# HIGH COURT OF MADHYA PRADESH, JABALPUR

**Ref No.: Reg(IT)(SA)/2020/1694**    **Dated: 05-12-2020**

## BID DOCUMENT – PART I

(Contains Sections I to VI-A; To be read in conjunction with PART II & III)

For

## For Supply, Installation, Commissioning & Maintenance of Integrated Video Surveillance System
## (MPHC-IVSS)
## &
## Courtroom Live Audio-visual Streaming System
## (MPHC-CLASS)

At

## Subordinate Courts in the State of Madhya Pradesh

**High Court of Madhya Pradesh, Jabalpur-482001**

**Telephone : 0761-2623358**

**Website :** www.mphc.gov.in

**e-mail :** regithcjpb@mp.gov.in **and** mphc@nic.in

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## Abbreviations

| | | | |
|---|---|---|---|
| AES | Advanced Encryption Standard | OLT | Optical Line Terminal |
| AGC | Automatic Gain Control | ONT | Optical Network Terminal |
| AMC | Annual Maintenance Cost | ONVIF | Open Network Video Interface Forum |
| ANPR | Automatic Number Plate Recognition System | OS | Operating System |
| AWG | American Wire Gauge | OSI | Open System Interconnect |
| BOQ | Bill Of Quantities | PAL | Phase Alternating Line |
| C4I | Command, Control, Communications, Computers, And Intelligence | PDAT | Pre-dispatch acceptance test |
| CLASS | Courtroom Live audio-visual Streaming System | PMC | Project Management Consultant |
| CoO | Country Of Origin | PO | Purchase Order |
| CPSE | Central Public Sector Enterprise | PoC | Proof Of Concept |
| DAS | Direct-Attached Storage | POE | Power Over Ethernet |
| EMD | Earnest Money Deposit | PON | Passive Optical Network |
| EMI | Electromagnetic Interference | PTR | Proven Track Record |
| FAT | Factory Acceptance Test | PTZ | Pan Tilt And Zoom |
| GPS | Global Positioning System | RAID | Redundant Array Of Independent Disks |
| HD | High Definition | RFID | Radio Frequency Identification |
| HDPE | High-Density Polyethylene | SAN | Storage-Area Network |
| HLC | Head Light Compensation | SAT | System Acceptance Test |
| IDE | Integrated Development Environment | SATA | Serial Advanced Technology Attachment |
| iSCSI | Internet Small Computer System Interface | SLA | Service-Level Agreement |
| IVSS | MPHC Integrated Video Surveillance System | SMF | Sealed Maintenance Free |
| ISO/IEC | International Organization For Standardization/ International Electrotechnical Commission | SMS | Short Messaging Service |
| IVA | Intelligent Video Analytics | SMTP | Simple Mail Transfer Protocol |
| JB | Junction Box | SoPs | Standard Operating Procedures |
| LAN | Local Area Network | SQL | Structured Query Language |
| MAF | Manufacturer's Authorization Form | SSL | Secure Sockets Layer |
| MP | Mega Pixel | TDS | Tax Deducted At Source |
| MTBF | Mean Time Between Failures | THDI | Total Harmonic Current Distortion |
| MTTR | Mean Time To Repair | TPI | Third Party Inspection |
| MPHC | High Court of Madhya Pradesh | UAT | User Acceptance Test |
| NAS | Network-Attached Storage | UPS | Uninterruptible Power Supply |
| NIC | Network Interface Card | UTM | Unified Threat Management |
| NIT | Notice Inviting Tender | UTP | Unshielded Twisted Pair |
| NTSC | National Television Systems Committee | VAS | Video Analytics Software |
| NVR | Network Video Recorder | VHF | Very High Frequency |
| ODD | Optical Disk Drive | VMS | Visitor Management System |
| OEM | Original Equipment Manufacturer | WDR | Wide Dynamic Range |
| OFC | Optical Fiber Cable | | |

Please note that the terms bidder / vendor / system integrator / contractor are used interchangeably to signify the company that is bidding for this project.

Wherever "MPHC" is used it signifies the High Court of Madhya Pradesh, Jabalpur.

## 1. SECTION I – Notice Inviting Tender

Notice Inviting Tender (Ref No.: Reg(IT)(SA)/2020/1694 Dated: 05-Dec-2020)

The Registrar General, on behalf of High Court of Madhya Pradesh, Jabalpur invites sealed tenders in two cover system from experienced and reputed firms/organizations/ Original Equipment Manufacturers and dealers for the *"Supply, installation, commissioning, operation, maintenance & training of MPHC Integrated Video Surveillance System (IVSS) to be implemented at 48 No. of District & Sessions Courts & 160 No. of Civil Courts under the High Court of Madhya Pradesh".*

| Sl. No. | Estimate Project Cost | EMD | Cost of Tender Document **(online)** | Last date and time of online submission of proposal **(mandatory).** | Last date and time of submission of hardcopy of proposal **(mandatory).** | Date and time of opening of the technical Bids | Date and time of opening of the financial Bids at High Court of Madhya Pradesh | Time for Completion of the Work |
|---|---|---|---|---|---|---|---|---|
| 1. | 126 crores **(capex only)** | Rs. 1.26 Crore | Rs. 10,000/- | 27th January, 2021 before 06:00 P.M. | 28th January, 2021 before 05:00 P.M. | 29th January, 2021 at 11:00 A.M. | Date and time of opening of financial bids will be intimated to qualified bidders via e-mail / letter / telephone. | 24 Months |

*2    Tender documents may be viewed or purchased online by interested and eligible bidders from the website www.mptenders.gov.in after paying Tender fee of Rs.10,000/- and Processing Fee, as applicable . The tender document is also available in website www.mphc.gov.in for reference.*

*3    Bidders can submit its tender online at www.mptenders.gov.in on or before the key dates given above. The Physical copy of the Technical Bid (submission of hardcopy of the technical bid is mandatory) along with original EMD should also be submitted at the address below latest by **06:00 P.M. on 28th January, 2021.***

4    All further notifications/amendments, if any shall be posted on *www.mptenders.gov.in* and *www.mphc.gov.in*only. No separate communication shall be made with individual Bidders.

*5*    The financial bids are to be submitted online and no hard copy to be submitted along with the bid.

All other terms and conditions for submission of tender are contained in this document. If the date of submitting/opening of the Bid is declared as holiday then the bids shall be submitted / opened on next working day.

The Registrar General, High Court of Madhya Pradesh, Jabalpur (M.P.) reserves the right to accept or reject any or all bids without assigning any reason thereof.
Address for communication:
Registrar General,
High Court of Madhya Pradesh
**Jabalpur (M.P.) ,** Email: regithcjpb@mp.gov.in & mphc@nic.in , **Landline: 0761-2623358**

## 1.1. Terms and Conditions for e-Tendering:-

- For participation in e-tendering module, it is mandatory for prospective bidders to get registration on website **https://mptenders.gov.in/**. Therefore, it is advised to all prospective bidders to get registration by making on line registration fees payment at the earliest.
- Tender documents can be purchased *only online* on payment of tender fees and downloaded from website **https://mptenders.gov.in/** by making online payment for the tender document fee.
- Service and gateway charges shall be borne by the bidders.
- Since the bidders are required to sign their bids online using class – III Digital Signature Certificate, they are advised to obtain the same at the earliest.
- For further information regarding issue of Digital Signature Certificate, the bidders are requested to visit website **https://mptenders.gov.in/**. Please note that it may take upto 7 to 10 working days for issue of Digital Signature Certificate. Department will not be responsible for delay in issue of Digital Signature Certificate.
- If bidder is going first time for e-tendering, then it is obligatory on the part of bidder to fulfill all formalities such as registration, obtaining Digital Signature Certificate etc. well in advance.
- Bidders are requested to visit our e-tendering website regularly for any clarification and / or due date extension.
- Bidder must positively complete online e-tendering procedure at **https://mptenders.gov.in/**
- Department shall not be responsible in any way for delay /difficulties /inaccessibility of the downloading facility from the website for any reason whatever.
- For any type of clarification bidders can / visit **https://mptenders.gov.in/** . In case of any assistance please call Help desk numbers 0120-4200462, 0120-4001002. Support timings: Monday to Saturday from 10:00 AM to 7:00 PM.
- Interested bidders may attend the free training programme in Bhopal at their own cost. For further query please contact help desk.
- The bidder who so ever is submitting the tender by his Digital Signature Certificate shall invariably upload the scanned copy of the authority letter as well as submit the copy of same in physical form with the offer of particular tender.
- The firms registered under NSIC and MSME (The vendor to be registered with both NSIC and MSME for claiming exemption of tender fees) are exempted for submission of tender fees only. But they have to submit valid EMD as per the tender requirement.

## 2.  SECTION II - Instructions to Bidders

### 2.1.  Introduction

In line with MPHC Administrations' objective of upgrading the security surveillance infrastructure under its subordinate courts, MPHC has decided to implement an Integrated Video Surveillance System (IVSS) at 48 No. of District & Sessions Courts & 160 No. of Civil Courts under the High Court of Madhya Pradesh. The IVSS implementation is envisioned to comprise of Video Management System, Access Control System, Visitor Screening System & Video Monitoring System, integration of various technologies, Local & Wide Area Network, Facility Management Services and Operation & Maintenance of the System for a period of 5 years.

This tender document is intended for obtaining a techno commercial proposal from reputed organizations (hereinafter called 'Bidders') to supply, design, install, test, commission and support the MPHC Integrated Video Surveillance System at 208 locations in the state of Madhya Pradesh.

The MPHC Integrated Video Surveillance System comprises implementation of Video Management System, Access Control System, Visitor Screening System & Video Monitoring System, integration of various technologies, Local & Wide Area Network, Facility Management Services and Operation & Maintenance of the System for a period of 5 years, as per Terms, Conditions and Specifications mentioned in the tender document. Please be advised that the rates, terms & conditions finalized against this tender shall be binding till completion of the entire scope to our full satisfaction. All bidders are required to quote for the entire solution encompassing all the system components. Incomplete bids will be rejected. The Bidder shall have the single point responsibility for the complete solution including supply, design, installation, integration testing, & commissioning, final documentation & handover.

### 2.2.  BID DOCUMENT

The process and procedures of bidding, the materials to be supplied and the various terms and conditions of this tender are provided in the Bid Document.

The Bid Documents include**:-**

**PART I**

> Section I    Notice Inviting Tender
>
> Section II    Instructions to Bidders
>
> Section III   General Conditions of Contract
>
> Section IV   Special Conditions of Contract
>
> Section V    Scope of work
>
> Section VI-A Technical Specifications

**PART II**

> Section VI-B Bill of Material

**PART III**

> Section VII PART II - Formats for Submission of Proposals
>
> Section VIII - Certificates

The Bidder should carefully read all the instructions, terms and conditions, specifications and various forms that are provided in the Bid Document. The tender may be rejected if any or all of the information asked for in this document are not furnished along with the tender or if the tender is not responsive with the Bid Document.

## 2.3. AMENDMENT OF BID DOCUMENTS

At any time, prior to the date of submission of Bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify bid documents by amendments.

## 2.4. COST OF BIDDING

The Bidder has to bear all the costs associated with the preparation and submission of the bid. Purchaser will, in no case, be responsible or liable for any of the costs, regardless of the conduct or outcome of the bidding process.

## 2.5. APPLICATION FEE (AF) AND EARNEST MONEY DEPOSIT (EMD)

   a. The proposal should be submitted along with an application fee of **Rs.10,000/- (Rupees ten thousand only), to be paid online.** Earnest Money Deposit (EMD) of **Rs. 1,26,00,000/- (Rupees One crore twenty six lakh only)**in the form of a unconditional Bank Guarantee or Fixed Deposit Receipt, valid for a period of at least 6-months from the date of submission of the bid,  drawn in favour of "**Registrar General, High Court of Madhya Pradesh, Jabalpur**" of any Nationalized / Scheduled bank payable at Jabalpur should be submitted in hard copy in sealed envelop before 05:00 P.M. *The Bid submitted without EMD and/or the application fee shall be summarily rejected.*
   b. The EMD of the successful Bidder will be returned when the Bidder has signed the Contract Agreement with the purchaser and has furnished the required Performance Guarantee.

   The EMD will be forfeited:

   a. If a Bidder withdraws its bid during the period of bid validity. **or**
   b. If the Bidder fails to accept the Purchaser's corrections of arithmetic errors in the Bidder's bid (if any), **or**
   c. If the Successful Bidder fails to sign the contract agreement with the purchaser, **or**
   d. If the Successful Bidder fails to furnish the Performance Guarantee within the stipulated time.

## 2.6. BID PRICES

The Bidder shall give the pricing as individual and as a total composite price inclusive of all levies & taxes i.e. GST, packing, forwarding, freight and insurance etc.

## 2.7. DISCOUNTS

The Bidders are informed that **discount**, if any, should be included in the total price.

## 2.8. BID VALIDITY

The bids shall remain valid for a period of **180 days** from the last date of submission.

## 2.9. ONLY ONE BID PER PARTY

Each bidder is permitted to submit ONLY ONE BID irrespective of whether he is the sole bidder, or the Leader or Member of a duly formed JV or Consortium. In case it is found that any party has submitted more than one bid for the subject work(s) in any of the above capacities, all bids so submitted may be summarily rejected and the EMPLOYER shall not entertain any further request/ correspondence in this matter.

### 2.10. SUBMISSION OF PROPOSALS

a.  All proposals will have to be submitted in HARD BOUND also (Hard bound implies such binding between two covers through stitching or otherwise whereby it may not be possible to replace any paper without disturbing the document) form with all pages sequentially numbered either at the top or at the bottom right corner of each page. It should also have an index giving page wise information of above documents. Incomplete proposal or those received without hard bound or those without proper index shall summarily be rejected. All the Pages and Papers are to be sealed and signed.

b.  Please note that, in case of conflict in bidder's online & hard copy submissions, the proposal in hard copy submission shall be considered for technical evaluation.

c.  The Bidders are required to fill up and submit the documents with their proposals.

d.  The proposals shall be submitted in two parts, viz.,

e.  Envelope-1: Containing application fee. The envelope should be super-scribed as "Envelope 1 – EMD & Application FEE" at the top left corner.

f.  Envelope-2: Pre-qualification Proposal and Technical Proposal super scribed as "Envelope 2 – Pre-qualification and Technical Proposal" (Containing duly signed PRE-QUALIFICATION PROPOSAL SUBMISSION FORM as prescribed in the tender, Other required Prequalification documents, clause-by-clause compliance to the technical specifications of the equipment as prescribed in Section-VI, all technical literature, brochures, any other related material etc.). In the technical proposal, there should not be any indication about the prices (printed or otherwise) of any of the products offered.

g.  All the sealed envelopes should again be placed in a sealed cover superscribed as "Technical Tender for Supply, Installation, Commissioning and Maintenance Integrated Video Surveillance System for Subordinate Courts of High Court of Madhya Pradesh, Jabalpur" from: M/s ---------------------------" "NOT TO BE OPENED BEFORE **11.00 A.M on 29<sup>th</sup> January 2021** which will be received and time mentioned in the Schedule of Events (Section-II – 2.16) of this document. The Bid is to be submitted to the "Registrar General, High Court of Madhya Pradesh, Jabalpur".

h.  The Bids and all correspondence and documents relating to the bids, shall be written in the English language.

### 2.11. LATE BIDS

Any bid received by the Purchaser after the time and date for receipt of bids prescribed by the Purchaser in the tender may be rejected and returned unopened to the Bidder.

### 2.12. MODIFICATION AND WITHDRAWAL OF BIDS

1.  The Bidder is allowed to modify or withdraw its submitted bid any time prior to the last date prescribed for receipt of bids, by giving a written notice to the Purchaser.
2.  Subsequent to the last date for receipt of bids, no modification/ withdrawal of bids shall be allowed.
3.  The Bidders cannot withdraw the bid in the interval between the last date for receipt of bids and the expiry of the bid validity period specified in the Bid. Such withdrawal may result in the forfeiture of its EMD from the Bidder.

### 2.13. LOCAL CONDITIONS

a.  Each Bidder is expected to fully get acquainted with the local conditions and factors, which would have any effect on the performance of the contract and /or the cost.

b.  The Bidder is expected to know all conditions and factors, which may have any effect on the execution of the contract after issue of Letter of Award as described in the

bidding documents. The Purchaser shall not entertain any request for clarification from the Bidder regarding such local conditions.

## 2.14. Unfair Practices

a. If, during any stage of the project, it comes to the notice of MPHC that the companies have resorted to collusion, by way of the following, the contract shall be terminated & an appropriate action would be initiated.

b. The L1 bidder, after getting the contract, has outsourced or sub-contracted any part of the contract to any of its competing bidders.

c. The L1 bidder, after getting the contract, has sourced any component or service from any of its competing bidders.

d. The L1 bidder has done any fraudulent act or practice, or used substandard components or changed the makes of the components during supply/installation without the permission of MPHC.

e. Please note that outsourcing or subletting of the contract under the tender shall not be allowed & only the companies having capability to and intending to execute the contract themselves should participate in the tender.

f. Unfair snooping by certain countries

g. Any equipment which is manufactured in a country which currently has a land border dispute with India, or where conditions are such that supply chains & support during the project or product lifecycle are likely to be affected (to be solely determined by MPHC), shall not be acceptable, please note.

h. The quoted equipment should neither support any interconnection / communication protocol, (such as the GB/T 28181 protocol adhered to by the equipment manufactured in China), that requires sharing of information or data with any foreign government or agency, nor should the quoted equipment be manufactured in a country that mandates such a protocol.

i. If it is found at any stage of the project lifecycle (even after completion of the CAMC period) that the supplied equipment support any such protocol or standard or are manufactured in the country that mandates such a protocol, the vendor will have to replace the equipment without any financial cost to MPHC. MPHC also reserves the right to replace such equipment & recover the cost from the vendor. Bidders are, therefore, advised to get themselves completely satisfied about the data security & reliability of components required for their quoted solution.

j. The OEMs shall be required to provide a declaration in this regard confirming compliance to all the above.

## 2.15. Termination based on funding

The contract resulting from this tender will be subject to availability of funds with the High Court. In the event of paucity of such funds, the High Court of Madhya Pradesh reserves the right to terminate or suspend the contract for an agreed period of time without any penal charges.

## 2.16. LSTK Nature of Work

The nature of work under this tender shall be LSTK (Lumpsum Turnkey). The court wise indicative bill of quantities is provided in the Tender Document. However, bidders are advised to make themselves acquainted with the site requirements & may undertake a sample site survey for arriving at their own estimations for cabling & other project requirements. The quantities mentioned for system network, storage & servers are indicative & bidders are advised to consider them as lumpsum & quote for the actual quantities required for their respective proposed solution. For all other items, the quantities mentioned shall be considered as fixed.

## 2.17. CONTACTING THE PURCHASER

Any effort by a Bidder influencing the Purchaser's bid evaluation, bid comparison or contract award decisions may result in the rejection of the bid.

During and after the tendering process, the bidder, or any representative of the bidder, shall not contact, or attempt to contact, any of the officials of MPHC, directly or indirectly, apart from email-based communication, on the email id provided in the tender document, that may be required for seeking technical clarifications in the tender. Any attempt to do so may result in the disqualification of the bidder from the tendering process, at the sole discretion of MPHC.

## 2.18. ELIGIBILITY/ PRE-QUALIFICATION CRITERIA

| Sr. No. | Condition | Documents Required |
|---|---|---|
| 1. | The bidder should be in the business of implementing electronic security systems / solutions for at least seven years as on 31st December, 2020. | Purchase orders / completion Certificates/performance Certificates with details of electronic security systems / solutions. |
| 2. | The average annual turnover of the firm should be at **least Rs. 126 Crore** during the last three consecutive financial years. (i.e. 2019-20, 2018-19 2017-2018). | Audited balance sheets and profit and loss accounts shall be submitted for the corresponding three years duly certified by statutory auditor. |
| 3. | The Net Worth of the bidder should be positive during the last financial year ending 31st March 2020. | Audited balance sheets and profit and loss accounts shall be submitted for the corresponding year. |
| 4. | The bidder shall have experience in successfully implementing at least<br><br>**One (1)** completed similar work of the value of at least **Rs. 100.8crores**<br><br>**OR**<br><br>**Two (2)** completed similar works of at least **Rs. 63 crores**<br><br>**OR**<br><br>**Three (3)** completed similar works of at least **Rs. 50.4 crores**<br><br>"Similar work" is defined as the supply, installation and commissioning of an Integrated Video Surveillance System or Wide Area Networking System, carried **out within seven years** from the last day of the month previous to the one in which tender is invited, through a single work order. | The bidder shall furnish purchase orders & work completion certificates with all details clearly mentioned |
| 5. | The bidder should have experience of executing at least one (1) project for the implementation of Video Surveillance System of value more than Rs. 50.4 Crore during the last 3 years from the date of publication of the tender. | The bidder shall furnish purchase orders & work completion certificates with all details clearly mentioned |

| Sr. No. | Condition | Documents Required |
|---|---|---|
| 6. | The bidder should not be under a holiday list or black list for corrupt and fraudulent practices issued by any state/central government department or undertaking, within India. | A declaration to this effect shall be submitted by the bidder, duly certified by an auditor. |
| 7. | The bidder should have at least one service office in Madhya Pradesh OR should open one within 30 days of issue of work Order by MPHC.. | The details for administrative & service infrastructure must be enclosed, as a part of a declaration duly certified by an auditor. Valid GST registrations for the respective offices must be submitted, along with the details of the project & support staff. OR A declaration that the bidder shall open office within 30 days of issue of work order. |

Note:-

1. Relevant documentary proofs such as copy of work orders, completion certificates, turnover statement, IT returns, details of jobs executed by the bidder, declarations etc., in support of all the eligibility criteria mentioned above shall be enclosed with the technical bid as proof pertaining to above, failing which the bid will be summarily rejected.
2. All the documents in support of the eligibility criteria submitted by the bidders should be self certified by the bidder or by an independent auditor.
3. MPHC reserves the right to verify the authenticity of the prequalification credentials submitted by the bidder.
4. In case of experience shown from private entities, respective TDS certificates shall be submitted.
5. In case the bidder is an Indian arm (subsidiary, branch office or affiliate) of a foreign bidder, and is not in a position to fulfill the eligibility criteria of its own, then the foreign company shall have to fulfill each eligibility criteria. The contract will be entered into with the Indian arm only and in such case, a proper back to back continuing (parent company) guarantee shall be provided by the foreign company clearly stating that in case of any failure of any supply or performance of the equipment, machinery, material or plant or completion of the work in all respects and as per the warranties/ guarantees as may be required by Owner.
6. **Consortium of upto two companies can bid for the project. However, both the consortium members should meet the pre-qualification criteria.**

## 2.19.  Proven Track Record (PTR)

The OEMs participating in the bid along with the bidders shall possess the following proven track records. Documents to the effect will have to be submitted along with the bidders' technical proposals.

### 2.19.1 Camera OEM

1. The camera OEM shall have supplied & installed a minimum of 2000 IP cameras in a single project in India since the last three years ending last day of the month previous to the one in which tender is invited.
2. The camera OEM should have supplied cameras in Government Projects such as places of high security such as seaports, airports, defense infrastructure or city surveillance projects. A declaration to this effect shall be provided by the camera OEM.
3. The camera OEM should be operating in India for the last three years & should have an installation base of more than 10000 cameras in India.
4. The camera OEM shall have an office, spares depot (or a distribution setup) & technical service support in India.

5. The camera OEM shall have a direct emergency response team to attend any emergency conditions (like device malfunction or for changes in device functionalities or for firmware upgrade & troubleshooting)

### 2.19.2 C4i& VMS OEM

1. The Security Management System (C4i/ PSIM software)OEM should have installed the solution in at least 3 Government/Private Projects in India in the last three years ending last day of month previous to the one in which tender is invited. A declaration to this effect shall be produced clearly stating the make and model number/s of the solution and the duration of the installation.
2. The Security Management System OEM should have installed the solution in at least one multi-site (at least 200 state or nation-wide locations) integrated project in India/globally.
3. The OEM shall have an office & technical service support in India, with at least one software engineer on its payroll in India.
4. The OEM shall have a direct emergency response team to attend any emergency conditions (like software malfunction or for changes in device functionalities or for firmware/software upgrades, installation with integration of new camera makes & troubleshooting any critical issues)
5. VMS should be a part of Global Top 5 VMS as per the latest IHS Report OR the VMS OEM should have at least one successful installation with over 9000 Cameras & 300 video servers in a single application server in High Availability mode in Government/Private customer.

### 2.19.3 IT Hardware OEM

- All Servers, Storage Systems, Workstations & other IT hardware proposed should be from OEMs who are amongst the top 5 for World-wide Market share in terms of Revenue as per Gartner / IDC latest published quarterly report, prior to the date of tender publication.

### 2.19.4 Networking Equipment OEM

- All networking switches proposed should be from OEMs who are amongst the top 5 for World-wide Market share in terms of Revenue as per IDC / Similar organization's latest published quarterly report / presence in the latest Magic Quadrant by Gartner, published prior to the date of the tender publication. For Industrial Grade Switches - From any of Top 10 OEM from Latest IMS/ HIS / Gartner World Report, published prior to the date of the tender publication.

### 2.19.5 FRS OEM

The FRS OEM should have supplied at least 500 no. of devices in India, through a single order, during last 3 years from the date of publication of the tender.

### 2.20. SCHEDULE OF EVENTS:-

The tentative dates for the schedule of key events of this tender are given as under:

| Sl. No. | Events | Proposed Schedule / dates |
|---|---|---|
| 1. | Date of Publication in the website of the High Court and Government e-Procurement Portal. | 5th December, 2020 |
| 2. | Date of Pre-Bid meeting through video conferencing. | Date of online pre-bid meeting (through VC on 18th December, 2020 at 11:00 A.M.). Not more than 02 representatives of the company to attend the meeting. Bidders to submit their pre-bid query through e-mail on regithcjbp@mp.gov.in with a copy to mphc@nic.in by 17th December, 2020 without fail. For VC link please mail on regithcjbp@mp.gov.in and contact Shri Ujjwal Wagh on his mobile number 9303816575. |
| 3. | Last Date for Submission of online Pre-bid Queries (*after pre-bid meeting*) | 24th December, 2020. |
| 4. | Last date and time of online submission of proposal (mandatory). | 27th January, 2021 before 06:00 P.M. |

| 5. | Last date and time of submission of hardcopy of proposal (mandatory). | 28th January, 2021 before 05:00 P.M. |
|---|---|---|
| 6. | Date and time of opening of the technical Bids | 29th January, 2021 at 11:00 A.M. |
| 7. | Date and time of opening of the online financial Bids at High Court of Madhya Pradesh, Jabalpur | Date and time of opening of online financial bids will be intimated to qualified bidders via e-mail / letter / telephone. |

**Note:-** In light of the global COVID-19 pandemic & various Govt. guidelines in that regard, it is decided that pre-bid meeting should be held via VC. Two representatives per company shall be allowed to participate in the meeting upon receiving such request from the company's official email ID. Prospective bidders shall also be provided an opportunity to send their pre-bid queries on email till the deadline for receiving online queries.

*__The financial bids are to be submitted only online and no hard copy of financial sheet to be submitted along with the bid.__*

## 2.21. OPENING OF PROPOSAL

The Evaluation Committee or its authorized representative will open the tenders.

## 2.22. EVALUATION

a. The Purchaser reserves the right to modify the Evaluation Process at any time during the Tender Process, without assigning any reason, whatsoever, and without any requirement of intimating the Bidders of any such change.

b. Any time during the process of evaluation, the Purchaser may seek for clarifications from any or all Bidders.

c. **Phase-1: EMD:** First, the envelope containing Earnest Money Deposit will be opened and if both are found furnished by the Bidders in the prescribed manner, then the second envelope containing Pre-Qualification & Technical Proposal documents shall be opened. At any stage during the evaluation, if the EMD is found invalid, the respective Bidder's bid will be summarily rejected.

d. **Phase-2: Pre-Qualification and Technical Proposal Evaluation:** The Bidder shall have to fulfill all the Pre-qualification Criteria. These documents will be scrutinized along with the Technical Proposal in this phase of evaluation. Those bidders who do not fulfill the terms and conditions of Pre-qualification Criteria as specified in this tender or whose Technical Proposal is non-responsive will not be eligible for further communication. Technical Proposals of the Bidders would be evaluated for the clause-by-clause compliance of the technical specifications as mentioned in the Bid document. Evaluation of Prequalification and Technical Proposal by Registrar General, High Court of Madhya Pradesh shall not be questioned by any of the Bidders. The Purchaser reserves the right to ask for a technical elaboration/clarification in the form of a technical presentation from the Bidder on the already submitted Technical Proposal at any point of time before opening of the Commercial Proposal. The proposals shall be opened in presence of their representatives who choose to attend.

e. The successful bidder may be required to demonstrate the proposed solution by carrying out a Proof of Concept (POC) at Jabalpur. The purpose/objective of the POC shall be to determine that the solution proposed by the bidder meets the overall functional & technical requirement of the project. Please note that a successful PoC is a pre-requisite for technical qualification. The PoC will be conducted with the exact same set of equipment / software / makes proposed by the vendor and will be based on functional capabilities of the vanilla version of the software proposed. Please refer Part III–Annexure for the PoC criteria that will have to be demonstrated as a minimum.

f. **Phase 3: Commercial Evaluation:** The Commercial Proposal Evaluation will be based on the "Total Cost", which would be the total costs including all taxes, duties and levies for the supply, installation, commissioning, system integration of MPHC-IVSS& MPHC-CLASS and 4-year post-warranty AMC (maintenance) & FM cost. The bid shall **be treated as a complete package.**

## 2.23. DECIDING AWARD OF CONTRACT

a. The Purchaser reserves the right to ask for a technical elaboration/ clarification in the form of a technical presentation from the Bidder on the already submitted Technical Proposal at any point of time after opening the proposal. However, such clarifications shall be limited to elaboration/ additional information & should not be construed by the bidders as an opportunity to submit any of the mandatory documents, which should have been submitted as a part of the technical proposal. The Bidder has to present the required information to the Registrar General, High Court of Madhya Pradesh or its appointed representative on the date asked for, at no cost to the Purchaser.

b. It is the responsibility of the bidders to provide all the information & submit all the documents in support of its prequalification & technical eligibility claims. MPHC reserves the right to complete the evaluation of the proposals based on the information made available to it in the bidder's technical proposal.

c. Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the Bidder does not accept the correction of the errors, its bid will be rejected. If there is a discrepancy between words and figures, the amount mentioned in words will prevail.

d. The Purchaser will notify the Successful Bidder on its intention to award the work through "Letter of Award" mentioning the total purchase Value. The timeline for delivery of products and services will start from the date of issue of Letter of Award.

e. The Purchaser will subsequently send the Successful Bidder the Form of Contract Agreement, incorporating all agreements between the parties.

f. As soon as practically possible, following receipt of the Form of Contract Agreement, the successful Bidder shall sign and date the Form of Contract Agreement and return it to the Purchaser. This is deemed as the "Contract" or "Contract Agreement" defined elsewhere in this tender document.

## 2.24. GENERAL INSTRUCTIONS TO THE BIDDERS

a. The cost of preparing a proposal, cost involved for the technical presentation and of visits to the High Court of Madhya Pradesh is not reimbursable.

b. All cutting, overwriting in the proposal should be authenticated by the initials of the authorized signatory. In case of any calculation error the unit rates would prevail. The amount will also have to be written in words.

c. Successful bidder must reconfirm/ warrant the locations of its establishment in Madhya Pradesh for ensuring post-installation services and support.

d. Canvassing in any form will lead to disqualification of the bid.

## 2.25. CONFIDENTIALITY

a. The Bidder shall keep confidential any information related to this tender with the same degree of care as it would treat its own confidential information. The Bidders shall note that the confidential information will be used only for the purposes of this tender and shall not be disclosed to any third party for any reason whatsoever.

b. As used herein, the term "Confidential Information" means any written information, including without intimation, information created by or for the other party, which relates to internal controls, computer or data processing programs, algorithms, electronic data processing applications, routines, subroutines, techniques or systems, or information concerning the business or financial affairs and methods of operation or proposed methods of operation, accounts, transactions, proposed transactions or security procedures of either party or any of its affiliates, or any

client of either party, except such information which is in the public domain at the time of its disclosure or thereafter enters the public domain other than as a result of a breach of duty on the part of the party receiving such information. It is the express intent of the parties that all the business process and methods used by the Bidder in rendering the services hereunder are the Confidential Information of the Bidder.

c.  At all times during the performance of the Services, the Bidder shall abide by all applicable High Court of Madhya Pradesh security rules, policies, standards, guidelines and procedures. The Bidder should note that before any of its employees or assignees is given access to the Confidential Information, each such employee and assignees shall agree to be bound by the term of this tender and such rules, policies, standards, guidelines and procedures by its employees or agents.

d.  The Bidder should not disclose to any other party and keep confidential the terms and conditions of this tender, any amendment hereof, and any Attachment or Annexure hereof.

e.  The obligations of confidentiality under this section shall survive rejection/termination/expiry of the contract for a period of five years.

# 3. SECTION III - GENERAL CONDITIONS OF THE CONTRACT (GCC)

## 3.1. SPECIFICATIONS

The Products/equipment supplied under this contract shall conform to the Technical Specifications given in this tender under Section VI.

## 3.2. PERFORMANCE GUARANTEE

a. The Successful Bidder will be required to furnish performance guarantee in the form of unconditional Bank Guarantee issued by a Nationalized / Scheduled Bank in India of amount equivalent to 5% of the Capital Value valid for a period of **36 months** within 15 days from the date of contract.

b. **Bank Guarantee:** The Bank Guarantee issued by following banks would be accepted. SBI or its subsidiaries, any Indian Nationalized Bank/Scheduled Bank, Export Import Bank of India**,** a foreign bank (issued by a branch outside India) with counter guarantee from SBI or its subsidiaries or any Indian Nationalized Bank, and any scheduled commercial bank approved by RBI having a net worth of not less than Rs.500 Crores as per the latest annual report of the bank.

c. The Performance Guarantee shall be as per the format approved by the Registrar General, High Court of M.P., Jabalpur.

d. The Performance Guarantee shall be payable to the Purchaser as a compensation for any loss resulting from the Bidder's failure to complete its obligations under the contract. The Purchaser will discharge the Performance Guarantee after completion of the Bidder's performance obligations, including any warranty obligations, under the contract.

e. Additional performance security for the amount equivalent to the difference between the estimated amount minus the quoted amount shall be obtained from the successful bidder, when the bid amount is less than the estimated cost put to tender, please note.

## 3.3. DELIVERY OF MATERIALS AND RELATED DOCUMENTATION

a. Delivery, Installation and Commissioning of the materials /items along with the related documents as per Bill of Materials Section and Technical Specification Section are the responsibility of the Bidder.

b. The Successful Bidder shall ensure that all Products/equipment are supplied within the Implementation schedule mentioned in the tender document.

c. The Successful Bidder shall submit all the Software Kits (CDs), License Papers, Warranty Papers and any other relevant documentation related to the supplied products to the Purchaser along with the supplied products/equipment/software.

## 3.4. WARRANTY

a. The Bidder is required to provide on-site comprehensive warranty valid for the period of 12 months for all supplied products/ equipment / software.

b. The Bidder shall warrant that all the equipment supplied under the contract is newly manufactured and shall have no defect arising out of design, materials or workmanship or from any act or omission of the Bidder that may develop under normal use of the supplied equipment in the conditions prevailing across the country.

c. The Bidder shall warrant that the services provided under the contract shall be as per the Warranty & AMC Service Level Requirements given under Section-V. During

the warranty & AMC period, the Bidder shall perform all the functions as enunciated in Section-V at no extra cost to the Purchaser. All the penalty clauses shall be applicable during the period of warranty & AMC in case of failure on part of Bidder. The terms and conditions for Warranty & AMC are given in Section-V.

d.  The Bidder shall quote for comprehensive on-site post-warranty AMC for Four years, which shall become effective after the completion of warranty period. The cost, including visits of the engineers, etc, shall be quoted as part of the individual equipment prices. No separate charges shall be paid for visit of engineers or attending to faults and repairs or supply of spare parts.

e.  The Registrar General, High Court of Madhya Pradesh shall promptly notify the Bidder about any claims arising under this warranty & AMC. Upon receipt of such notice, the Bidder shall repair/replace/reconfigure/re-provision the defective equipment or service. Replacement under warranty clause shall be made by the Successful Bidder free of all charges at site including freight, insurance and other incidental charges.

f.  The Bidder shall at the time of submitting the bid submit the Technical Proposal specifying how the Bidder proposes to carry out repair under Warranty & AMC period. The Bidder shall also indicate what spares will be kept for immediate replacement. The infrastructure planned to be created by the Bidder to fulfill its obligations under Warranty & AMC and its action plan to deal with the various situations arising out of hardware and software faults shall be clearly indicated.

g.  If the Bidder, having been notified, fails to remedy the defect(s) within the period specified in the Service Level Agreement, the Registrar General, High Court of Madhya Pradesh may proceed to take such remedial action as may be necessary at the Bidder's risk and expense and without prejudice to any other rights, which the Registrar General, High Court of Madhya Pradesh may have against the Bidder under the contract.

## 3.5.  PAYMENT TERMS

a.  For the supply, installation, commissioning, testing, training and warranty of items& system as per tender and post-warranty comprehensive Annual Maintenance Contract for 48 months (Note: Payments will be made in Indian Rupees only)

b.  60% of total price against delivery of equipment at the site, on pro-rata basis.
c.  20 % of total price against successful Installation of the system.
d.  20% against successful commissioning & UAT.

**For CAMC - Quarterly prorata payment of finalized CAMC amount will be made after successful completion of period of respective post warranty CAMC.**

## 3.6.  PRICES

The rates and prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subjected to adjustment.

## 3.7.  PURCHASER'S RIGHTS

a.  The Purchaser reserves the right to make changes within the scope of the work at any point of time.

b.  The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of contract without assigning any reason whatsoever and without thereby incurring any liability to the affected bidder or bidders on the grounds of purchaser's action.

### 3.8. TIME SCHEDULE TO COMPLETE THE CONTRACT:-

a. The successful bidder shall complete the assignment within <u>24 months</u> from the date of Purchase Order.

b. The Successful Bidder shall ensure that the delivery of Products/ equipment and/or the delivery of the services are in accordance with the time schedules specified in this tender. In case of any deviation from the schedule, the Purchaser reserves the right to either cancel the Contract and/or recover Liquidated Damage charges.

c. The Successful Bidder, if faced with problems in timely delivery of services, which have dependencies on the Service Provider and/or the Purchaser, which are beyond their control at any time before the Final Acceptance Signoff, shall immediately inform the Purchaser in writing, about the causes of the delay and tentative duration of such delay etc. The Purchaser, on receipt of such notice, shall analyze the facts at the earliest and may at its sole discretion, extend the contract period as deemed reasonable.

Any delay by the Successful Bidder in the delivery of Products/ equipment and/or the services will make the Successful Bidder liable to any or all of the following:

1. Forfeiture of Performance Bank Guarantee,
2. Imposition of Liquidated Damage charges,
3. Termination of the contract for default,
4. MPHC getting the delayed work performed from any other vendor at the risk & cost of the successful Bidder/ Vendor.

### 3.9. LIQUIDATED DAMAGES

If the Bidder fails to deliver any or all of the equipment or to perform the services within the time period(s) specified in tender, the Registrar General, High Court of Madhya Pradesh shall without prejudice to its other remedies under the contract, deduct from the contract price, as liquidated damages, a sum equivalent to the 1% of the contract price for every week (seven days) or part thereof of delay, up to maximum deduction of 5% of the contract price. Once the maximum is reached, the Registrar General, High Court of Madhya Pradesh may consider termination of the contract.

### 3.10. FORCE MAJEURE

a. Neither party shall be responsible to the other for any delay or failure in performance of its obligations due to any occurrence commonly known as Force Majeure which is beyond the control of any of the parties, including, but without limited to, fire, flood, explosion, acts of God or any governmental body, public disorder, riots, embargoes, or strikes, acts of military authority, epidemics, strikes, lockouts or other labour disputes, insurrections, civil commotion, war, enemy actions.

b. If a Force Majeure arises, the Bidder shall promptly notify Registrar General, High Court of Madhya Pradesh in writing of such condition and the cause thereof. Unless otherwise directed by Registrar General, High Court of Madhya Pradesh the Bidder shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. The Bidder shall be excused from performance of its obligations in whole or part as long as such causes, circumstances or events shall continue to prevent or delay such performance.

### 3.11. TERMINATION

a. Termination on expiry of the <u>CONTRACT</u>: The Agreement shall be deemed to have been automatically terminated on the expiry of the Contract period unless the

Registrar General, High Court of Madhya Pradesh has exercised its option to extend the Contract in accordance with the provisions, if any, of the Contract.

b.  Termination on account of Force Majeure: The Registrar General, High Court of Madhya Pradesh shall have the right to terminate the Contract on account of Force Majeure.

c.  Termination on account of insolvency: In the event the Successful Bidder at any time during the term of the Contract becomes insolvent or makes a voluntary assignment of its assets for the benefit of creditors or is adjudged bankrupt, then the Registrar General, High Court of Madhya Pradesh, Jabalpur shall, by a notice in writing have the right to terminate the Contract and all the Successful Bidder's rights and privileges hereunder, shall stand terminated forthwith.

d.  Termination for breach of contract: A breach by the Successful Bidder of its obligations hereunder and such breach not being rectified by the Successful Bidder within 30 days of receipt of the Purchaser's notice intimating such breach. Upon termination, the Successful Bidder shall surrender all the data and materials belonging to the Purchaser.

e.  Termination for delay: Successful Bidder shall be required to perform all activities/services as per the terms and conditions mentioned in the tender document. If the Successful Bidder fails to do so, the Contract may be terminated by Registrar General, High Court of Madhya Pradesh by giving written notice unless Registrar General, High Court of Madhya Pradesh has extended the period with levy of Liquidated Damages as per tender.

f.  The Registrar General, High Court of Madhya Pradesh may at any time terminate the Contract by giving notice without assigning any reason.

g.  Consequences of termination: In all cases of termination herein set forth, the obligation of the Registrar General, High Court of Madhya Pradesh to pay shall be limited to the period upto the date of effective termination. Notwithstanding the termination of the Agreement, the parties shall continue to be bound by the provisions of the Agreement that reasonably require some action or forbearance after such termination.

h.  In case of termination of Contract herein set forth the Contractor shall be put on holiday [i.e. neither any enquiry will be issued to the party by the Registrar General, High Court of Madhya Pradesh against any type of tender nor their offer will be considered by Registrar General, High Court of Madhya Pradesh against any ongoing tender(s) where contract between Registrar General, High Court of Madhya Pradesh and that particular Contractor (as a bidder) has not been finalized] for two years from the date of termination by the Registrar General, High Court of Madhya Pradesh to such Contractor.

## 3.12. ARBITRATION

In case of any dispute following arbitration clause will apply:

a.  Any question, dispute or difference arising under the contract, shall be referred to the sole arbitrator appointed by Hon'ble Chief Justice of High Court of M.P., Jabalpur. The award of the arbitrator shall be final and binding on both the parties to the contract. The place of arbitration shall at Jabalpur only.

b.  The expense of arbitration will be incurred by the parties asked and subject to final award. The Arbitration & Reconciliation Act 1996 and the rules thereunder, any statutory modification thereof for the time being in force shall be deemed to apply to the arbitration proceedings under this contract.

## 3.13. GOVERNING LAWS AND JURISDICTION:-

The Agreement shall be governed by the laws in force in India. Any dispute arising in relation to the Agreement shall be subject to the Jurisdiction of the Courts at Jabalpur.

### 3.14. Limitation of Liability

The successful bidder (its partners, directors, staff, agents and associates) shall not be liable for any losses, damages, costs or expenses arising out of this engagement save in so far as they are and have been determined to have been directly and wholly caused by default of the successful bidder and in such circumstances the aggregate liability of the successful bidder shall be limited to an amount not more than the total fees actually payable by the principal for this engagement, but how ever there shall be no such limitation in case of misconduct or negligence of the Successful Bidder.

## 4. SECTION IV - SPECIAL CONDITIONS OF THE CONTRACT (SCC):-

### 4.1. DEFINITION

These conditions given in this Section IV, supplement the "Instructions to the Bidders" given in Section II & conditions given in Section III and in case of any conflict, the conditions given herein shall prevail over those in Sections II and III.

### 4.2. Nature of Work

**The nature of work under this tender shall be LSTK (Lumpsum Turnkey). The price quoted by the bidder for the entire project shall be considered final & fixed without any scope for price escalation. Bidders are, therefore, advised to make their correct estimations for the quantities & specifications of the equipment proposed to be supplied/ commissioned by them for the techno-functional requirements detailed in the bid document.**

### 4.3. EQUIPMENTS AND SUPPORTING ACCESSORIES / SOFTWARE

All the equipment / systems / items to be supplied shall conform to the relevant technical specifications as mentioned in Section VI of this document.

### 4.4. SITE ACCEPTANCE TESTS (SAT)

a. The Purchaser shall carry out all the tests detailed in the Acceptance Test Schedule to be furnished by the Contractor to confirm that the performance of the entire installation satisfies the specification requirements. The Purchaser reserves the right to include any other tests, which in its opinion is necessary to ensure that the equipment meets the specifications.

b. The Purchaser reserves the right to ask for modifications/additions to the Site Acceptance Test Procedure at any point of time till the Site Acceptance signoff of each location.

c. The Site Acceptance Tests shall cover the intended functioning of the equipment with proper integration with other sub components, applications and software's.

d. The contractor shall carry out the Site Acceptance Tests in the presence and supervision of the Purchaser or its designated Officer at the site. The contractor, at its own cost, shall provide the testing of equipment/instruments/software programs necessary for performing and demonstrating the Site Acceptance Tests.

e. The purchaser or its appointed testing authority shall supervise the tests at each site, as described in the site acceptance test procedure and performed by the contractor to confirm that the complete solution at each site satisfies the requirement of specifications including the service performance.

f. The contractor shall rectify all deficiencies immediately, if found, in the performance of the system as per the requirement during the Site Acceptance Tests, at no cost to the High Court of Madhya Pradesh, Jabalpur.

g.  Any components or modules failing during the acceptance tests shall be replaced free of cost by the Contractor. These replacements shall not be made out of spares supplied by the Contractor as part of supplies under this Contract. This shall also not entitle the contractor to any extension of completion time.

h.  The cost of all test and / or analysis shall be fully borne by the contractor.

i.  The completed installation at all stages shall be subjected to checks and tests as decided by Purchaser. The contractor shall be liable to remedy all of such defects as discovered during these checks and test and make good all deficiencies brought out. The complete installation shall be taken over finally on successful commissioning in entirety.

## 4.5. CONSIGNEE AND SECURITY OF MATERIAL

Security of all material in the section where the work is in progress shall be the contractor's responsibility and he shall arrange to guard the same from theft/pilferage/vandalism. In the event of any loss the contractor shall be responsible for the same. Any stores lost, prior to formally taking over by the Purchaser, shall be made good by the contractor at no cost to the Purchaser.

## 4.6. Implementation Phases

1.  The proposed IVSS & CLASS shall be implemented in single phase comprising four distinct stages of 6-month duration each, as below:-

| Stage Name | IVSS& CLASS Implementation |
|---|---|
| Stage I – | **1)** Implementation of IVSS & CLASS in Jabalpur District Court & Tehsil Courts at Patan & Sihora **2)** Development of Command & Control Center (with DC & DR) at HC Jabalpur. |
| Stage II – | Implementation of IVSS & CLASS in 51 courts in 16 Districts of Jabalpur (22 Courts), Rewa (16 Courts) & Shahdol (11 Courts) Divisions. |
| Stage III – | Implementation of IVSS & CLASS in 70 Courts in 18 Districts of Indore (25 Courts), Ujjain (34 Courts) & Narmadapuram (11 Courts) Divisions. |
| Stage IV – | Implementation of IVSS & CLASS in 80 Courts in 18 Districts of Gwalior (20 Courts), Bhopal (25 Courts), Chambal (10 Courts) & Sagar (25 Courts) Divisions. |

2.  A successful prototype testing during Stage I of the project shall be the pre-condition for implementation of subsequent stages. If the vendor fails to successfully complete the first phase, MPHC shall have the right to get the first phase as well as the remaining phases executed from another vendor & recover the additional (incremental) cost incurred in doing so from the vendor. A clause to this effect should be added to the tender.

3.  The selected vendor shall be awarded the work in above-mentioned stages & upon completion of the respective stage; the PO for the next subsequent stage shall be issued.

## 4.7. Project Completion Period

1.  The period for project implementation (project completion) shall be as follows:

| Task | Months for completion (from |
|---|---|

| | the date of Purchase Order) |
|---|---|
| Implementation (Stage I) – | 6 |
| Implementation (Stage II) – | 6 |
| Implementation (Stage III) – | 6 |
| Implementation (Stage IV) – | 6 |

The total project completion period shall be:-

o  Twenty four (24) months from the date of Purchase Order for Supply, Installation, Testing, Commissioning, Integration, Punch List liquidation, Final Documentation, SAT & Providing Training of the MPHC Integrated Video Surveillance System.
o  Twelve (12) months from the date of successful SAT & hand-over for Providing Comprehensive System Warranty Services (Warranty Period).
o  Forty Eight (48) months from the Date of Completion of Warranty Period for Providing Comprehensive Annual Maintenance Services (separate order may be placed by MPHC).

**Note:- The warranty/ AMC period shall start from the date of completion of corresponding implementation stage/phase.**

## 4.8. Performance Testing and Warranty

The Successful Bidder shall carry out the performance test run of the complete system at site after satisfactory installation/ implementation under its supervision. Training of operators should be as per details mentioned in this document after commissioning of the system without any extra cost to MPHC.

The system provided should be guaranteed / warranted for any kind of manufacturing defects and satisfactory performance for a period of 12 months from the date of hand-over after final sign off obtained from concern officials of MPHC.
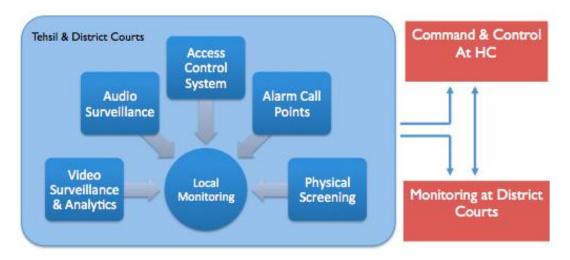
# 5. SECTION V - Scope of Work

## 5.1. System Description

### 5.1.1 Functional Objectives

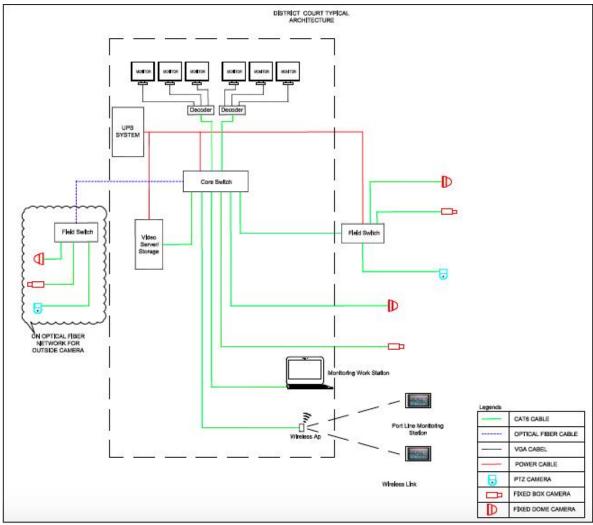Following are the functional objectives identified for the proposed system.

1. All the perimeter entry points/ openings, building entrances, staircase landings/openings, parking places, Courtrooms & Data Center doors to be under 100% video surveillance.
2. Audio-visual surveillance for courtrooms
3. Biometric (Face Recognition) