ITI LIMITED

# Short term Expression of Interest (EOI) for Selection of Business Associate for Supply, Installation, Testing, Commissioning, Warranty and AMC of Security System for some Government Organisation of High Repute.

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|---|---|
| **EoI / Tender (RFP) Reference** | ITI/MSP/LKO/SS/20-21/1<br>Dated: 13th November2020 |
| **Due Date and Time for submission of EoI** | 21st November 2020 Up to 13: 30 Hrs. on the Due Date |
| **Time of the Sale of EoI Document** | Up to 13: 00 Hrs. on the Due Date |
| **Cost of Tender Document** in shape of e-Transfer/ DD in favor of ITI Limited Lucknow | Rs.5000/- **(Rupees Five Thousand Only) [Non Refundable]** |
| **EMD** (e-Transfer/Demand Draft) in the favor of ITI Ltd | Rs1500000/- (**Rs. Fifteen Lakh Only)** |
| **Tender Document Issued to** | M/s |
| **Signatures and Date of the issue of the EoI Document** | |

***November 2020***

**ITI LIMITED**
**ITI BHAWAN VIBHUTI KHAND**
**GOMTI NAGAR LUCKNOW-226010**

**Short term Expression of Interest (EOI) for Selection of Business Associate for Supply, Installation, Testing, Commissioning, Warranty and AMC of Security System for some Government Organisation of High Repute.**

**Ref: ITI/MSP/LKO/SS/20-21/1** ` **Dated:13.11.2020**

ITI is undertaking CCTV SURVEILLANCE projects for various customers on revenue sharing basis. Towards these business activities, ITI invites sealed Expressions of Interest (EOI) from eligible partner.

The Partner jointly should work with ITI for addressing the Tender and implementing the project in the event of ITI winning the contract.

**Due Date and time for Submission of EOI on or before 13:30 Hrs, 21.11.2020**

| | | |
|---|---|---|
| **1** | **Technical Bid** | EOI document cost Rs.5000 /- in DD/e-transfer in favour of ITI LIMITED.(Non Refundable)<br>EMD :Rs 15,00,000.00[Fifteen Lakhs Only] in DD/e-transfer in favour of ITI LIMITED. |
| 1(i). | Eligibility of Business Associate | |
| | A | The entity should be either registered as a Company under Companies Act 1956/ 2013 or as a Partnership (including Limited Liability Partnership) under Partnership Act, 1932 as the case may be. |
| | B | The bidder and CCTV OEMs should have local presence and should have an office in Lucknow. CCTV OEM should have self owned service center for last five years from date of bid submission. |
| | C | The Bidder should have minimum average annual turnover of Rs 04 Cr in the last three financial year (2017-18, 2018-19 & 2019-2020 ) |
| | D | Bidder should have implemented Security System. Documentary proof of execution of similar works must be enclosed in Technical bid. Business Associate should submit order copy and completion certificate for at least 1 order of Rs. 4 crores or at least 2 orders of Rs. 2 crores or at least 3 orders of Rs.1.3 crores. The orders and certificates should be of date from 01.01.13 to 30.09.2020.OEM of CCTV should have at least 15 years Manufacturing experience and should be in business for past 15 years in India and should be ISO 9001:2015 certified. |
| | E | Bidder must give an undertaking and supporting documents to provide 5 year warranty support and post 1 resident engineer at the site during the warranty period. It is mandatory to quote AMC rates after the warranty period in the financial bid. |
| | F | The bidder & OEM should not have been barred from participating in any tender/ providing services/procurement process or supply of materials by an organization / department / office/ PSU/ board or corporation of either Government of India or any state government. |
| | G | The bidder should have a valid GST registration. |

| | | |
|---|---|---|
| | H | Bidder should submit a "Manufacturers Authorization Form" (MAF) issued by the respective OEM authorizing the bidder to supply, install, commission and mantain the equipments. |
| | I | The Bidder should not quote for any product of Chinese origin. It is mandatory to specify Make and Model for all items. Proposed camera OEM should be a member of the present ONVIF organization committee. |
| | J | Bidder should be ready to demonstrate the products as and when required by the end customer. |
| | K | Bidder must submit an undertaking for maintaining spares and maintain the system for a period of upto 10 years. |
| 1(ii) | The Business Associate need to submit the following: | |
| | A | Company Profile |
| | B | Certificate of Incorporation |
| | C | Audited Annual Report for last 3 years |
| | D | GST NO. Registration Certificate |
| | E | **All documents in support of Eligibility of Business Associate.** |
| | F | PAN Number and Income Tax return copy for the assessment for the last Three years |
| | G | Funding Plan for the projects ( Banker's solvency certificate for at least Rs. 1 crores and not more than one year old ). |
| | H | Undertaking to work with ITI as per EOI/Tender terms and conditions including Warranty & post-warranty services and implementing the project in the event of ITI winning the contract. |
| | I | Undertaking (on Letterhead) for submitting DD/E-Transfer and bearing all expenses towards preparation of **PBG [i.e @5% of End Customer's Basic Value of Order].** |
| | J | Undertaking to obtain support letter and MAF from OEMs in favor of ITI |
| | K | Manpower details to be furnished |
| | L | Undertaking to obtain relevant statutory licenses, copyrights etc., for operational activities |
| | M | To submit Power of attorney authorizing the person signing the bid for this EOI |
| | N | Support center details to be furnished |
| **2** | **Financial Bid** | Consolidated Margin being Offered (Covering the – Supply, Installation, Wiring & Commissioning including Warranty Support as per tender) in percentage (%) to ITI excluding Taxes. (to be submitted separately in sealed cover). Please also refer note 10 below |

**BANK MANDATE**

we are furnishing the Bank Mandate for making payment towards EMD through RTGS w.r.t. our EoI ref:- ITI/MSP/LKO/SS/20-21/1 dated 13.11.20

| S.NO. | ITEM | DETAILS |
|---|---|---|
| 1 | ADDRESS: | ITI LIMITED, R.O. ITI BHAWAN, VIBHUTI KHAND, GOMTI NAGAR, LUCKNOW-226010 |
| 2 | TEL NO: | 0522-2720301 |
| 3 | FAX NO: | 0522-2720302 |
| 4 | EMAIL ID: | Itiro_lko @rediffmail.com |
| 5 | NAME OF BANK: | PUNJAB NATIONAL BANK |
| 6 | NAME OF SIGNATORY: | Anupam Pandey and Rajendra Kumar |
| 7 | A/C NO: | 3926008702000067 |
| 8 | TYPE OF A/C (SB/CURRENT): | CURRENT |
| 9 | TYPE OF PAYMENT (RTGS/CHEQUE): | RTGS |
| 10 | IFSC CODE: | PUNB0619300 |
| 11 | MICR NO: | 226024042 |
| 12 | GST NO: | 09AAACI4625C2ZW |
| 13 | PAN NO: | AAACI4625C |

**Note:**

**1.** The financial bid (Indicating the Margin Clearly) and Technical Bid shall be placed in separate sealed envelopes only, super scribed with words "**Technical Bid".** & "**Financial Bid".** Both the bids are to be placed in a separate sealed cover mentioning, **"DON'T OPEN BEFORE 15:30 hrs 21.11.2020".**

**2.** The BID will be rejected, if the margin is not offered and offered margin is not mentioned in a separate sealed cover.

**3.** Technical bid will be opened **15:30Hrs 21.11.2020.**

**4.** Financial Bid opening will be done after the evaluation of Technical bid (Only for technically qualified bidder).

**5.** Bid should be valid for a period of **180** days from the date of opening of bid.

**6.** Conditional offers are liable for rejection.

**7.** In case of any clarification , collect the details/documents from Lucknow Office ( Mr. Vijay Kumar , DGM [Mktg.] Mobile:8052559367). The technical specification is enclosed with EOI and the same may be downloaded and submitted as per EOI Terms and conditions. .

**8.** ITI personnel will be involved with the implementation Team in each location.

**9.** Payment to the successful bidder shall be made on receipt of payment from end customer and after obtaining satisfactory working certificate, receipt of materials and other documents and after deducting the offered margin to ITI, operational expenses payable to customer and the statutory taxes payable to the Govt. (Penalties if any levied by the customer will be passed on to the successful bidder from the net amount received from the customer).

**10.** Clause by clause compliance of EOI with references to supporting documents.

**11.** Successful bidder has to sign consortium agreement covering the terms and conditions of the customer.

ITI Limited reserves the right to accept or reject in part or full any or all the EOIs without assigning any reasons therefore and without incurring any liability to the respondents.

The EOI may be sent in a sealed cover marked "**Short term Expression of Interest (EOI) for Selection of Business Associate for Supply, Installation, Testing, Commissioning, Warranty and AMC of Security System for some Government Organisation of High Repute**"

so as to reach the following address on or before **13.30 hrs 21.11.2020.**

**AGM[CM & MSP NZ II]**

**ITI LIMITED**
**ITI BHAWAN VIBHUTI KHAND**
**GOMTI NAGAR LUCKNOW-226010**

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*The following clauses/conditions are to be considered for Response to EOI:*

1] For tenders involving ITI manufacturing products, ITI may provide the required quotes etc.

2] ITI reserves the right to undertake partial supplies of the mentioned quantity.

3] ITI reserves the right to undertake services likes installation & Commissioning activities, Annual Maintenance Contract (AMC) etc.

4] All terms and conditions of the project as imposed by end customer on ITI will be applicable on selected agency on back to back basis.

5] Margin to ITI would be payable on supply, I&C and AMC services undertaken by the selected agency for the project.

6] All activities like Proof of concept on "No Cost No Commitment" (NCNC) basis wherever applicable will be the responsibility of OEM and Business Assosciate.

7] Business Associate should be willing to impart required training to ITI engineers for undertaking services & execution of project.

8] Business Associate will be responsible for any short coming in the BOM and the same should be rectified free of cost.

9] Business Associate should be willing to provide ToT for manufacture of offered products in ITI.

10] Business Associate should be willing to sign an exclusive agreement with ITI for smooth execution of the project.

11] All commercial terms will be as per the RFP/PO.

12] All expenses towards Earnest Money Deposit (EMD) / Bid security /PBG required for submitting the bid will be borne by the selected Business Associate.

(This is the format of Integrity Pact to be signed by the bidder with ITI in case the RFP/EOI of the bidder is found suitable for addressing the business opportunity.)

## PRE-CONTRACT INTEGRITY PACT

**Purchase Enquiry/Order No.** ITI/MSP/LKO/SS/20-21/1 **Dated: 21st November, 2020**

THIS Integrity Pact is made on……day of …….20 .

**BETWEEN:**

ITI Limited having its Registered & Corporate Office at ITI Bhavan, Dooravaninagar, Bangalore – 560 016 and established under the Ministry of Communications, Government of India (hereinafter called the Principal), which term shall unless excluded by or is repugnant to the context, be deemed to include its Chairman & Managing Director, Directors, Officers or any of them specified by the Chairman & Managing Director in this behalf and shall also include its successors and assigns) ON THE ONE PART

**AND:**

…….. represented by ……..
Chief Executive Officer (hereinafter called the Contractor(s), which term shall unless excluded by or is repugnant to the context be deemed to include its heirs, representatives, successors and assigns of the bidder/contract ON THE SECOND PART.

**Preamble:**

WHEREAS the Principal intends to award, under laid down organizational procedures, contract for ……. of ITI Limited (name of the Stores/equipment/items).The Principal, values full compliance with all relevant laws of the land, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s)/ Contractor(s).
In order to achieve these goals, the Principal has appointed an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles as mentioned herein this agreement.

WHEREAS, to meet the purpose aforesaid, both the parties have agreed to enter into this Integrity Pact the terms and conditions of which shall also be read as integral part and parcel of the Tender Documents and contract between the parties.

***Now Therefore, In Consideration of Mutual Covenants Stipulated In This Pact The Parties Hereby Agree As Follows And This Pact Withnesseth As Under:***

**Section 1 – Commitments of the Principal**

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

a. No employee of the Principal, personally or through family members, will in connection with the tender for or the execution of the contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the personal is not legally entitled to.

b. The Principal will, during the tender process treat all bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all bidder(s) the same

information and will not provide to any bidder(s) confidential/additional information through which the bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employee, which is a criminal offence under IPC/PC Actor if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary action as per its internal laid down Rules/ Regulations.

**Section 2 – Commitments Of The Bidder/Contractor**

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

a. The bidder(s)/contractor(s) will not, directly or through any other person or firm offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The bidder(s)/contractor(s) will not enter with other bidders/contractors into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The bidder(s)/contractor(s) will not commit any offence under IPC/PC Act, further the bidder(s)/contractor(s) will not use improperly, for purposes of competition of personal gain, or pass onto others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of foreign original shall disclose the name and address of the agents/representatives in India, if any. Similarly, the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any.

e. The Bidder(s)/Contractor(s) will, when presenting the bid, disclose any and all payments made, are committed to or intend to make to agents, brokers or any other intermediaries in connection with the award of the contract.

f. The Bidder(s)/Contractor(s) will not bring any outside influence and Govt bodies directly or indirectly on the bidding process in furtherance to his bid.

g. The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or to be an accessory to such offences.

**SECTION 3 – Disqualification From Tender Process & Exclusion From Future Contracts**

3.1 If the Bidder(s)/Contractor(s), during tender process or before the award of the contract or during execution has committed a transgression in violation of Section 2, above or in any other form such as to put his reliability or credibility in question the Principal is entitled to disqualify Bidder(s)/ Contractor(s) from the tender process.

3.2 If the Bidder(s)/Contractor(s), has committed a transgression through a violation of Section 2 of the above, such as to put his reliability or credibility into question, the Principal shall be entitled exclude including blacklisting for future tender/contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the Principal taking into consideration the full facts and circumstances of each case, particularly taking into account the number of transgression, the position of the transgressor within the company hierarchy of the Bidder(s)/Contractor(s) and the amount of the damage. The exclusion will be imposed for a period of minimum one year.

3.3 The Bidder(s)/Contractor(s) with its free consent and without any influence agrees and undertakes to respect and uphold the Principal's absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground including the lack of any hearing before the decision to resort to such exclusion is taken. The undertaking is given freely and after obtaining independent legal advice.

3.4 A transgression is considered to have occurred if the Principal after due consideration of the available evidence concludes that on the basis of facts available there are no material doubts.

3.5 The decision of the Principal to the effect that breach of the provisions of this Integrity Pact has been committed by the Bidder(s)/ Contractor(s) shall be final and binding on the Bidder(s)/ Contractor(s), however the Bidder(s)/ Contractor(s) can approach IEM(s) appointed for the purpose of this Pact.

3.6 On occurrence of any sanctions/ disqualifications etc arising out from violation of integrity pact Bidder(s)/ Contractor(s) shall not entitled for any compensation on this account.

3.7 subject to full satisfaction of the Principal, the exclusion of the Bidder(s)/ Contractor(s) could be revoked by the Principal if the Bidder(s)/ Contractor(s) can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption preventative system in his organization.

