.38	52.62	631.11	4.738%
12	100.00	51.06	48.94	580.05	5.106%
13	100.00	55.02	44.98	525.03	5.502%
14	100.00	59.29	40.71	465.75	5.929%
15	100.00	63.88	36.12	401.87	6.388%
16	100.00	68.84	31.16	333.03	6.884%
17	100.00	74.17	25.83	258.85	7.417%
18	100.00	79.93	20.07	178.93	7.993%
19	100.00	86.12	13.88	92.80	8.612%
20	100.00	92.80	7.20	0.00	9.280%
Total	2000.00	1000.00	1000.00		100.00%

Note: #Standard formula of Excel



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Annexure D : Maintenance Charges

Sl. No	Item Description	Quarterly Maintenance Price	% of Tax & Duties	Total Price including Taxes, Duties. (in Rs.)
1	Maintenance charges (including service engineer) of the CCTV surveillance system to be paid quarterly in arrears for entire period of 5 years	2500	12.36%	2809
Total Maintenance Charges for 20 qtrs.		50,000	12.36%	56180

Note: The maintenance charges will be paid quarterly in arrears during entire lease period.

Quarter wise Maintenance charges

Qtr. No	Maintenance charges per quarter	Service Tax On Maintenance (Say@12.36%)	Qtrly Maintenance Charges (incl. Taxes) (in Rs.)
A	B = Maintenance charges / 20 Qtr	C = B * 0.1236	D = B+C
1	2500	309	2809
2	2500	309	2809
3	2500	309	2809
4	2500	309	2809
5	2500	309	2809
6	2500	309	2809
7	2500	309	2809
8	2500	309	2809
9	2500	309	2809
10	2500	309	2809
11	2500	309	2809
12	2500	309	2809
13	2500	309	2809
14	2500	309	2809
15	2500	309	2809
16	2500	309	2809
17	2500	309	2809
18	2500	309	2809
19	2500	309	2809
20	2500	309	2809
Total	50,000	6180	56,180



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Annexure E: One time charges						
<i>Part A</i>						
Sl. No	Item Description	Item (Qty)	Unit Price	Total Price	% of Tax & Duties	Total Price including Taxes, Duties. (in Rs)
1	Project Management Charges			4,000	12.36%	4,494
2	Installation Charges			6,000	12.36%	6,742
	Total			10000		11236
<i>Part B: Installation charges break up</i>						
Sl.No	Item Description	Item (Qty)	Rate (per meter)	Total price	% of Tax & Duties	Total Price including Taxes, Duties.
1	Excavating					
2	Road Cutting					
3	Cable laying					
.	.					
.	.					
.	.					
	Total installation charges			6,000		

**NOTE: Bidder to quote for quantity as estimated in site survey.
 The value for all works put together is taken as Installation Charges**



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Summary:

Summary					
Sl. No	Item	Basic	Tax Rate	Taxes	Total (in Rs.)
1	Lease Rental for entire lease period (payable in 20 Qtrs.)	420000	Lease tax + Service tax on interest	13664	433664
2	Maintenance Charges (payable in 20 Qtrs.)	50000	Service Tax @ 12.36%	6180	56180
3	One Time Charges	10000	Service Tax @ 12.36%	1236	11236
	Total	480000		21080	5,01,080

So the Total Project cost as proposed by Bidder A at PTPQ of 100 is : Rs 5,01,080 /- (Rs Five Lakh One Thousand and Eighty only)

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CHECKLIST FOR BIDDER/LESSOR

<i>Following Documents need to be enclosed/furnished with Techno-commercial Bid</i>				
Annexure	Clause / Sub-Clause	Conditions	Yes / No	NA
I	1.4	The detailed BOM.		
I	1.4	Block schematic, video / control signal / network topology / power wiring diagram.		
I	1.4	System Requirement Specification (technical write-up)		
I	1.4	Data sheets of quoted components/ models .		
I	2.2 b	Details of third party financing agency (if involved).		
II	1.1	The Certificate / Authorization Letter, issued by Authorized Representative of the OEM, specific to this tender stating the relationship, guaranteeing support for offered components for a period of at least 7 years and authorizing the Partner to quote for this tender.		
II	1.2	Supporting document(s) stating that the Bidder have Registered and Incorporated office in India for last 3 years.		
II	1.3	Bangalore office address		
II	1.4	A valid ISO: 9000 certificate copy of the Bidder.		
II	1.5	Declaration for clean track record		
II	1.6	Certificate from bankers/chartered accountant/IT for Financial Turnover.		
II	2	Proof of successful installation of CCTV Surveillance system.		
II	3	Customer references with number of equipment supplied and year of commissioning including details.		
II	4	Order copies of referred projects and successful completion/ performance certificate from the customer.		
III	1.2 b	Technical offer/details including literature/leaflets.		
III	1.2 d	Certificates enlisted in technical specifications.		
III	1.2 e	Technical Compliance Statement as per enclosed format.		
III	1.2 f	Commercial terms compliance statement as per enclosed format.		
III	1.2 g	Unpriced copy of price bid as a part of Techno-commercial bid.		
III	1.2 h	Any other documentary evidence as per prequalification criteria (if mentioned/ not mentioned above).		
III	1.5	Consent letter agreeing for Reverse Auction.		

Note: The checklist provided here is for the convenience of bidder/lessor. This may help bidder in speeding up the tender submission. The checklist may not contain all the required details. Please refer to the tender document for the complete list.



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CHECKLIST FOR BIDDER/LESSOR

<i>Please check following information has been provided</i>				
Annexure	Clause / Sub-Clause	Item Description	Yes / No	NA
III	1.2 a	EMD in the form of Pay Order/ Bank Draft, in favour of "Bharat Heavy Electricals Limited" payable at Bangalore, enclosed.		
III	1.3	The Technical & Commercial Bid should not include prices.		
III	1.4 a	Price Bid contains PRICES only and prices in Indian Rupees.		
III	1.6	Part I (EMD& Techno-commercial Bid) and Part II (Price Bid) submitted in two separate envelope with bidder's distinctive SEAL and properly super-scribed		
III	1.7	Tender addressed properly.		
III	1.8	Tender if submitted by post and should be sent by "Registered Post with Acknowledgement Due"		
III	2.1	Local address of the bidder to whom all the correspondence are to be addressed		
III	2.2	All the required particulars has been filled in the format provided for this purpose in the tender documents and also signed each and every page of the tender document including the drawings attached there before submitting tender		
III	2.5	The tender has been signed separately and legibly by each partner or member of the firm or in their absence, by the person holding the power of Attorney on behalf of the firm concerned.(if the tender is being submitted by a firm)		
III	3	Rates quoted as per clause, sub clauses of 3 of Annexure III		
III	3.2	Whether rates quoted are as per Price Bid Format only providing details of prevailing rates of taxes and duties.		
III	4.2 e	Price quoted in words and Figures should be similar		
III	4.2 f	Whether the bidder has quoted the quarterly financial lease charges (Rental and Maintenance Charges) for the system for 5 years and one time installation charges.		
III	4.2 f	Whether breakup of rental and maintenance charges mentioned.		
III	4.2 f	Whether bidder indicated all the applicable taxes.		
IV	1.10	Whether Copy of Cancelled Cheque enclosed		
IV	1.28	EFT/Paylink Direct Credit details as per format		
Note: The checklist provided here is for the convenience of bidder/lessor. This may help bidder in speeding up the tender submission. The checklist may not contain all the required details. Please refer to the tender document for the complete list.				

END