**Section 4 – Previous Transgression**

4.1 The Bidder(s)/ Contractor(s) declares that no previous transgression occurred in the last 3 years immediately before signing of this Integrity Pact with any other company in any country conforming to the anti-corruption/ transparency International (TI) approach or with any other Public Sector Enterprises/ Undertaking in India of any Government Department in India that could justify his exclusion from the tender process.

4.2 If the Bidder(s)/ Contractor(s) makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Section-3 of the above for transgressions of Section-2 of the above and shall be liable for compensation for damages as per Section- 5 of this Pact.

**Section 5 – Compensation for Damage**

5.1 If the Principal has disqualified the Bidder(s)/Contractor(s) from the tender process prior to the award according to Section 3 the Principal is entitled to forfeit the Earnest Money Deposit/Bid Security/ or demand and recover the damages equitant to Earnest Money Deposit/Bid Security apart from any other legal that may have accrued to the Principal.

5.2 In addition to 5.1 above the Principal shall be entitled to take recourse to the relevant provision of the contract related to termination of Contract due to Contractor default. In such case,

the Principal shall be entitled to forfeit the Performance Bank Guarantee of the Contractor or demand and recover liquidate and all damages as per the provisions of the contract agreement against termination.

**Section 6 – Equal Treatment of All Bidders/Contractors**

6.1 The Principal will enter into Integrity Pact on all identical terms with all bidders and contractors for identical cases.

6.2 The Bidder(s)/Contractor(s) undertakes to get this Pact signed by its sub-contractor(s)/sub-Business Associate(s)/associate(s), if any, and to submit the same to the Principal along with the tender document/contract before signing the contract. The Bidder(s)/Contractor(s) shall be responsible for any violation(s) of the provisions laid down in the Integrity Pact Agreement by any of its sub-contractors/sub-Business Associate/associates.

6.3 The Principal will disqualify from the tender process all bidders who do not sign this Integrity Pact or violate its provisions.

**Section 7 – Criminal Charges against Violating Bidder(S)/ Contractor(S)**

7.1 If the Principal receives any information of conduct of a Bidder(s)/Contractor(s) or sub-contractor/sub-Business Associate/associates of the Bidder(s)/Contractor(s) which constitutes corruption or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer of the Principal for appropriate action.

**Section 8 – Independent External Monitor(S)**

8.1 The Principal appoints competent and credible Independent External Monitor(s) for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extend the parties comply with the obligations under this pact.

8.2 The Monitor is not subject to any instructions by the representatives of the parties and performs his functions neutrally and independently. He will report to the Chairman and Managing Director of the Principal.

8.3 The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all product documentation of the Principal including that provided by the Bidder(s)/Contractor(s). The Bidder(s)/Contractor(s) will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The Monitor is under contractual obligation to treat the information and documents Bidder(s)/Contractor(s) with confidentiality.

8 .4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the project provided such meeting could have an impact on the contractual relations between the Principal and the Bidder(s)/Contractor(s). As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in specific manner, refrain from action or tolerate action.

8.5 The Monitor will submit a written report to the Chairman & Managing Director of the Principal within a reasonable time from the date of reference or intimation to him by the principal and, should the occasion arise, submit proposals for correcting problematic situations.

8.6 If the Monitor has reported to the Chairman & Managing Director of the Principal a substantiated suspicion of an offence under relevant IPC/PC Act, and the Chairman & Managing Director of the Principal has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

8.7 The word 'Monitor' would include both singular and plural.

8.8 Details of the Independent External Monitor appointed by the Principal at present is furnished below: -

**Shri Venugopal K. Nair, IPS (retd.)**
**P-1, Waterford Apartment**
**Pt. Kuruppan Road, Thevara**
**Kochi – 682 013, KERALA**
Any changes to the same as required / desired by statutory authorities is applicable.

**Section 9 – Facilitation of Investigation**

9.1 In case of any allegation of violation of any provisions of this Pact or payment of commission, the Principal or its agencies shall be entitled to eamine all the documents including the Books of Accounts of the Bidder(s)/Contractor(s) and the Bidder(s)/Contractor(s) shall provide necessary information and documents in English and shall extend all help to the Principal for the purpose of verification of the documents.

**Section 10 – Law and Jurisdiction**

10.1 The Pact is subject to the Law as applicable in Indian Territory. The place of performance and jurisdiction shall the seat of the Principal.

10.2 The actions stipulated in this Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

**Section 11 – Pact Duration**

11.1 This Pact begins when both the parties have legally signed it. It expires after 12 months on completion of the warranty/guarantee period of the project / work awarded, to the fullest satisfaction of the Principal.

11.2 If the Bidder(s)/Contractor(s) is unsuccessful, the Pact will automatically become invalid after three months on evidence of failure on the part of the Bidder(s)/Contractor(s).

11.3 If any claim is lodged/made during the validity of the Pact, the same shall be binding and continue to be valid despite the lapse of the Pact unless it is discharged/determined by the Chairman and Managing Director of the Principal.

**Section 12 – Other Provisions**

12.1 This pact is subject to Indian Law, place of performance and jurisdiction is the Registered &

Corporate Office of the Principal at Bengaluru.

12.2 Changes and supplements as well as termination notices need to be made in writing by both the parties. Side agreements have not been made.

12.3 If the Bidder(s)/Contractor(s) or a partnership, the pact must be signed by all consortium members and partners.

12.4 Should one or several provisions of this pact turn out to be invalid, the remainder of this pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

12.3 Any disputes/ difference arising between the parties with regard to term of this Pact, any action taken by the Principal in accordance with this Pact or interpretation thereof shall not be subject to any Arbitration.

**12.** 4 The action stipulates in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

In witness whereof the parties have signed and executed this Pactat the place and date first done mentioned in the presence of the witnesses:

| For PRINCIPAL | For BIDDER(S)/CONTRACTOR(S) |
|---|---|
| …….. | …… |
| (Name & Designation) | (Name & Designation) |
| Witness | Witness |
| 1) …… | 1)……... |
| 2) …….. | 2)……. |

Bid Evaluation Process / Methodology:

This EoI would be subjected to a 2 Stage Evaluation Process. All Bidders are requested to note the entire evaluation process carefully.

Prior to the detailed evaluation, ITI will determine the substantial responsiveness of each EoI/ Bid to the EoI/RFP Document. For purpose of ascertaining the eligibility,a substantially responsive bid is one which confirms to all the terms and conditions of the EoI/RFP Document without deviations.

The purchaser's determination of bid's responsiveness shall be based on the contents of the bid itself without recourse to extrinsic evidence.

ITI may waive any minor infirmity or non-conformity or irregularity in the Bid/EoIwhich doesn't constitute a material deviation, provided such waiver doesn't prejudice or effect the relative ranking of any bidder.

The EoIs/Bids submitted by the Bidders would be subjected to a well-defined and transparent evaluation process.

The Bidder(s) will be evaluated on QCBS(Quality cum Cost Basis Selection)System with different weightage for Technical Bid and Commercial Bid (at different Bidding stages).

First and Second Stage Bid Evaluation

All EoIs (bids) would be subjected to a process where the weightage of the technical part would be 65% and the weightage of the Commercial part would be 35%.

A maximum of 1000 marks will be allocated for the Technical Bid. The evaluation of functional and technical capabilities of the Bidders will be completed first as per the following process:

Only the technical proposals will be subjected for evaluation at this stage. The Bidders scoring less than 600 marks (cut-off score) out of 1000 marks in the technical evaluation shall not be short-listed for next stage of Financial-Bid Evaluation process.

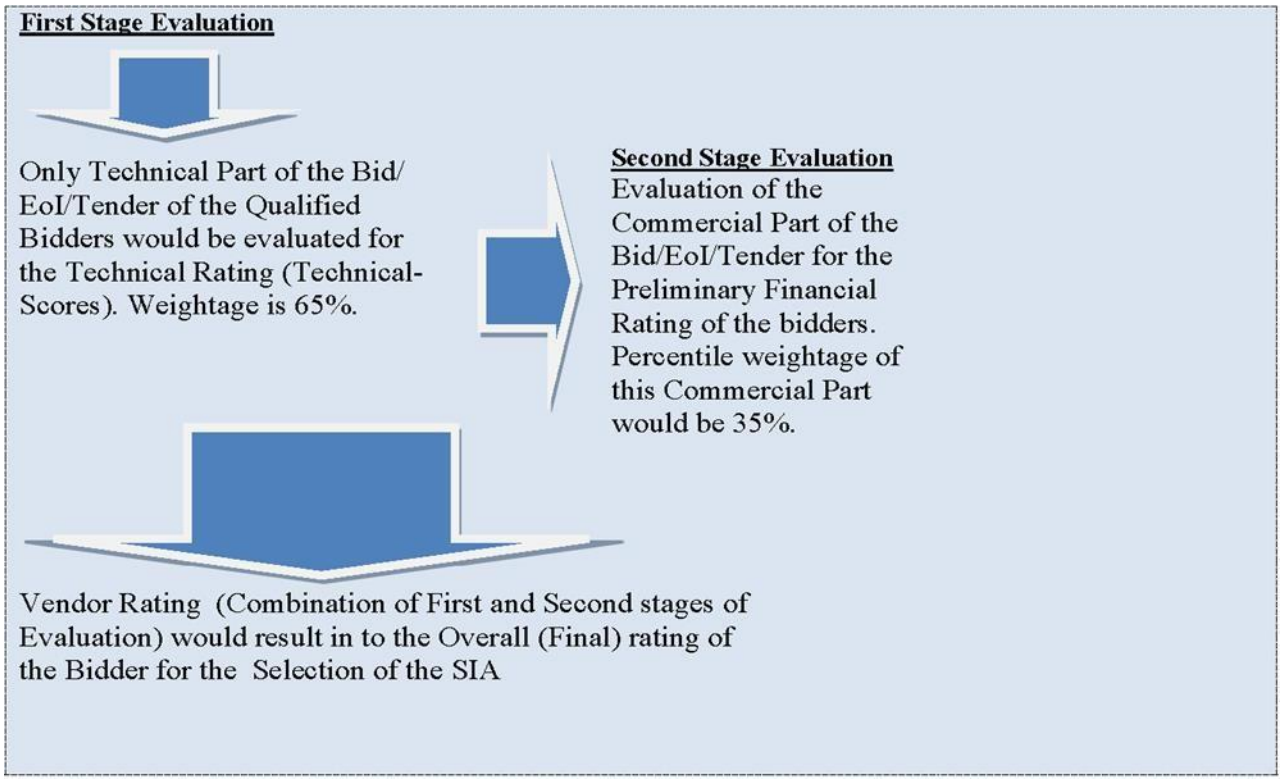
Only those Bidders who qualify as per the specified Eligibility Criteria shall be considered for the Technical Bid evaluation (First Stage evaluation) in which scores will be awarded based upon the evaluation matrix. The bidders scoring at least 600 points in the technical evaluation shall only be considered for further Evaluation. The scores of Technical Bids will be carried
forward from first stage of Evaluation to Second Stage of Evaluation i.e. Financial Bid evaluation.

ITI may, at its sole discretion, decide to seek more information from the Bidders in order to normalize the bids. However, the Bidders will be notified separately, if such normalization exercise as part of the technical evaluation is carried out.

The Bidders who are short-listed based upon technical criteria may be asked, if necessary, to make a presentation on their solution at LUCKNOW, at their own cost.

At the Second Stage Evaluation, the bids will be further evaluated on the basis of the vendor ratings which will be done on the base of combined scoring of the Technical-Bid (weighted) and Financial Bid (weighted).

Successful Bidder will be the one that has highest vendor rating.




TECHNICAL RATING (TR) would be evaluated on the basis of the following formula:

$$TR = \frac{65}{100} \times \text{Technical Score (TS)}$$

Where Technical Score (TS) would be calculated as per the Technical evaluation Matrix given in this section of the Bid Document.

COMMERCIAL RATING(CR)would be evaluated on the basis of the following formula:

$$CR = \frac{35}{100} \times \text{Commercial Score (CS)}$$

Commercial Score (CS)

Commercial Rating is based on Commercial Scoring (CS) of a particular bidder which will be worked out as per the Formula given below:

$$CS = \frac{AQ}{BQ} \times 1000$$

Where:

AQ is Actual Quote (Commercial Score) of a particular Bidder under consideration.

BQ is Best Quote (Commercial Score) of the Best Bidder

VR(Vendor Rating) = TR(Technical Rating)+ CR(Commercial Rating)

ITI reserves the right to reject any or all bids without assigning any reasons thereof. *It shall not be obligatory for ITI to award the work only to the lowest bidder.*

Matrix of Technical Bid Evaluation:

The technical evaluation for knowing the Technical Rating (TR) of the bids will be done strictly on the basis of Technical Score (TS) which would be computed as per the matrix shown below:

| Sr. No | Parameters | Weightage in terms of Scoring | | Max. Score |
|---|---|---|---|---|
| 1. | Presence (duration in years) of the Bidder in the field of Security System Integration / CCTV Surveillance/ IT/Networking/ Similar Scope of work. | 3 to 4 Years of Presence | 30 | 50 |
| | | 4 to 6 Years of Presence | 40 | |
| | | More than 6 Years of Presence | 50 | |
| 2. | Organization and Ownership Status of the Bidder | Privately Owned /Partnership Firm | 30 | 50 |
| | | Private Limited Company | 40 | |
| | | Public Ltd Company /PSU | 50 | |
| 3. | Bidder's Average Annual Turnover during last 3 Financial Years | Eligibility Criterion (Minimum) to 1.25 times of the Eligibility Criterion | 30 | 50 |
| | | 1.25 times of the Minimum to Twice the Eligibility Criterion | 40 | |
| | | More than 1.5 times of the Eligibility Criterion | 50 | |
| 4. | Experience of the Bidder in the deployment of Security System Integration / CCTV Surveillance/ IT/Networking/ Similar Scope of work in Govt. domain in terms of business volume. | Eligibility Criterion (Minimum experience) to 1.25 times of the Eligibility criterion | 50 | 100 |
| | | 1.25 times of the Minimum Experience to Twice the Eligibility Criterion | 75 | |
| | | More than Twice the Eligibility Criterion | 100 | |
| 5. | Experience of the Bidder in the deployment of Security System Integration / CCTV Surveillance/ IT/Networking/Similar Scope of work in Govt. domain in terms of Number of Projects. | No Experience | 00 | 100 |
| | | One project | 50 | |
| | | Two or More projects | 100 | |
| 6. | Experience of the Bidder in the deployment of Security System Integration / CCTV Surveillance/ IT/Networking/Similar Scope of work during last 7 years in terms of Number of Projects | No Experience | 00 | 150 |
| | | One Project | 25 | |
| | | Two Projects | 50 | |
| | | Three to Four Projects | 100 | |
| | | More than four Projects | 150 | |
| 7. | Experience of the Bidder in implementation of projects involving Security System Integration / CCTV Surveillance IT/Networking//Similar Scope of work | No Experience | 00 | 100 |
| | | Experience | 100 | |
| 8. | ITI's past Experience with the Bidder (or any Consortium member) in Projects. | No Experience | 00 | 100 |
| | | Satisfactory Past Experience | 50 | |
| | | Good Past Experience | 100 | |
| 9. | Understanding of the Requirement, Technical Solution and Technologies to be deployed | Average (demonstrates ambiguous Solution /Poor Price-benefit to Govt. Exchequer.) | 25 | 150 |

| | | | | |
|---|---|---|---|---|
| | | Fairly Good (demonstrates an Ordinary Solution/ Moderate Price-benefit to Govt. Exchequer.) | 50 | |
| | | Very Good (demonstrates a Good Price-benefit to Govt. Exchequer.) | 100 | |
| | | Excellent Solution (demonstrates a strong Price-benefit to Govt. Exchequer.) | 150 | |
| 10. | Technical Presentation as per Annexure-P on Project Implementation, Support Mechanism etc. | Unsatisfactory | 00 | 150 |
| | | Average | 50 | |
| | | Good | 100 | |
| | | Excellent | 150 | |
| Technical Score (Positive) of an Individual Bidder TS-1 | | | | |
| 11.** | Negative Marking towards the Past Experience of ITI with the bidder in recent 5 years | Unsatisfactory (due to the Performance of the Bidder or a Consortium Member which might have caused Embarrassments to ITI by way of Inordinate Delays in the project execution and Imposition of Severe Penalties on ITI) | 150 | |
| | | Poor (due to deliberate neglect of ITI's Projects or Pricing Misappropriation /Tax Evasion at the part of the Bidder or a Consortium Member in past which might have caused major Embarrassment to ITI on Legal/Fiscal front or Heavy Loss to Government exchequer. | 200 | |
| | | Deceitful action of the Bidder(s) against ITI during some Bidding Process (happened in past) which has resulted Breach of Trust between the Bidder(s) and ITI for further business alliances | 300 | |
| Technical Score (Negative) of an Individual Bidder TS-2 | | | | |
| Resultant Technical Score TS of an Individual Bidder (TS1 minus TS2) | | | | |
| MAXIMUM SCORE OF TECHNICAL BID= | | | | 1000 |

**Annexure-P**

Technical Presentation:

As Bidder's clarity on the understanding of the requirements is a 'Prudent Factor' of the assessment of the capability of the prospective System Integrators (SIA)/Vendors/Bidders, all bidders would be given an opportunity in a transparent manner to project their strengths. This Power-Point presentation will carry weightage in the Technical Bid (150 marks out of 1000). The presentation would be agenda based where each aspect would be given due consideration. The presentation would be of 45 Minutes duration (Approx.)

The agenda of the presentation is given below:

| Sr. No. | Agenda Point of the Presentation | Max Marks | Allocation of theMarks |
|---|---|---|---|
| 01. | Understanding of Technical Requirements | 150 | 25 |
| 02. | Technical Capabilities of the Bidder(s) and other OEMs (if any). | | 35 |
| 03. | Financial Capabilities of the Bidder(s) | | 30 |
| 04. | Project Implementation Methodology including Logistics and Resource Deployment | | 20 |
| 05. | Experience of the Prime-Bidder in Handling of the Government Projects. | | 10 |
| 06. | Challenges and concerns from the Bidder's perspective. | | 05 |
| 07. | Challenges and concerns from Buyers perspective. | | 05 |
| 08. | Methodology of Warranty and Post-Warranty Support / Maintenance of the EOI Requirements & Solution. | | 15 |
| 09 | Expectations from ITI Limited and the Government Agency (the end User) | | 05 |
| 12 | Total | | 150 |

The Bidders are supposed to submit both ink-signed Hard copy and Softcopy (in CD/DVD/Pen Drive) of the presentation for further evaluation and records. The bidders would not be given further time-slot to revise/modify the presentation.

The bidders may bring the product specialists and Project implementation team members along with Commercial managers to submit the spot clarifications if any.

The presentation would remain confidential and the details of one bidder shall not be shared with any other bidder by ITI Limited.

The bidder shall intimate the Details of the Presentation Team members in advance to avoid any confusion at later stage.

The scoring of this presentation may not be declared same day.

**BRIEF SCOPE OF WORK**

There is already existing setup of CCTV System at Customer premises at Lucknow. Which was deployed around 10 years ago and in present the equipment deployed has been out of technology and need to be changed.The new IP based CCTV System has to be deployed at 70 pinned point.All Proposed CCTV Camera shall be Full High Definition with inbuilt IR. The requirement at the location is mix of PTZ camera and Fixed Cameras

1. The Central Device will Be connected to servers and storage device of min 30 days recording
2. The Cameras shall be deployed over fiber network only using armoured fiber cable and should be underground or overhead in GI pipe in case underground is not possible at any place.
3. The Recording shall be 30 days on high definition.
4. The power supply shall be provided to the system via online UPS with at least 1 hr of power backup.
5. There should be provision of Control Room. Control Room should be having 7 no of workstation for viewer, Video Wall.
6. Control Room have 7 Joy Sticks to control PTZ Camera.
7. The CSO shall have also a LED Monitor Along With Joystick Control for monitoring of entire system in his chamber.
8. Entire Project shall have comprehensive **warranty of five (5) years with 1 site Engineer.**
9. Main technical aspects taken into consideration has beenpointed below.
10. The Entire Project has been divided in single zones Architecture.
11. Decided approx. 70 location including old CCTV Point.
12. All locations are connected to Control Room by 1 G Fiber Network.
13. The Switch deployed at the Locations will be PoE in nature to provide Power to Cameras without extending power cables.
14. Power Load is Approx. 100 W at Each location.
15. Fixed Camera and PTZ Camera has been taken 30/60 fps Full HD.
16. The Existing equipment's are out dated and cannot be re-used in this project so it is decided to replace all equipment's with newtechnology.
17. The Camera Locations will have the Out Door IP 66 Housings /Racks to accommodate the end point equipment's.
18. A video management software (VMS) will be installed for effective searches and video management services.

## SPECIFICATION AND SELECTION

The requirements listed in the following represent the minimum requirements for surveillance systems, if they are to be considered state-of-the-art technology:

1. Video surveillance has to deliver live video with a minimum resolution of 1920x1080 at 30 fps at H.264 compression in order to guarantee that persons and objects can be identified properly in the live video.
2. Video Surveillance System has to record the camera video streams at 1080p (1920x1080) resolution at H.264 compression in order to guarantee that persons and objects can be identified properly in the recorded videos.
3. All cameras shall be recorded at 30 fps in all condition.
4. The system has to allow for simultaneous display and storage of the live videos as well as the display of the stored videos without the risk of losing data.
5. The system needs to be able to operate in outdoor applications at temperatures up to +50 degree C. This will reduce power consumption to a minimum, thus providing for cost-efficient protection of the whole system using uninterruptible power supplies. Outdoor cameras shall be protected by surge/ lighting protection equipment. Such equipment shall be modular and be kept together with the camera housing/outdoor weather proof junction box which in turn shall have proper earthing as per statutory norms.
6. The surveillance cameras need to be able to record videos on the SD memory card of 64 Gb in case of network connectivity from camera to the recording server fails.

7 The video surveillance system shall support ONVIF profile S and Gto integrate other IP cameras seamlessly.

8 The housing and the materials have to be chosen in such a way that thecameras have a life expectancy of at least seven years.

9 Warranty of project will be 5 years after successful ATP (Acceptance test Procedure )

Detailed specifications and compliance requirements are available in another section of this document.

VIEWING AND RECORDING

Video surveillance has to deliver live video with a minimum resolution of 1920x1080 at 30 fps at H.264 compression in order to guarantee that persons and objects can be identified properly in the live video.

1 Video Surveillance System has to record the camera video streams at 1080p (1920x1080) resolution at H.264 compression in order to guarantee that persons and objects can be identified properly in the recorded videos.

2 The video surveillance system shall have sufficient storage to record all cameras for minimum 30 days.

**GRAPHICAL ILLUSTRATION OF SOLUTION OFFERED**

The following diagram has been given to illustrate the architecture of the proposed solution

1 **Power Architecture**: The Power Network of Proposed System the Racks are Connected to Central Power Unit with 3 Core 2.5 Sqmm Pure Copper cable. UPS OF min 10 KVA or as per load shall be deployed an Control Room with Standby option for uninterrupted Power Supply for Entire System

2 **Network Architecture**: You never go out of network keeping this in mind the Ring Topology has been adapted for core fiber network while for performance the Star topology has been considered hence we have optedfor Logical Ring topology to have the features of Star and Ring topology at a single architecture.

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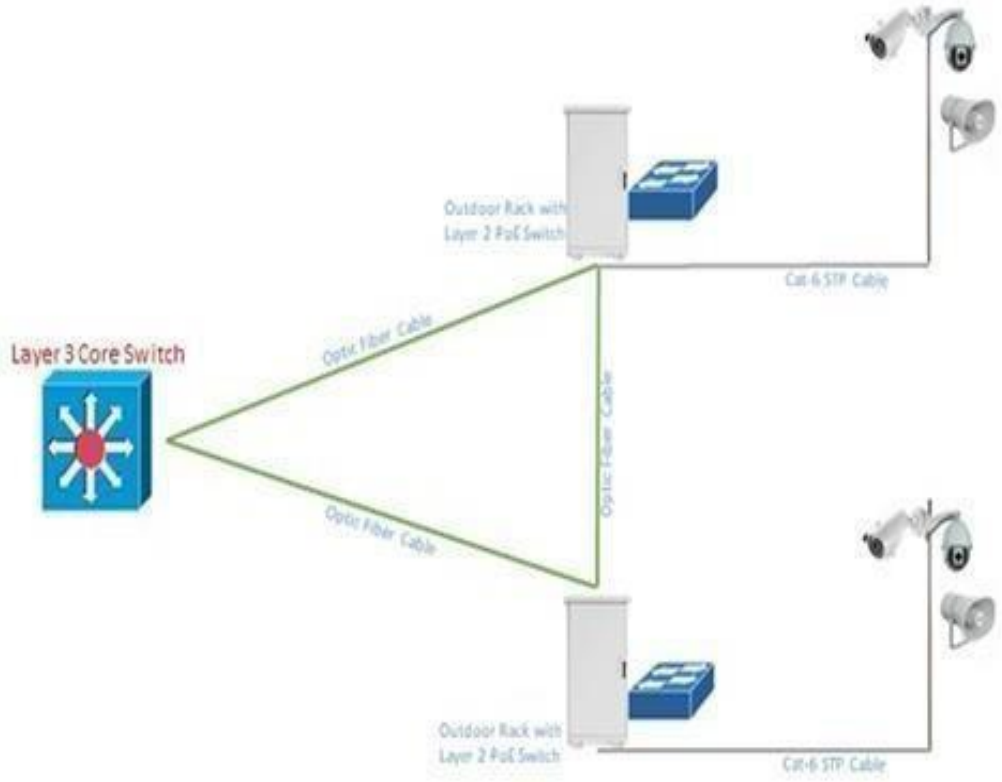

**Technical Specifications**

| IP IR PTZ Camera 1080p | | Compliance Yes/NO |
|---|---|---|
| Image Sensor | 1/2.8" Progressive Scan CMOS or better | |
| Resolution | Min 1920x1080 | |
| Frame rate | 2MP at 60 FPS and other resolution @30FPS | |
| Compression | H.265 | |
| WDR Measured according to IEC 62676 Part 5 | 120 db or better | |
| Video Streaming | Triple streaming stream, fully configurable. At least major streams of full HD at 60 FPS and remaining streams @30 FPS. | |
| Alarm Input and Output | 01 I/p, 01 relay O/P | |
| Network Port | RJ45 10/100 Base T | |
| Protocol | TCP, HTTP, HTTPS, SMTP, SNMP, SNTP, RTP, RTSP, SSL, 802.1x, QoS, DNS, ICMP, UPNP, DDNS, IP v4 & v6 Remote Administration: Remote configuration and status using web based tool | |

| | | |
|---|---|---|
| Lens | (4.3-4.5) mm - (129-135 )mm (F1.6 - F4.4) for 30x Optical zoom, Digital zoom of12X | |
| Focus | Automatic with manual override | |
| Illumination / Sensitivity at F1.6, 30 IRE | Colour: 0.05 lux Mono: 0.01 lux. IR Distance: 150 Mtrs or better to cover more area in night with minimum two Beam (Narrow angle for long distance and Wide angle for short distance) or better( Internal /External with 360 degrees coverage) IR from Camera OEM only | |
| Audio Compression | Two way Audio : Required Input / Output : 1in and 1out | |
| Preposition Accuracy | ± 0.1° | |
| Protection: | IP66 enclosure | |
| Operating Temperature: | -10° to 50° | |
| Video Analysis(edge based) | Object in field, Line crossing , Enter / leave field, Loitering, Follow route, Idle / removed object, Counting, Occupancy, Crowd density estimation, Condition change, Similarity search - licenses for all these analytics to be considered with camera. Edge based or Server based also allowed | |
| Electronic Shutter Speed (AES) | 1/30 s to 1/15000 s | |
| BLC | Required | |
| Defog | Required | |
| PAN and Tilt Speed | Pan: 0.1°/s - 240°/s; Tilt: 0.1°/s - 120°/s | |

| | | |
|---|---|---|
| Security | Network authentication with EAP/TLS , Embedded Login Firewall, on-board Trusted Platform Module and Public Key , Infrastructure (PKI) support./ Equivalent security will be considered. | |
| PAN& Tilt Angle | PAN:360°; Tilt:0°-90° | |
| Other feautures | ONVIF : Profile S Compliant Signal to Noice Ratio: ≥55db, Privacy mask supported minimum 16 and 256 presets. | |
| Security | Network authentication with EAP/TLS , Embedded Login Firewall, on-board Cyber Security Chip like Trusted PlatformModule (TPM) . Equivalent security will be considered. | |
| Local Memory | Minimum 128GB with class6 or higher from day one (during downtime of the connectivity to server, captured data should be stored locally and the same should automatically upload into the storage after restoring of connectivity) | |
| Certification | CE,FCC, UL. | |

| **5 MP IR bullet Camera with all accessories.** | | **Compliance Yes/NO** |
|---|---|---|
| Image Sensor | 1/2.8" Progressive Scan | |
| Resolution | 3072(H) x 1728(V) (Effective 5MP will be considered) | |
| Frame rate | 30 fps at full resolution (16:9 ) or better | |
| Compression | H.265/H.264 or superior, MJPEG | |
| WDR Measured according to IEC 62676 Part 5 | 120db or better | |

| | | |
|---|---|---|
| Video Streaming | Triple streaming Stream, fully configurable | |
| Alarm Input and Output | 01 I/p, 01 relay O/P | |
| Network Port | RJ45 10/100 Base T | |
| Protocol | TCP, HTTP, HTTPS, SMTP, SNMP, SNTP, RTP, RTSP, SSL, 802.1x, QoS, DNS, ICMP, UPNP, DDNS, IP v4 & v6<br>Remote Administration: Remote configuration and status using web based<br>tool | |
| Lens | 2.7 to 12 mm/ 3 to 15 mm | |
| Focus | Auto focus and zoom | |
| Illumination / Sensitivity at F1.3, 30IRE | 0.3 lux lux; Mono: 0.03 lux IR Distance, 60 mtrs or better with IR from camera OEM<br>only | |
| Audio Compression | Two way Audio : Required Input / Output : 1in and 1out | |
| Protection and housing | IP67 and IK10 Rated camera enclosure from camera OEM | |
| Operating Temperature: | Minus 5-60 Degree | |
| Video Analysis(edge based) | Object in field, Line crossing , Enter / leave field, Loitering, Follow route, Idle / removed object, Counting, Occupancy, Crowd density estimation, Condition change, Similarity search - licenses for all these analytics to be considered with<br>camera. | |
| Electronic Shutter Speed (AES) | 1/30 s to 1/15000 s | |
| BLC | Required | |
| Defog | Required | |

| | | |
|---|---|---|
| Security | Network authentication with EAP/TLS , Embedded Login Firewall, on-board Trusted Platform Module (TPM) and Public Key | |
| Other features | ONVIF : Profile S Compliant Signal to Noise Ratio: ≥55db | |
| Local Memory | Minimum 512 GB with class6 (during downtime of the connectivity to server, captured data should be stored locally and the same should automatically upload into the storage after restoring of connectivity) | |
| Certification | CE,FCC, UL, | |

| **5MP IR HD Box Camera with all accessories** | | **Compliance Yes/NO** |
|---|---|---|
| Image Sensor | 1/2.8" Progressive Scan | |
| Resolution range | (3000 - 3900) x (1700- 2200) (Effective 5 MP will be considered) | |
| Frame rate | 30 fps at 05 MP aspect ratio 16:9 | |
| Compression | H.265/H.264 or superior, MJPEG | |
| WDR | 120db or better | |
| Video Streaming | Quad streaming Stream, fully configurable. Atleast two streams at full resolution and full frame rate | |
| Alarm Input and Output | 01 I/p, 01 relay O/P | |
| Encoding regions | Up to 7 areas with encoder quality settings per area | |
| Network Port | RJ45 10/100 Base T | |
| | | |
| Protocol | TCP, HTTP, HTTPS, SMTP, SNMP, SNTP, RTP, RTSP, SSL, 802.1x, QoS, DNS, ICMP, UPNP, DDNS, IP v4 & v6 Remote Administration: Remote | |

| | | |
|---|---|---|
| | configuration and status using web based tool | |
| Lens | 12 to 50 mm C/CS Mount | |
| Illumination / Sensitivity at F1.2, 30IRE | 0.012 lux colour, 0.004 lux (B/W)<br>0.0 lux IR (Inbuilt IR) | |
| Audio | Two way Audio : Required Input / Output : 1in and 1out | |
| Protection and housing | IP66 and IK10 Rated camera enclosure from camera OEM with heater and blower | |
| Operating Temperature: | - 10° - 50° C | |
| Video Analysis(edge based) | Object in field, Line crossing, Enter / leave field, Loitering, Follow route, Idle / removed object, Counting, Occupancy, Crowd density estimation, Condition change, - licenses for all these analytics to be considered with camera. Server based analytics will be considered) | |
| Electronic Shutter Speed (AES) | 1/30 s to 1/15000 s | |
| | | |
| BLC | Required | |
| Defog | Required | |
| Internal RAM | 256 MB and 64 MB Flash | |
| Video Tempered proof | Inbuilt 256 bit encryption or better | |
| Privacy Masking | 8 areas, programmable | |
| Security | Network authentication with EAP/TLS and AES256 , Embedded Login Firewall, on-board Cyber Security Chip like Trusted Platform Module (TPM) | |

| | | |
|---|---|---|
| Other feautures | ONVIF : Profile S Compliant Signal to Noice Ratio: ≥50db ; Pixel Counter | |
| Local Memory | Minimum 256 GB with class6 or higher from day one (during downtime of the connectivity to server, captured data should be stored locally and the same should automatically upload into the storage after restoring of connectivity) | |
| Certification | CE,FCC, UL, | |
| **General Specifications:** | | **Compliance (Yes/No)** |
| **Video Management System General Description** | | |
| A. The video management system (VMS) specified is an enterprise-class client/server based IP video security solution that provides seamless management of digital video, audio and data across an IP network. The video management system is designed to work with ONVIF compliant 3rd party products as part of a total video security management system to provide full virtual matrix switching and control capability. The video management system consists of the following software modules: management server, recording services, configuration client and operator clients. Video from other sites may be viewed from single or numerous workstations simultaneously at any time. Cameras, recorders, and viewing stations may be placed anywhere in the IP network. | | |
| B. The VMS shall support the following recording services: | | |
| a) Video Recording Manager | | |
| C. The software components of the video management system can be deployed together on a single PC forsmall | | |

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| system applications or on separate PCs and servers to meet large systems requirements. | |
| D. The management server shall run as services on Windows Server 2008R2, Windows Server 2012 R2or Windows 7 SP1 (64-bit)and Windows 8.1 (64-bit). | |
| E. The configuration client software shall run as an application on Windows Server 2012 R2. If system contains less than 500 cameras Windows 8.1 (64 bit) suffices. | |
| F. The operator client software shall run asan application on Windows 8.1 or Windows 10. | |
| G. The VMS shall support cameras compliant to ONVIF Profile S. It shall be possible to scan the network for ONVIF cameras. | |
| H. It shall be possible to provide basic configuration of ONVIF cameras from within the VMS, such as general camera settings (e.g. multicast streaming), recording profiles (including Codec, resolution, frames per second), Audio profiles etc. | |
| I. It shall be possible to use the events provided by an ONVIF camera to trigger events and alarms in the Video Management System. When the events of specific ONVIF camera model are mapped to the camera Events (event mapping) in the VMS, it shall be possible to apply this mapping to all cameras of the same camera model inthe system. | |
| J. It shall be possible to export and import the event mapping of ONVIF cameras for the purpose of using the same event mapping on other installed systems. | |
| K. It shall be possible for operator to access livestreams and to control PTZ functionality. | |
| L. It shall be possible to record ONVIF compliant cameras. | |
| M. It shall be possible to view the connection statusof ONVIF compliant cameras in the Operator Client. | |

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| N. It shall be possible to display ONVIF compliant cameras in live view on a digital monitor wall connectedto a PC or a video decoder. | |
| O. It shall be possible to connect to cameras and/or other video sources via RTSP stream or MJPEG tothe video management system. | |
| P. It shall be possible to record the RTSP stream of cameras and/or other video sources that are connectedto the video management system. | |
| Q. The control of the playback (camera selection, replay speed, pause etc.) shall be done through the RTSP URL. | |
| R. The VMS shall provide a transcoding service for supporting iPad and iPhone devices as well as html5 based web clients as mobile video clients. | |
| S. The VMS shall provide access to the system bymeans of Mobile video clients. The Mobile video clients shall consist of an iOS based App and a web-based client. Both Mobile clients shall be able to access live and recording data of all cameras in the video management system. It shall be possible to view up to 4 video streams at once on a web client or iPad and mix live and playback streams. The mobile video clients shall further more support PTZ and provide an option for the user to zoom in as well as to opt between high resolution and smooth motion (higher rate of frames per second). It shall be possible to access the video management system from mobile video clients with the user accounts in the video management system. | |
| T. The web client shall provide means to search for text data in the logbook and access the corresponding video recordings directly from the results. | |
| U. The web client shall provide means to trigger relays configured in the VMS. | |
| V. The web client shall provide means to trigger video export. The export shall be executed on the central management server of the video management system. | |
| W. The IOS Mobile Client shall enable security staff to alert and share live video with other securitystaff members in a very simple manner. | |

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| X. The web Client shall provide and indicate, when videos are uploaded from IOS Mobile Clients to the server. | |
| Video Management System | |
| A. The video management system shall be scalable to an Enterprise Management System that allows a user of an operator client to simultaneously access the devices of multiple subsystems with given permissions. Each subsystems shall be like an independent VMS, containing its own recording system, operator clients and management server. The Operator client of one Enterprise Management user group can access up to 10 subsystems. An Enterprise management system shall host up to 20 user groups. If each subsystem is restricted to 100 cameras, the number of subsystems may be extended to 30 Subsystems per user group. Access permissions of Enterprise Operator Clients to subsystems and their devices shall be managed within the subsystems by means of a user ID and PW. Enterprise Operator Clients can than only access subsystems, when respective user ID and PW and set correctly in their Enterprise User group. An Enterprise Management Server shall be able to provide 20 Enterprise Management User groups. A change in a subsystem's configuration shall be automatically reflected for the Enterprise Operator Client. Extensions in the subsystems shall not require any additional licensing within the dedicated Enterprise Management Server. | |
| B. When a user of an Enterprise Management user group accesses a subsystem, he shall see all devicestates and all his user actions on the subsystem shall be logged on the Enterprise Management System. | |
| C. The video management system (VMS) specified shall be a centrally managed, scalable client/server based architecture that allows full virtual matrix switching and control systems. | |
| D. The VMS shall be designed to use a facility'sexisting IT infrastructure and require no special cabling. | |

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| E. The VMS shall be capable to be deployed in Local Area Networks (LAN) as well as in Wide Area Networks (WAN). For establishing remote connections across WAN, it shall be possible to setup a port mapping table within the configuration manager in order to map the public port to a private IP and port of the devices. The VMS shall provide a RRAS configuration tool to transfer the port mapping table to a RRAS Service. | |
| F. The VMS shall be capable to be deployed in Local Area Networks (LAN) as well as in Wide Area Networks (WAN). For establishing remote connections across WAN, it shall be possible to route all network traffic between the operator client and other system components throughan SSH tunnel, which is using a single port and is secured. | |
| G. The VMS shall allow an operator client to control and view live and playback streams of cameras allocated to the VIDEO RECORDING MANAGER, VIDEO STEAM GATEWAY and DVRs from a remote site (across WAN). Thisincludes ONVIF cameras connected to the VIDEO STEAM GATEWAY. | |
| H. Viewing transcoded video streams shall bepossible on all clients of the VMS with a minimum of: | |
| a) Microsoft Windows Client | |
| b) IOs Client for phones and tablets | |
| c) Web client | |
| I. Transcoding shall be dynamic | |
| J. The video quality/bandwidth shall be adapter very quickly to link quality changes (for instance 3g/4G, Wifi etc.). | |
| K. The transcoding feature shall apply to live and to playback as well. | |
| L. There should be an option for the operator of anIOS client to simply & gradually prioritize between motionin the image and image quality. | |
| M. When the operator digitally zooms inside a transcoded image, the transcoder should send onlythe area covered by the zoom, using the wholebandwidth available. This should enable operators with a low | |

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|---|---|
| bandwidth to view details coming from a high definition or ultra-high definition video camera. | |
| N. During video replay, when the playback is paused, the transcoder shall send a single, high definition image, to the client, allowing the operator to see all details | |
| O. The VMS shall support Automated Network Replenishment if supported by the devices. The recording is buffered within the memory of the IP camera to cover network outages. The VMS shall receive an event and be able to issue an alarm, when the storage in the camera reaches a critical buffer state as well as when recording is deleted due to the local storage capacity being used up. When an outage is resolved, the camera shall automatically replenish the gaps in the storage. This should be automated and should not require and user input. | |
| P. The pre-alarm shall be recorded in the localstorage of IP cameras supporting Automatic Network Replenishment and only be transferred to the central storage in the event of an alarm in order to reduce network strain caused by pre-alarms. | |
| Q. It shall be possible to configure up to 7 different pre-alarms for each IP camera supporting Automatic Network Replenishment for different events or compound events. | |
| R. It shall be possible to configure the use of Regions of Interest (ROI) in IP cameras supporting it. When an operator uses the region of interest, only the selected area shall be transmitted over the network to reduce network strain. | |
| S. It shall be possible to configure for fixed camerasand Autodome-cameras, that the camera automatically focuses and follows the object which triggers an alarm based on the Intelligent Video Analysis techniques. | |
| T. The VMS shall provide an easy and comfortable way to the operator to select and connect to a management server from a list of servers during logon. The tool shall | |

| | |
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| provide a search function to quickly find the server by searching for content appearing in the name or description of the servers. | |
| U. The VMS shall automatically detect when management servers are located in different time zones by means of the local time settings in the servers. The operator shall see from the server list in device tree, which management servers' time zone is currently displayed in the operator's User Interface. The operator shall be given the possibility to set his own operation time to a dedicated time zone of one of the management servers. Selected time zone shall be applied to live view, playback, thealarm list and the logbook. Operator shall also be able to select UTC time. | |
| V. The VMS shall have one operator client that can playback Video Recording Manager. | |
| AA. The VMS shall have one operator client that can export all recording listed in (E) to one single archive | |
| BB. The VMS shall provide up to 10 different and independent programmable recording schedules. The schedules may be programmed to provide different record frames rates for day, night, and weekend periods as well as special days. Advanced task schedules may also be programmed that could specify allowed logon times for user groups, when events may trigger alarms, and when data backups should occur. | |
| CC. The VMS shall allow the establishment of user groups and Enterprise user groups that have access rights to specific cameras, priority for pan/tilt/zoom control, rights for exporting video, and access rights to system event log files. Access to live, playback, audio, PTZ control, preset control, and auxiliary commands shall be programmable on an individual camera basis. | |
| EE. The VMS shall support Dual Authorization logon. It shall function as follows: | |
| a. Dual Authorization user groups may be created. | |

| | |
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| b. Logon pairs, consisting of any two normal user groups, may be assigned to each Dual Authorizationuser group. | |
| c. A separate set of privileges and priorities canbe assigned for each Dual Authorization user group. | |
| d. For each user group assigned as part of a logonpair, it shall be configurable whether the group can | |
| - Log on either individually or as part of the logon pair | |
| - Or log on only as part of the logon pair. | |
| e. If a user that is part of logon pair logs on individually, then he shall receive the privileges and priorities of his assigned user group. If the same user logs in as part of a logon pair, i.e. being authorized by the second user, then the user shall receive the privileges and priorities assigned to the Dual Authorization group to which the pair is assigned. | |
| f. The logbook shall log the log on procedure to identify a single user or a dual authorization log on. Subsequent user actions shall be logged as the actions of the first user. | |
| g. Dual authorization shall also be available for an Enterprise Management System. | |
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| FF. The VMS shall interface with the Intelligent Video Analysis (IVA) techniques of the IP encoders and IP cameras to provide advanced motion detection that analyzes object size, direction, and speed as well as detecting objects entering or leaving designated areas. The VMS shall also support the detection of fire supported in the Intelligent Video Analysis in the near future. | |
| GG. The VMS shall support configuring the IVA parameters from the configuration client. | |
| HH. The VMS shall react to events triggered by the IVA of the encoders or IP cameras. | |
| II. The VMS workstations may be connected to up to 4 monitors where each monitor may be configured to display live streaming video, playback video, site maps, or alarms. | |

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| JJ. The VMS shall support Lightweight Directory Access Protocol (LDAP) that allows integration with enterprise user management systems such as Microsoft Active Directory. | |
| KK. LDAP shall also be available for an Enterprise Management System. LDAP shall be configurable in an Enterprise user group. | |
| LL. The VMS shall export video and audio data optionally in ASF or MOV format to a CD/DVD drive, a network drive, or a USB drive. The exported data in ASF or MOV format may be played back using standard software such as Windows Media Player. | |
| MM. The VMS shall export video and audio data optionally in its native recording format to a CD/DVD drive, a network drive, or a direct attached drive. The exported data in native recording format shall include all associated metadata. Viewer software shall be included with the export. Once installed, the viewer softwareallows playback of the streams on any compatible Windows PC. | |
| NN. It shall be possible to password protect the video export. The export can then only be opened and viewed when the corresponding password is entered. | |
| OO. The video management system shall write a digital signature to the exported video. This shall allow the viewing client to verify, that the imported and opened video has not been tampered. The video management system shall provide a warning in case that the video has been tampered. This shall be done by means of the checksum of the digital signature. | |
| PP. The VMS shall auto-discover encoder, decoder, VIDEO RECORDING MANAGER devices and DVRs. Device detection shall support devices in different subnets. | |
| QQ. The VMS shall auto-discover IP devices with their default IP addresses, and allow auto-assignment of unique IP addresses. | |
| RR. The VMS shall be able to simultaneously configure multiple encoders or decoders, even of different types. When devices of different types are being configured, only | |

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| the parameters available in all devices are available for configuration. | |
| SS. The VMS shall ensure, that Recording is not affected in any way by server downtimes. | |
| TT. The VMS shall ensure continues operation during management server down-times as live viewing, playback of recording and export of video data. | |
| UU. The operator client shall indicate its connection status to the management server. | |
| VV. An Enterprise Operator Client shall be capable of working offline. The status of each connection to a subsystem's management server shall be indicated. The client should be able to operate offline for as long as necessary. There should not be any time limit. | |
| WW. The VMS shall be designed in such a way that configuration changes to any part of the system shall not interrupt operational tasks, until the operatordecides to update re-fresh the workstation configuration. | |
| XX. The VMS shall be highly resilient to failure. Even in a concurrent failure of all Management server(s), VIDEO RECORDING MANAGER(s) and iSCSI storage, the operators shall still be able to view & control cameras as well as playing back the video from cameras with a memory card OR SI has to insure redundancy in architecture . | |
| YY. When the failed system components are back online, no special user or administrator action shall be required for the system to be back to a nominal working mode. | |
| ZZ. The video management system shall support to enable an encrypted communication between the management server and a camera, between the Operator Client and the cameras and between the Video Recording Manager and the cameras. If enabling the encrypted communication, the video management systemshallutilize HTTPS (TLS) to encrypt all control communication and video payload via the encryption engine in the device. When utilizing TLS, all HTTPS control communication and | |

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| video payload shall be encrypted with an AES encryption key up to 256 bits in length. | |
| AAA. The video management system shall support to confirm the authenticity of recorded video data. The video management system shall support to check hash values against recorded video data of cameras, which provide a recording stream with hash valuessigned by its certificates. | |
| 2.02 Video Management System Components | |
| A. The management server software shall provide management, monitoring, and control of the entire system. The management server software shouldtypically be installed on a server-class computer, but may be installed, with all the other video management software modules on one workstation. The management server shall also maintain data stream management, alarm management, priority management, central logbook, central configuration and user management. | |
| B. Software updates to the operator client and configuration client shall be automatically deployed from the management server. | |
| C. The VMS shall be designed in such a way the management server downtimes do not affect the functionality of the recording services ( Video Recording Manager, Local Storage, Direct-to-iSCSI-Recording), DVRs. Normal recording and Motion recording shall continue during the management server downtimes, only Alarm Recording cannot be activated as the management server is responsible for evaluating the alarm conditions. During management server downtime the recording services shall still be able to change the recording parametersschedule dependent. | |
| D. Configuration client software shall provide theuser interface for system configuration and management. | |
| E. Operator client software shall provide the user interface for system monitoring and operation. The | |

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| operator client maintains live monitoring, storage retrieval, and alarm handling. | |
| F. Operators should still be able to login in the operator client software even if the management server is downor not available. | |
| G. The management server should be compatible with 3rd party high availability solutions (VM-Ware; Microsoft Hyper V) in High Availability –mode. The downtime during unplanned failover should be max 300 seconds. Planned Failover should not cause any downtime. | |
| 2.03 Video Recording Manager | |
| A. The VMR shall be an optional package ofthe installation program of the VMS. | |
| B. The video management system shall be capable of managing multiple VIDEO RECORDING MANAGERs. | |
| C. The VIDEO RECORDING MANAGER shall beconfigured from the VMS configuration client. It shall be possibleto assign encoders and IP cameras to it. | |
| D. The recording parameters shall be configured in the recording tables of the VMS configuration program. These settings will be replicated into the devices from the management server. | |
| E. The VIDEO RECORDING MANAGER shall manage exclusively the encoders, IP-Cameras, and the supported iSCSI storage systems. It shall offer system wide recording monitoring and management of iSCSI storage, video servers and cameras. | |
| F. The VIDEO RECORDING MANAGER shall support the encoders and cameras to directly stream the data to the iSCSI storage. The VIDEO RECORDING MANAGER shall not be involved in the processing of the data. | |
| G. The VIDEO RECORDING MANAGER shall manage all disk arrays in the system as a single virtual common pool of storage. It shall dynamically assign portions of that pool to the encoders and IP-Cameras. | |

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| H. The transfer rate of the data from the encoder or IP- Camera is limited by network speed and the iSCSI data throughput rate. | |
| I. The VIDEO RECORDING MANAGER shall provide redundancy for storage provisioning and failoverdesign for central recording management service. | |
| J. It shall be possible to configure a secondary VIDEO RECORDING MANAGER recording for a selection of camera. Cameras thus record on a different recording target (dual recording). It shall be possible to configure different quality settings for the secondary VIDEO RECORDING MANAGER. | |
| K. It shall be possible to configure a mirrored recording mode where the secondary VIDEO RECORDING MANAGER automatically contains the same devices and quality settings as the primary VIDEO RECORDING MANAGER. Hence, when cameras are added to the primary VIDEO RECORDING MANAGER, they are automatically recorded on the secondary VIDEO RECORDING MANAGER as well. Retention time of the primary and secondary VIDEO RECORDING MANAGER may differ though. | |
| L. It shall be possible to configure failover VIDEO RECORDING MANAGERs for primary and secondaryVIDEO RECORDING MANAGERs. In the event of a master VMR failing, the secondary VIDEO RECORDING MANAGER takes over the tasks of VIDEO RECORDING MANAGER that failed. | |
| M. The VIDEO RECORDING MANAGER shall be able to restore a lost recording database from data on the iSCSI storages. | |
| N. The VIDEO RECORDING MANAGER shallprovide flexible retrieval of recordings. It shall be able to determine on which iSCSI disk array data from each camera or encoder has been stored. | |
| O. It shall be possible to secure the access to the VIDEO RECORDING MANAGER software with a password. This shall be done in the configuration client. | |

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| P. The VIDEO RECORDING MANAGER software shall provide status monitoring information as a webinterface. The following information shall be provided: | |
| a) Uptime of the VIDEO RECORDING MANAGER software | |
| b) Bit rate information for the recorded data | |
| c) Retention times per camera | |
| d) Status on recording and storage | |
| Q. The video management system shall allow configuring if playback of recordings is streamed through the VIDEO RECORDING MANAGER or is streameddirectly from the iSCSI storage. | |
| R. The video management system shall support to retrieve the playback information, i.e. from which iSCSI storages to retrieve the video, audio and meta-data, either from the Video Recording Manager or directly from the IP encoder or camera. Playback information directly from the IP encoder or camera is limited in time and should be used while the VIDEO RECORDING MANAGER is not available to increase the reliability of the video management system. | |
| 2.04 Support of Monitor Walls | |
| A. The VMS shall support analog monitors connectedto IP decoders as well as monitor walls. | |
| B. It shall be possible to configure analog monitors in full screen mode or quad mode. When in quad mode, the VMS shall be able to select video and control cameras inany quadrant. | |
| C. It shall be possible to group analog monitors into Analog Monitor Groups (AMGs). An AMG shall specify a monitor arrangement of rows and columns. | |
| D. It shall be possible to restrict access to AMGsto specified operator client workstations. | |
| E. The VMS shall support a monitor wall for an Enterprise System, i.e. an Enterprise Operator Client shall be able to call up and view cameras of the various subsystems on a central monitor wall. | |

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| F. The VMS shall support a monitor wall supporting connection of up to two HD monitors via HDMI todisplay asymmetrical layouts. It shall also support H264 and HD. | |
| G. The VMS shall support the display of IP cameras on video wall up to 70 cameras and asymmetrical layouts | |
| 2.05 Alarm Management Capability | |
| A. The video management system shall providethe capability to allow alarms to beschedule-dependent. | |
| B. The video management system shall allow alarmsto be individually allocated to specific user groups for processing. | |
| C. The video management system shall support replication of events such that a single physical event causes multiple system events. These multiple eventsshall be independently configurable to allow independent handling of the alarms by multiple operator groups, orto be handled differently according to different schedules. | |
| D. The video management system shall be programmable to selectively, per alarm and peruser group, automatically pop-up the alarm video. | |
| E. The video management system shall support display of alarm video in a special Alarm Image Window so users do not have to search their display screens to find the alarm images. | |
| F. The video management system shall displayalarm video in rows of Alarm Image Panes, with one rowper alarm, and with up to 5 Image Panes per row. | |
| G. The video management system's Alarm Image Panes shall be configurable to display live video, playback video, text documents, site maps, HTML files, or web sites (URLs). Per alarm one playback video and one site map can be configured. | |
| H. The operator client shall be able to display up to 10.000 hotspots simultaneously, spread over up to 20 different maps. | |

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| I. The video management system's Alarm Image Pane rows shall be displayed in order of their priority, withrows for higher priority alarms always displayed above lower priority alarm rows. The display order for equal priority alarms shall be selectable between new alarms displayed above existing alarms, or new alarms displayed below existing alarms. | |
| J. The video management system shall providean alarm reaction time of maximum 2 seconds when sufficient network bandwidth is available. | |
| K. The video management system shall distribute alarm notifications, via entries in the alarm list of the operator user interface, to all members of the user groups to which the alarm is assigned. The alarms shall appear in all said users' alarm lists. | |
| L. The video management system shall operate as follows: when an alarm is accepted by a user, it shall be removed from the other users' alarm lists. | |
| M. The video management system shall allow a user to un-accept an alarm he has previously accepted. In this case, the alarm shall re-appear in the alarm lists ofall members of the user groups assigned to this alarm. | |
| N. The video management system shall support the association of workflows with alarms. Workflows shall consist of action plans and comment boxes. An actionplan shall display a text document, HTML page, or web site that typically contains instructions for handling the alarm. Comments entered in the comment boxes shall be logged in the system logbook. | |
| O. The video management system shall beconfigurable to force an alarm workflow. In this case, the alarmcannot be cleared until the workflow is processed. | |
| P. The video management system shall offerthe possibility to automatically clear alarms when the originating event condition is no longer true. | |
| Q. The video management system shall allow alarms to be configured to send PTZ cameras to prepositions orto execute camera Aux commands on occurrence. | |

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| R. The video management system shall beconfigurable to put any IP-connected camera into alarm recording mode on alarm occurrence. | |
| S. The video management system shall be configurable to send an e-mail or SMS message in response to analarm. | |
| T. The VMS shall be capable of displaying video on analog monitors connected to video decoders inresponse to alarms. | |
| U. The VMS alarm response shall take advantage of the row and column arrangement of analog monitor groupsby associating a row of analog monitors with each active alarm. Each alarm may display video on multiplemonitors, limited by the number of columns in the analog monitor group. | |
| V. As new alarms are received, alarm rows shall stack in priority order on the analog monitors. | |
| W. The VMS shall support for alarms to display video on multiple analog monitor groups, with configurable assignment of individual assignment of alarms to monitor groups. | |
| X. In an Enterprise System, the management server of the subsystem, which triggered the alarm shall be indicated. | |
| 2.06 Relays and Digital Inputs | |
| A. The open/close states of inputs and relays from devices connected to the system, including IP cameras and PTZ cameras, video encoders and decoders, matrix switchers, and DVRs shall be indicated on the VMS operator client user interface and can be queried via the VMS SDK. | |
| B. Relays from devices connected to the system shall be controllable from command scripts, the VMS SDK, and icons on the operator client user interface. | |
| C. Input and relay state changes from devices connected to the system shall be recognizable as events in the VMS. | |
| D. It shall be possible to configure one malfunctionrelay used to indicate an occurrence with special severity. It | |

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| shall be possible to configure compound events to trigger the malfunction relay. | |
| 2.07 Logbook | |
| A. The system shall protocol every event and alarm in an SQL database. The alarm entry shall contain the camera titles that have been recorded due to this alarm. | |
| B. The logbook shall be able to store at least 500,000 entries per hour. If the capacity of the logbook is filledup the oldest entries will be deleted to create space. | |
| C. The user shall be able to search the logbook for events and alarms. The user shall be able to export the search results into a comma separated value list (CSV). | |
| D. The system shall include and install a ready-to-use SQL database. The system shall optionally allow the usage of a separately installed SQL database. | |
| 2.08 Digital I/O Interface Connection | |
| A. The VMS shall interface to the Advantech ADAM6000 family of digital I/O devices. | |
| B. The digital inputs and relay outputs from the ADAM devices shall provide all of the features and functionality described in the Relays and Digital Inputs section of this document. | |
| C. ADAM 6000 family of devices attached to thenetwork shall be automatically discoverable via a network scan. | |
| 2.09 SNMP | |
| A. The video management system shall be capableof monitoring third-party equipment SNMP protocol. | |
| B. The video management system shall provide a Management Information Base (MIB) to enable other Physical Security Information Management Systems (PSIM) to monitor the video management systemby means of SNMP traps. | |
| C. The Video Management System shall support at least SNMPv2 | |
| 2.10 Pre-Programmed Camera sequences | |
| A. The video management system shall support pre-programmed camera sequences. These sequenceswill | |

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| allow cameras to be automatically displayed on the computer image panes and/or analog monitors connected to decoders. The sequences shall support simultaneous display on multiple image panes or monitors. The sequences shall also support camera prepositions for each PTZ camera on each sequence step. The system shall be configurable such that operators can select these sequences from the logical tree or a site map. | |
| B. Pre-programmed camera sequences can bedisplayed in operator client and on Analog Monitor Groups. | |
| 2.11 Virtual Inputs | |
| A. The video management system shall provide a software interface that allows third-party software to generate events in the video management system. The software shall support any COM programming languages (e.g. Visual Basic and C++), any .Net programming language (e.g. C#) or JavaScript. | |
| B. The VMS shall allow third-party software to include up to 10 data fields and an Alarm ID along with thevirtual input event. | |
| C. These fields shall be searchable in the system logbook. | |
| D. The virtual input data shall be optionally displayed in the operator client playback mode synchronously with the associated video. | |
| 2.12 SDK | |
| A. The video management system shall provide a documented Software Development Kit (SDK) toallow integration to and integration from third-party software. | |
| B. The SDK shall expose all functionality of thecommand scripts, including, but not limited to: | |
| C. SDK functionality shall require authentication to the system. | |
| D. The SDK shall be accessible from all .Net programming languages. | |
| E. A Cameo SDK shall be available which allows for programming 3rd party operator clients. | |

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| F. A Remote Client SDK shall be available which allows for programming an interface between a running VMS operator client and a 3rd party management system. | |
| 2.13 Configuration Changes | |
| A. Configuration changes made in the VMS configuration client shall modify a working copy of the configuration, and shall not affect the active operating configuration. | |
| B. It shall be possible to activate the working copy through a user action in the configuration client, at which point the working becomes the new active operating configuration. | |
| C. It shall be possible to set a date and time in the future at which the working copy becomes active. | |
| D. It shall be possible to view a list of all configuration activations that have been applied to the system. It shall be possible to select any of the activated configurations, and have the system "roll back" to an earlier configuration. | |
| E. It shall be possible to activate a configuration and leave it to the operator to refresh the configuration locally instantly or at a later point in time. It shall be possible to enforce a configuration activation for every operatorclient connected to the management server. | |
| F. It shall be possible to create and export a reports of the current configuration in CSV-format for the purpose of documentation. There shall be reports for the following configurations: | |
| a) Recording schedules | |
| b) Task schedules | |
| c) Cameras and Recording Parameters | |
| d) Stream and Quality Settings | |
| e) Event Settings | |
| f) Compound Event Settings | |
| g) Alarm Settings | |
| h) Configured Users | |
| i) User Groups and Accounts | |
| j) Device Permissions | |

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| k) Operating Permissions | |
| 2.13 Operator Client | |
| A. An operator client user logging on to an Enterprise Management Server shall be able to simultaneously access the devices of up to 10 subsystems and a total number of 10000 encoders/cameras. If each subsystem contains less than 100 cameras, the video management system shall support up to 30 subsystems for simultaneous access to the devices. | |
| B. If an operator client loses its connection to the management server, the user shall nevertheless be able to continue working with the connected devices, accessing live and playback and be able to PTZ Dom cameras. | |
| C. The video management system shall provide an administrator-configured Logical Tree. The logical tree shall be freely configurable with any tree structure, with nodes consisting of folders or maps, and leavesconsisting of devices (cameras, inputs, and relays), sequences, documents, URLs, or command scripts. Each user group shall only see items in the logical tree for which the administrator has granted access. | |
| D. The logical tree of an Enterprise operator client displays the available device for each configured management server of a subsystem and theirconnection status. | |
| E. The user shall be able to search the logical treefor item names. | |
| F. The VMS shall provide a user-dependent bookmark Tree. The bookmark tree shall allow saving a time period or a single point in time for later investigation and export. Bookmarks shall be available both for live mode and for playback mode. | |
| G. The VMS shall provide a user-dependent Favorites Tree. The favorites tree shall allow maps, folders, and devices and complete views (image pane patterns with camera assignments) to be configured by each user ina user-defined structure. The user's favorite tree shall be | |

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| available irrespective of the computer with which he logs on to the system. | |
| H. The video management system shall provide an Image Window that displays a collection of Image Panes. The layout shall be optimized for standard and widescreen monitors. With standard monitors the number of image panes per image window shall be variable between 1 (a single full-window video) and 25, arranged in a 5x5 grid. A slider shall be available allowing the grid size to be changed from 1x1, 2x2, 3x3, 4x4, and 5x5. With widescreen monitors the number of image panes per image windows shall be variable between 1 and 30, arranged in grids of 1x1, 3x2, 4x3, 5x4, and 6x5. The VMS shall allow image panes to be enlarged or decreased in size within the grid. E.g., in a 5x5 grid, a single image pane can be enlarged to use 4 of the grid elements, creating a larger image within the grid. | |
| I. The video management system shall provide the user of the operator client a flexible image pane, allowing the operator to view video in any pattern created within the grid structure. The operator shall not be restricted to pre- configured layouts, but shall be able to resize the image panes by clicking and dragging on the border of an image pane to drag the border horizontally or vertically or by clicking on a corner of an image pane to drag thecorner diagonally to the desired size. | |
| J. The video management shall implement the concept of a selected image pane. The selected image pane shall be highlighted. There shall always be a selected image pane in the operator client application. The selected image pane is always used for control commands, e.g. PTZ control, instant playback control, and audio replay. | |
| K. The video management system shall provide the user of the operator client to be able to select the video stream offered by a camera displayed on an image pane. For cameras configured to use two different streams for live view and for recording, operator shall be able to manually | |

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| switch between the higher resolution stream and the lower resolution stream for a particular camera. | |
| L. The video management system shall provide the user of the operator client an option to enable an automatic switching between a high and a low resolution stream. The video management system shall automatically switch to a low resolution stream, if the user of the operator client opens multiple cameras on a monitor. The video management system shall automatically switch to a high resolution stream, when the user of the operator client maximizes a camera on the monitor or if he user of the operator client zooms in to see more details. The video management system shall support the audio channels of the encoders and IP cameras. It shall be possible to assign audio sources to cameras. In the operator client it shall be possible to turn on/off the replay of the audio per camera. | |
| M. The video management system shall supporttwo different audio modes, single source audio andmulti-source audio. | |
| In single source audio mode only the audio source assigned to the camera in the selected image pane is replayed. | |
| In multi-source audio mode all audio sources of the cameras displayed in the client application are replayed. | |
| N. The video management system shall support site maps with hot-spot icons for devices (cameras, relays, inputs but also the Management Server and the Video Recording Manager), command script initiation, camera sequence initiation, and links to other site maps. Thesite maps shall be capable of being zoomed. | |
| O. The hot-spot icons shall be configurable tooptionally display the device name or link title. | |
| P. The status of the devices is visually shown onthe corresponding hot-spot icon on the map. | |

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| Q. It shall be possible to configure, that the importance of the occurrence of a certain event of a device is especially highlighted. When the selected event occurs, a defined background color will appear at thecorresponding hot-spot icon on the map. | |
| R. In addition to the background color, it shall be possible to configure, that the background color isblinking to further highlight the importance of the occurring event. | |
| S. It shall be possible to configure the priority of the events of devices to ensure, that only one event per hot- spot icon is visualized on the map when several events occur simultaneously. | |
| T. The VMS shall provide a thumbnail of the live video, when the mouse is hovered over the camera icon onthe map. | |
| U. It shall be possible to select the presets of a Dom camera from the context menu of a hot-spot icon ofa camera on the map. | |
| V. It shall be possible to accept and clear alarms of triggered by a certain camera from the context menu of the hot-spot icon of that camera on the map. | |
| W. The operator client shall display live streams from encoders. For IP-cameras and encoders it shall be possible to configure per workstation and individually per camera which encoding stream (Stream 1 or Stream 2) of these devices shall be displayed. | |
| X. The operator client shall support the display of the live stream of an ultra HD camera in multiple image panes without the impact on the CPU-load of the operator client. It shall be possible to adapt the different views per image pane using E-PTZ and to save the multi-view as a favorite. When selecting the favorite, the customized live view including the ultra HD views of the same camera are called up on screen. The | |
| Y. Operator Client shall support dewarped panoramic views for displaying 360° cameras. When operator is using E-PTZ in the image pane, an overlay shall indicate his position for better orientation. | |

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| Z. The Operator Client shall provide dewarped playback for video recorded with a 360° lens. | |
| AA. It shall be possible for the operator to pick an object in a live stream and trigger the camera to focus and follow that particular object automatically. | |
| BB. The video management system shall support automatic sequencing. It shall be possible for users to multiple-select cameras (control-click or shift click), and drag the multiple-selection to an image pane or a graphic representing an analog monitor connected to a decoder. All of the cameras in the selection shall then sequence in the image pane or monitor at a user-selectable rate. It shall also be possible to drag a folder to an image pane or analog monitor. In this case, all of the cameras contained within the folder shall sequence. | |
| CC. The video management system shall support PTZ control with a dedicated graphical joystick control, supporting Pan, Tilt, Zoom, Iris, Focus and Aux Command operations. It shall also support PTZ control via clicking the mouse in the image panes. For PTZ cameras, the cursor shall change to indicate the Pan/Tilt direction when hovering over the corresponding image pane. The Pan/Tilt speed shall increase as the cursor moves farther from the center of the image pane. An area in the center of the image pane shall be used for zoom-in/zoom-out control.<br>Once zoom is initiated, the zoom speed shall increase as the cursor is moved farther from the center of the image pane. | |
| DD. The video management system shall support digital zoom of any image pane. A dedicated graphical control shall be provided in the user interface for this purpose. In addition, the mouse wheel shall control digital zoom when the mouse cursor is hovering over a selected image pane. | |
| EE. The video management system shall provide an Instant Playback function that displays recorded imageson one or multiple image panes. Recorded images from a single camera may also be played back on multiplepanes.<br>Instant playback supports pause, play forward, play | |

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| reverse, single step forward, single step reverse, fast- forward, and fast-reverse. | |
| FF. The video management system shall support a timeline that provides a graphical overview of video stored on the disk. The timeline shall display a timescale that can be adjusted from at least 15-minutes per division to 1 month per division. For each camera displayed in playback mode, the timeline shall provide a line that depicts the video storage for that camera. The line shall be color-coded to show if video is recorded for the displayed time period, and if so, if it is normal recording, motion recording, or alarm recording. The line shall be cross- hatched if the video is protected from deletion. The line shall also indicate if associated audio is recorded during the displayed time period. | |
| For VIDEO RECORDING MANAGER and Local Storage recordings color coding is limited to protection and audio indication. | |
| GG. The video management system shall support to configure an alarm whenever video recording is manually deleted. | |
| HH. The video management system shall support simultaneous time-synchronous playback. Playback shall support single-step forward and backwards; play normal speed forward and backwards; play high-speed forward and backwards; and play slow-speed forward and backwards. | |
| II. The video management system shall deploy smart methods to improve the playback user experience athigh speeds, mitigating workstation performance limitations. | |
| JJ. The video management system shall supportsearch of recorded video for motion in user-specified areas ofa camera image. | |

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| KK. The video management system shall support search of recorded video with at least the following criteria: object size, object color, direction, and speed as well as detecting objects entering or leaving designated areas. This Intelligent Video Analysis (IVA) based post-recording search will work for cameras recorded by VIDEO RECORDING MANAGER and Local Storage. | |
| LL. The video management system shall optionally display the information of the video analytics such as cells with detected motion, object masks, and trajectories in live and playback. | |
| MM. The video management system shall support searching based on any combination of time/date- rage, event type(s), alarm priority, alarm state, and device(s). It shall be possible to save and recall search parameters. | |
| NN. The video management system shall support search for text data retrieved from ATMs, point of sales, barcode readers or other applications. The search shall be performed in the logbook using a wildcard search. The search results shall appear in a list and selection of a result shall directly call up the exact video images recorded with the text data. | |
| OO. The text data shall be displayed in the image pane of the corresponding camera in live and playback. It shall thus be possible to simultaneously display text data of multiple cameras. The operator shall furthermore be able to choose whether the text data is displayed on the right side or below the image pane. | |
| PP. The video management system shall graphically display device states on its icons in the logical tree structure and on sitemaps. For cameras, the states shown shall include: loss of the analog video signal, network connection loss, video recording, video signal too noisy, video signal too bright, video signal too dark, video de-adjusted, and video includes associated audio. For relays and contact inputs, the open or close state shall be indicated. | |

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| QQ. The video management system shall support switching of cameras to analog monitors connected to decoders. The cameras shall be selectable via drag and drop from the logical tree or from the sitemaps. | |
| RR. The video management system shall support an indication for the operator client regarding the connection state to the management server. This shall include connected, disconnected, and configuration out-of-sync between management server and operator client. The connection state of the management server shall be indicated on the icon of the device tree. | |
| SS. The operator client shall support a configurable inactivity logoff for security reasons. The operator client will logoff automatically when no activity is detected from the operator in a configured period of time. | |
| TT. The video management system shall support a centrally stored user profile to store settings individual for each operator. These settings shall include but are not limited to sequence dwell times, instant playback replay time and image pane ratio settings (16:9 or 4:3) individually per monitor. These settings shall be available independently of the physical workstation to the operator. | |
| UU. For security reasons, it shall be possible to configure that the concurrent logon of the same user on different Operator clients is being omitted. | |
| VV. It shall be possible for the operator client to utilize one or multiple graphical processing unit(s) to decode H.265 encoded video streams. | |
| WW. It shall be possible for the operator client to connect to a management server using an SSH tunnel. The SSH tunnel shall be used for all communication between the operator client and other system components. | |
| XX. The operator client shall be able to display four UHD cameras simultaneously smoothly using hardware accelerated decoding. | |
| YY. For security reasons it shall be possible to enforce a secure password policies for the password user define to log on to the operator clients. When secure password | |

| | |
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| policies are enforced, the Operator client will only accept passwords with | |
| a) A minimum length of 8 digits | |
| b) At least one capital letter | |
| c) At least one capital letter | |
| | |
| Audio Intercom Functionality | |
| A. The video management system shall support bidirectional audio intercom functionality. Audio intercom streams audio data from an operator client Workstationto the audio output of the encoders. | |
| B. The audio intercom function shall be activated by a button in the operator client Workstation. When the button is pressed the operator shall be able to speak into a microphone on the client computer. The audio shall be transmitted to the audio source which is assigned to the currently selected camera. | |
| 2.20 CCTV Keyboard Control | |
| A. The system shall allow system control viathe keyboards. | |
| B. The keyboards shall support an Enterprise System, i.e. with a keyboard connected to an Enterprise operator client the desired subsystem's management server shall be selectable. | |
| C. Keyboard connections shall be possible tooperator client Workstations. | |
| D. When CCTV Keyboards are connected to decoders, it shall be possible to control the analog monitor groups in the system via the CCTV keyboard. | |
| E. When CCTV Keyboards are connected to decoders, it shall be possible to control PTZ operation of theselected camera using the keyboard joystick. | |
| F. When CCTV Keyboards are connected to decoders, it shall be possible to control set and call-up PTZ prepositions of the selected camera using the keyboard. | |

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| G. When CCTV Keyboards are connected to decoders, it shall be possible to execute PTZ and Aux-commands of PTZ Cameras on the selected camera using the keyboard. | |
| H. When CCTV Keyboards are connected to operator client Workstations, it shall be possible to control the current Image Pane selection using the keyboard joystick. | |
| I. When CCTV Keyboards are connected to operator client Workstations, it shall be possible to control the analog monitor groups in the system or control any Image Pane on the connected operator client Workstation, using the CCTV keyboard. | |
| J. When CCTV Keyboards are connected to operator client Workstations, it shall be possible to control PTZ operation of the selected cameras using thekeyboard joystick. | |
| K. When CCTV Keyboards are connected to operator client Workstations, it shall be possible to control set and call-up PTZ prepositions of the selected camera usingthe keyboard. | |
| L. When CCTV Keyboards are connected to operator client Workstations, it shall be possible to execute PTZand Aux-commands of the selected Autodome camera using the keyboard. | |
| M. When CCTV Keyboards are connected to operator client Workstations, it shall be possible to control playback of video, including both Instant Playback and Playback-mode synchronous playback, using the CCTV keyboard. | |
| N. When CCTV Keyboards are connected to operator client Workstations, playback control should include jog-shuttle emulation using the Keyboard Joystick. | |
| O. When in Jog-shuttle emulation mode: | |
| a) Rotating the Keyboard joystick will control forward and reverse playback, with playback speed proportionalto the amount of joystick rotation. | |

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| b) Moving the joystick up shall set the video into slow forward playback mode. Additional upwardmovements shall incrementally increase forward playback speed | |
| c) Moving the joystick down shall set the video into slow backward playback mode. Additional downward movements shall incrementally increase backward playback speed. | |
| d) Moving the joystick right shall set the video into pause mode. Additional rightward movements shallstep the video one frame forward. | |
| e) Moving the joystick left shall set the video into pause mode. Additional leftward movements shall step the video one frame backward. | |
| 2.21 Integration with Intrusion panel | |
| A. The video management system shall be able to connect to UL-approved intrusion panels and browse the areas and devices configured in the panel in the Configuration Client. | |
| B. The video management system shall be able to connect to 20 intrusion panels. | |
| C. The video management system shall be able to map the events of the intrusion panel to events in the video management system in order to use these events in the event and alarm engine of the video management system. | |
| D. The video management system shall be able to use the events of the intrusion panel to create compound events to trigger actions. | |
| E. The Operator Client shall indicate the connection and authentication state of the intrusion panels by means of icons. | |
| F. The video management system shall supportthe following devices from the intrusion panel: | |
| a) Areas | |
| b) Doors | |
| c) Outputs | |
| d) Points | |

| | |
|---|---|
| G. The states of these intrusion devices shall be shown on the icons in the device tree of the operator client as well as on the hot-spot icons of the map. The statesthat should show are: | |
| H. The user of an Operator Client shall be able to execute the following operations from the context menu of the intrusion device icons in the device tree as well as from the context menu on the corresponding hot-spot icons on the map: | |
| a) Arm, force arm and disarm areas of an intrusion panels | |
| b) Silence areas of the intrusion panel | |
| c) Open and close outputs | |
| d) Unlock, secure and cycle doors | |
| e) Bypass and un-bypass points | |
| I. All the user actions of the operator with regards to the intrusion devices in the video management system shall be logged | |
| J. The video management system shall provide separate user permissions for the above mentioned operations per user group. | |
| Provision of server based analytics | |
| A. The video management system shall provide an integration with a server based analytics platformwhich allows to use analytics from many different vendors. | |
| B. On connection with the management server ofthe video management system, the analytics platform shall retrieve the list of configured cameras into the analytics platform to prevent manual setup of the cameras | |
| C. It shall be possible to configure which video stream (stream 1 or stream 2) provided by the cameras shall be used for the analytics | |
| D. The system should allow the use of a pool of video analytic algorithm on any cameras without limitations. It should be very easy to change an algorithm from acamera to another. | |

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| E. The video analytic processing should be able to run on top of a server or to be virtualized usingleading virtualization technologies (vmWare, Hyper-V) | |
| F. The video analytic processing should be ableto scale seamlessly by adding servers. | |
| G. The video analytic processing should be able to be redundant. Server failure should not impact the functionality of the system, as the analytics on thisserver failover to another automatically and in a very short time. | |
| H. It shall be possible to setup several “lists” in the database of the analytics platform. A list contains License plates or faces and related data. | |
| I. The analytics platform shall detect license plates or faces in the live stream provided by the cameras and shall match them against the license plates and faces stored in data-base of the analytics platform | |
| J. When there is a match an event shall be send to the video management system. Additional data such as the camera and the time of detection shall be includedin the event provided to the video management system. | |
| K. When the event provided by the analytics platform triggers an alarm in the Operator Client ofthe video management system, the following contentshall show in a separate Analytics Viewer: | |
| a. The original image of the live camera wherethe license plate of the face has been detected | |
| b. A cropped extract of the original image justthe extracted license plate or face | |
| c. The corresponding face or license plate taken from the database of the analytics platform to allow the operator to compare the captured image with the reference image from data-base | |
| d. Additional data related to the face or license plate stored in the data-base of the analytics platform (e.g. name of person etc.) | |
| L. All events and meta-data shall be stored in the logbook of the video management system to allowto | |

| | |
|---|---|
| search for a license plate or person that triggered an alarm. | |

| **Storage Capacity -Min. 128 TB** | | |
|---|---|---|
| **Characteristics** | **Desired Parameters** | **Compliance (Yes/No)** |
| Type | Rack-mount 2U and 3 U | |
| Processor | Intel Xeon Processor E3-1275 V3 or latest | |
| Server O/S | WINDOWS 2012 R2 Edition or latest | |
| Video Compression | H.265, H.265, MPEG4, MJPEG | |
| Cache memory | 8 MB Intel Smart Cache | |
| Memory installed | Minimum 8 GB | |
| Network | 2x Gigabits Ports | |
| Redundancy | Hot swappable power supplies and hard drives | |
| RAID Level | RAID 0,1, 5, 6 | |
| Max internal storage | 128 TB Minimum | |
| Graphics | 4 x Mini Display Port | |
| Minimum Bandwidth | 460 Mbit/s | |
| I/O Interface | Front: 2 USB 2.0 ports<br>Rear: 2 USB 2.0 ports, 2 USB 3.0 ports | |
| Voltage | 100-240V and above | |
| Operating temperature | 10 °C to 35°C | |
| Operating humidity | 8 to 90% (non-condensing) | |

| **2U Rack Server** | | |
|---|---|---|
| **Parameter** | **Specifications** | **Compliance Yes/No** |
| Rack Height | 2U | |
| CPU Support | Must support 2 CPU's | |
| Chipset | Intel C621 or better | |
| Processors | Dual x Intel Xeon Gold 5215 Processor, 10 Core, 2.5 GHz processor | |
| Memory | 128 GB DDR4 RAM 2666 MHz | |
| Memory | Server should have 24DIMM slots | |
| Hard Drives | 5 x 1.2TB 10K RPM SAS | |
| | Should support up to sixteen hard disk drives (SAS, SATA, nearline SAS SSD: SAS, SATA) | |
| RAID Card | RAID Controller Card supports RAID 0, 1, 5, 10 with 8 GB Cache | |
| PCI Slots (I/O) | 8 x PCIe 2.0/3.0 slots | |
| NIC Embedded | Dual Port 1 GbE BASE - T and Dual Port 10GbE BASE-T | |
| Fiber Ports | Should have 2x 16Gbps FC ports | |
| Redundant Power Supply | Dual, Hot-plug, Redundant Power Supply | |
| PSU Output | High-efficiency, hot-plug, Platinum Efficient redundant power supplies | |
| Operating Systems Supported | Microsoft Windows Server 2016 | |
| | Novell SUSE Linux Enterprise Server | |
| | Red Hat Enterprise Linux | |
| Operating Systems | Server Should be supplied with | |
| Regulatory Certificate | FCC Class A, CE & ROHS Certification | |
| Remote Management | Should be provided along with server, should support Virtual media, Virtual Console | |
| Availability | ECC memory, hot-plug hard drives, hot-plug redundant cooling, hot-plug redundant power, tool less chassis, support for high | |

| | | |
|---|---|---|
| | availability clustering and virtualization, proactive systems management alerts | |
| Systems Management | Real-time out-of-band hardware performance monitoring & alerting should be provided along with server from server OEM | |
| | Agent-free monitoring, driver updates & configuration, power monitoring & capping, RAID management, external storage management, monitoring of FC, HBA & CNA & system health | |
| | Should support redundant fail safe hypervisior for Virtualization platform | |
| Server Security | Should have a cyber resilient architecture for a hardened server design for protection, detection & recovery from cyber attacks, Should protect against firmware which executes before the OS boots | |
| | Should provide effective protection, reliable detection & rapid recovery using: Silicon- based Hardware Root of Trust, Signed Firmware updates, System Erase, OS recovery, Secure alerting, Automatic BIOS recovery | |
| Warranty | 5 Years Onsite warranty by OEM | |

**Network Switches-**

**L2 managed Industrial grade Switch with 2x1 Gig SFP and 8x10/100 Mbps POE Ethernet Port Outdoor Door**

| **Feature** | **Description** | **Compliance(Y/N)** |
|---|---|---|
| Type | Fully Manageable Industrial Grade Layer-2 | |
| Application | Access Switches: Primarily providing network connectivity to IPCCTV cameras through Cat-6 cable and connectivity to | |

| | | |
|---|---|---|
| | Layer 3 Switch through Single mode Fibre optic cable. | |
| Power | The switches shall support dual power supply inputs. | |
| Port Density | 8 nos. 10/100/1000 copper PoE+ ports with 240w PoE budget | |
| | Min. 2 Nos. of 1G SFP ports | |
| System Capacity / Performance Features | Forwarding Rate: 14.88 Mpps or Better | |
| | Switching Fabric: 20Gbps or Better | As per the No. of Ports. |
| | Should be provided with minimum 512 MB RAM | |
| | 32 MB or more flash memory. | |
| | Minimum 8K MAC addresses | |
| | Should support IPv4 and IPv6 | |
| | 4K VLAN support | |
| | Private VLANs | |
| | IEEE 802.1Q Virtual LANs | |
| | IEEE 802.3ac VLAN tagging, PIM | |
| | Voice VLAN support | |
| | Access Control Lists (ACLs) | |
| Quality of Service | IEEE 802.1p | |
| | DSCP Prioritisation | |
| | 64 Kbps bandwidth limiting per port or per traffic class | |
| | Highly configurable traffic classification with low latency | |
| | Policy-based QoS based classifying traffic based on MAC , Port , VLAN , Protocol , L3 and L4 Parameters | |
| | Policy-based storm protection | |
| | Extensive remarking capabilities | |
| | Tail drop for queue congestion control | |
| | Strict priority, weighted round robin or mixed scheduling | |
| | | |

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|---|---|---|
| IPv6 Features | IPv4 and IPv6 Dual stack IPV6 routing support in hardware for maximum performance, | |
| Management Features | Console management port, USB interface for configuration backup | |
| | | |
| Standards to comply | IEEE 802.3, IEEE 802.3at, IEEE802.3u,IEEE 802.3AB,IEEE 802.3z,IEEE 802.3x,IEEE 802.3ad,IEEE 802.1d,IEEE 802.1p,IEEE 802.1Q,IEEE 802.1x, | |
| Operating temperature | -40°C to 75°C | |
| Certification | UL, cUL, CE/CB , IP30 Rating, | Essential for Industrial Grade Products. |

**LAYER -3 CORE SWICTH 24 PORT:-**

| **Parameter** | **Specifications** | **Compliance** |
|---|---|---|
| **Make** | | |
| **Model** | | |
| Port Density | 24x 1G Base-X Slots , 2x10G SFP+ Slots | |
| | Internal Redundant Power Supply Equipped | |
| Switching Capacity | Should support switching fabric of 128 Gbps or more | |
| Forwarding rate | Should support min forwarding rate of 95Mpps | |
| Hardware redundancy & Resiliency | Two or more Switches in stack should be capable to operate as one logical L3 Virtual switch with synchronisation of L3 & L2 (RIP, OSPF, BGP, PIM) protocols for higher availability .Switch should be supplied with required stacking cables | |
| Layer 2 Features | Support 802.1D, 802.1S, 802.1w, Rate limiting | |

| | | |
|---|---|---|
| | Support 802.1X Security standards | |
| | Support 802.1Q VLAN encapsulation, IGMP v1,v2 and v3 snooping, MLD snooping, UDLD | |
| | Support up to 4096 VLANs, STP, RSTP, MSTP | |
| | Support IGMP Snooping and IGMP Querying | |
| Layer 3 Features | Should support Static routing, RIP, OSPF, BGP, PIM for IPv4 and IPv6 | |
| VLAN | Should Support 802.1Q Tagged VLAN, port based VLANs and Private VLAN | |
| | Should Support IEEE 802.1v, VLAN stacking, Q-in-Q, | |
| Management | Switch needs to have a CLI, GUI, USB interface | |
| | Must have support SNMP V1, V2 and V3, RMON | |
| | Support SNMPv6, Telnetv6 and SSHv6, DHCPv6 relay, DHCPv6 client, NTPv6 client and server, | |
| | Support NTP, SNTP, SDN openflow v1.3 | |
| Security | Should support ACLs, VLAN ACL's | |
| | Support DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI), Support MAC address filtering and MAC address lock-down, | |
| | Support Tri-authentication: MAC-based, web-based and IEEE 802.1x, RSPAN | |
| Interoperability | For ease of integration all switches should be of same OEM | |
| Warranty | 5 years OEM warranty | |
| Environment | Operating Temperature- 0 to 45 C | |

**10 KVA Online UPS with 1 Hrs battery backup**

| Feature Description | Compliance (Y/N) |
|---|---|
| True On Line floor Mountable DSP based UPS with double conversion technology. | |
| UPS should have IGBT based rectifier. | |
| Temperature compensated battery charging feature should be built- in for prolonged battery life. | |
| INPUT | |
| | |
| VOLTAGE RANGE: 165-270 V AC, 1 phase | |
| FREQUENCY: 45-55Hz | |
| POWER FACTOR: 0.99 (With PF correction) | |
| CAPACITY: 10KVA | |
| OUTPUT | |
| VOLTAGE RANGE: Single phase 230V AC +/-1% | |
| HARMONIC DISTORTION : <3%(for Linear Load); <5%(Non-Linear Load) | |
| FREQUENCY : +/- 0.2 Hz | |
| POWER FACTOR : 0.8 | |
| CREST FACTOR : 3:1 | |
| EFFICIENCY AC - AC > 89% | |
| DISPLAY LCD | |
| BATTERY | |
| TYPE Sealed, lead acid, maintenance free (SMF) | |
| RATED VOLTAGE As per manufacturer standard | |
| BACKUP TIME 60 min; | |
| TRANSFER TIME - Zero for line mode to battery mode | |

**Armoured OFC Cable -6 Core**

| Feature | Description | Compliance(Y/N) |
|---|---|---|
| Type | Single mode | |
| Fiber Type | 6 core | |
| Core Diameter @ 1310nm | 9 + 0.6 μm | |

| | | |
|---|---|---|
| Construction | UV Stabilised Polyethylene (HDPE) | |
| Max. Bending Radius | 20 X Overall diameter | |
| Max. Tensile Strength-Short Term | 1500N | |
| Max. Crush Resistance-Short Term | 2000N/10 cm | |
| Attenuation at 1310 nm | 0.35 dB/km | |
| Outer Sheath | HDPE | |
| Fiber protection(Tubes) | Polybutylene Terephthalate (PBT) | |
| Operating Temperature range | -40°C -+70°C | |

**Outdoor Cat-6 A Cable**

| Feature/ descriptions | Compliance |
|---|---|
| Supply, Installation, Testing & Commissioning of CAT 6A U/FTP Cable which is specifically designed to support high speed data network applications such as 10-Gigabit Ethernet (10GBASE-T). Cable should have constructed of 4 screened pairs and a drain wire. This cable minimises alien crosstalk, provides excellent signal isolation and provides superior electromagnetic interference (EMI) protection.<br>Enhanced performance 4 pair U/FTP LS0H cable<br><br>Applications:<br>Category 6A U/FTP Cable is intended for high speed data applications up to 500MHz including:<br>IEEE 802.3bt (POE++)<br>IEEE 802.3 10GBASE-T 10Gb/s IEEE 802.3 1000BASE-T 1Gb/s<br>UL Listed<br>Electrical/Optical Characteristics:<br>Power: 96watt<br>Capacitance: 40 pF/m nom. @1 KHz. DC<br>Resistance: 72 Ω/Km max complies to ROHS | |

**Armoured Power cable-**

| Feature | Description | Compliance(Y/N) |
|---|---|---|
| Category | 3x 2.5 sqmm armoured Cable | |
| Material | Annealed Bare Electrolytic Grade, Copper conductor as per IS:8130/84, Multistrand conductor | |
| Insulation Material | Extruded PVC type B or Better as per IS 5831 | |
| Inner Sheath material | Extruded PVC, | |
| Armouring Material & Size | G.I Steel round wire as per IS 3975 | |
| Outer Sheath | Extruded PVC | |
| Insulation resistance | ≥ 1 M ohm per phase with respect to ground & between the phases | |
| Certification | As per applicable IS code | |

**GI Pole**

| Feature | Description | Compliance(Y/N) |
|---|---|---|
| Type | Seamless Cylindrical Pole | |
| Height | 6 meter or as per requirement | |
| Material | Mild Steel (MS) duly galvanized min 250 mm outer diameter, anti-climb in construction. | |
| Thickness | Min 6 mm | |
| Accessories | All necessary accessories for mounting | |
| | Pole design shall be final after approval of competent authority | |

**Junction box**

| Feature | Description | Compliance(Y/N) |
|---|---|---|
| Type | Pole/Wall mountable weather proof Junction Box | |
| Manageme nt | Grommet entries for Fiber, copper, and power cables | |
| Safety | Lockable door with latches and hex nut | |
| Size | Enough space in single unit to place Network Switch / media converter, PoE adapter, power cable & fibre termination | |

**Workstation for viewing with 19" screen**

| Features | Description | Compliance (Yes/No) |
|---|---|---|
| Processor | Intel processor Core™ i7/Xeon, 3 GHz or better | |
| RAM | The minimum RAM shall be 8 GB and should be able to ensure unobstructed video. | |
| Ethernet Port | Minimum 1 Numbers of Gigabit Ethernet Port | |
| HDD | Minimum Hard drive 1 TB or more SATA (7,200rpm), | |
| Graphics card | 2 GB or better graphics memory | |
| Operating System | Latest Windows Operating System. | |
| DVD R/W Drive | DVD R/W Drive | |
| USB interface | 4 USB interface ports. | |
| Keyboard and Mouse | Keyboard and Mouse | |
| Joystick | The Workstation shall have suitable port to connect joysticks from camera manufacturers for operation of the IPCCTV system, if required. | |

**VIDEO WALL**

| | | |
|---|---|---|
| Configuration | VIDEO WALL CUBES OF 50" DIAGONAL IN A 4 (C) X 2 (R) CONFIGURATION COMPLETE WITH BASE STAND | |
| Cube & Controller | Cube & controller should be from the same manufacturer | |
| Reputed Company | The OEM should be an established multinational in the field of video walls and should have installations around the world | |

| | | |
|---|---|---|
| OEM Capability | Only those OEM's would be considered who also manufacture the Projection/Optical engine as well apart from the whole cube. Companies claiming to be OEM's but not manufacturing their own Projection/Optical enignes shall not be considered | |
| Native Resolution | Full HD ( 1920x 1080 ) | |
| Light Source Type | Laser light source with Nichia Laser diodes | |
| | Individual cube should be equipped with multiple laser banks and each laser bank should have an array of diodes. Single or multiple diode failure should not impact image display on the screen | |
| Brightness of Projection engine | Minimum 2000 lumens | |
| Brightness of Cube | Minimum 700 nits and should be adjustable for lower or even higher brightness requirements | |
| Brightness Uniformity | $\geq$ 98 % | |
| Dynamic Contrast | 1000000:1 or more | |
| Dust Prevention | Should meet or exceed IP6X standard. Certificate to this effect to be furnished from 3rd party Laboratory | |
| Control | IP based control to be provided | |
| Remote | IR remote control should also be provided for quick access | |
| Screen to Screen Gap | $\leq$ 1 mm | |
| Screen Support | Screen should be minimum 3 layers with a Hard Backing to prevent bulging | |

| | | |
|---|---|---|
| Control BD Input terminals | Input: 1 x Digital DVI | |
| | Input: 1 x HDMI | |
| Cooling Inside Cube | By suitable method. Hazadrous liquids inside the cooling system are not acceptable | |
| Cube Depth | Total Cube depth including screen module should be less than 700 mm or lower | |
| Maintenance Access | Cube should be accessible from the rear side to save space | |
| Cube Size | Each cube should have a screen size of 1107 mm wide and 623 mm high. The cube size can have a tolerance of ± 5% in size nand depth less than 470 mm | |
| Cube control & Monitoring | Videowall should be equipped with a cube control & monitoring system | |
| | System should be based on Python- Django framework with web browser architecture | |
| | Should be able to control & monitor individual cube , multiple cubes and multiple video walls | |
| | Provide videowall status including Source , light source ,temperature, fan and power information | |
| | Should provide a virtual remote on the screen to control the videowall | |
| | Input sources can be scheduled in " daily", "periodically" or "sequentially" mode per user convenience | |
| | System should have a quick monitor area to access critical functions of the videowall | |
| | User should be able to add or delete critical functions from quick monitor area | |
| | Automatically launch alerts, warnings, error popup windows in case there is an error in the system | |
| | User should be able to define the error messages as informational, serious or warning messages | |
| | Automatically notify the error to the administrator or user through a pop up window and email | |

| | | |
|---|---|---|
| | Status log file should be downloadable in CSV format as per user convenience | |
| CONTROLLER | The Controller should be able to make all the 08 cubes behave as one logical area. It should be possible to display any or all the inputs on the video wall in any desired configuration. Should be possible to increase the no.of inputs if desired at a later stage | |
| Architecture | Should be based on Server architecture | |
| Operating System | Windows 7 or higher -64 bit | |
| RAM | 16GB or higher | |
| HDD | 500 GB or higher | |
| RAID | RAID should be provided | |
| Chip | Intel Xeon or better | |
| Power Supply | Dual Redundant Power Supply | |
| Outputs | 8 DP/DVI outputs to the cubes | |
| Inputs | 8 Universal Inputs, Dual LAN | |
| Chassis | 19" rack mount industrial chassis | |
| Unix/Linux Emulation | Should be possible to display images from Unix/Linux workstation | |
| Wall Management Software | Software to be provided to manage the layout on the display | |
| Wall management SW | | |
| Client & Server based Architecture | Should supports Multi client/Console control the Wall layouts | |
| Scaling and display | Software enable user to display, multiple sources up to any size and anywhere on the display wall. | |
| Controls | Software should support to control the Brightness, Contrast, Saturation, Hue, filtering, Crop and Rotate function as per user requirement | |
| RS232, TCP/IP | RS232 & TCP/IP support should be available for other interfaces | |

| | | |
|---|---|---|
| Remote Control | Wall can be control from Remote PC through LAN | |
| Auto Source Detection | Software should support for auto source detection | |
| Layout Management | Should support for Video, RGB, DVI, ,Internet Explorer, Desktop Application and Remote Desktop Monitoring Layouts | |
| Scenarios | Software should able to Save and Load desktop layouts from Local or remote machines | |
| Layout Scheduler | All the Layouts can be scheduled as per user convenience | |
| | Software should support auto launch of Layouts according to specified time event by user | |
| Launch Application | Software should able to Support | |
| Integration with touch Interface | system can able to work with 3rd party touch interfaces (Creston ,AMX) | |
| User friendly | Software should be user friendly | |
| Protocol | VNC | |
| Interface | LAN | |
| Resolution | At least 4k x 2k | |
| Scaling and display | Display of multiple sources up to any size, everywhere on the wall | |
| Console View | Software enable user to select following view | |
| | Primary Display | |
| | Secondary Display | |
| | Full Desktop | |
| | Selected region | |
| | Selected application | |
| KVM Support | Keyboard, Mouse Control | |

| | | |
|---|---|---|
| | Enable/Disable Keyboards and Mouse Controls | |
| Multi View | Supports multiple view of portions or regions of Desktop, Multiple Application Can view from single desktop simultaneously | |
| Short cut Keys | Support | |
| Control operator workstations | Software should able to Support | |
| Multiple concurrent client users | Software should able to Support | |

## BOQ (Bill of Quantity)

| Description of Item | Unit | Qty | Remark |
|---|---|---|---|
| Supply, installation & testing of Outdoor 1080p HD **PTZ Camera** | Nos | 17 | |
| Supply,istallation & testing of 5MP Outdoor IR IP **bullet camera** | Nos | 39 | |
| Supply,istallation & testing of 5MP Outdoor IR IP **Box camera** | Nos | 14 | |
| L2 managed Industrial grade Switch with 2x1 Gig SFP and 8x100/1000 Mbps POE Eth Port Outdoor Deployment | Nos | 20 | |
| Weather Proof Outdoor Box for Power ,OFC Termination and Network Switch | Nos | 20 | |
| 1 Gig SFP Transceiver Module | Nos | 40 | |
| Cat-6 STP Cable Box(305 Mtr.) | Nos | 10 | |
| Earthing for Rack | Nos | 20 | |
| 6 Core Armored SM OFC | Mtrs | 5000 | As per req |
| 8 Port fully loaded LIU | Nos | 20 | ARP |
| 3 Core 2.5 Sq mm # core Armored Power Cable | Mtrs | 5000 | ARP |
| Laying of Cat-6 in capping casing/ conduit | Mtrs | 2000 | ARP |
| 40 mm HDPE Pipe | Mtrs | 5000 | ARP |
| Pole for Camera | Nos | 30 | ARP |
| Digging and laying of OFC and Power Cable in HDPE Open Trench/HDD | Nos | 5000 | ARP |
| **Control Room** | | | |
| Storage capacity of min 128 TB | Nos | 1 | |
| Video Management software with 70 nos Camera licenses | Nos | 1 | |
| 2U Rack Servers with full redundancy | Nos | 2 | |
| Chassis Based Modular Core Switch 24 port as per specification | Nos | 2 | |
| 1 Gig SFP+ Transceiver Module | Nos | 48 | |
| Rack 24U for switches and severs | Nos | 2 | |
| 10 KVA Online UPS with 1hr Backup | Nos | 2 | |

| | | | |
|---|---|---|---|
| Viewer Work Station with Core i7 , 8 Gb Ram and 1 Tb HDD with 2 Gb Graphic Card | Nos | 7 | |
| Video walls with 50" LED in 4x2 matrix | Nos | 1 | |
| CCTV Joystick Controller | Nos | 7 | |
| LED display 60inches or better for supervision at CSO chamber | Nos | 1 | |

- Entire Project shall have five year of warranty with deployment of 1 site engineer inwarranty period (5 Years).
- Apart from aforesaid BOQ bidders are free to add any item/ accessories to achieve all the functionality of RFP.

**Financial Bid Format**

Bidder should quote ITI Margin taking into consideration all terms and conditions , Complying all clauses of EOI and BOQ mentioned below for the entire Scope of Work, Function and Technical Requirements mentioned in the EOI Document including cost of all accessories, active-passive cabling, installation, commissioning, warranty, support & Maintenance.

| **Description of Item** | **Unit** | **Qty** | **Remark** |
|---|---|---|---|
| Supply, installation & testing of Outdoor 1080p HD **PTZ Camera** | Nos | 17 | |
| Supply,istallation & testing of 5MP Outdoor IR IP **bullet camera** | Nos | 39 | |
| Supply,istallation & testing of 5MP Outdoor IR IP **Box camera** | Nos | 14 | |
| L2 managed Industrial grade Switch with 2x1 Gig SFP and 8x100/1000 Mbps POE Eth Port Outdoor Deployment | Nos | 20 | |
| Weather Proof Outdoor Box for Power ,OFC Termination and Network Switch | Nos | 20 | |
| 1 Gig SFP Transceiver Module | Nos | 40 | |
| Cat-6 STP Cable Box(305 Mtr.) | Nos | 10 | |
| Earthing for Rack | Nos | 20 | |
| 6 Core Armored SM OFC | Mtrs | 5000 | As per req |
| 8 Port fully loaded LIU | Nos | 20 | ARP |
| 3 Core 2.5 Sq mm # core Armored Power Cable | Mtrs | 5000 | ARP |
| Laying of Cat-6 in capping casing/ conduit | Mtrs | 2000 | ARP |
| 40 mm HDPE Pipe | Mtrs | 5000 | ARP |
| Pole for Camera | Nos | 30 | ARP |
| Digging and laying of OFC and Power Cable in HDPE Open Trench/HDD | Nos | 5000 | ARP |
| **Control Room** | | | |
| Storage capacity of min 128 TB | Nos | 1 | |
| Video Management software with 70 nos Camera licenses | Nos | 1 | |
| 2U Rack Servers with full redundancy | Nos | 2 | |
| Chassis Based Modular Core Switch 24 port as per specification | Nos | 2 | |
| 1 Gig SFP+ Transceiver Module | Nos | 48 | |
| Rack 24U for switches and severs | Nos | 2 | |
| 10 KVA Online UPS with 1hr Backup | Nos | 2 | |

| | | | |
|---|---|---|---|
| Viewer Work Station with Core i7 , 8 Gb Ram and 1 Tb HDD with 2 Gb Graphic Card | Nos | 7 | |
| Video walls with 50” LED in 4x2 matrix | Nos | 1 | |
| CCTV Joystick Controller | Nos | 7 | |
| LED display 60inches or better for supervision at CSO chamber | Nos | 1 | |
| Entire Project shall have five year of warranty with deployment of 1 site engineer in warranty period (5 Years). Apart from aforesaid BOQ bidders are free to add any item/ accessories to achieve overall functionality .<br><br>**AMC RATE AFTER WARRANTY PERIOD of 5 years** _____ | | | |

**MARGIN TO ITI IN PERCENTAGE ON CUSTOMER’S OFFERED RATES**_____

Authorized Signatory

Seal of the Company

Name & Designation
Date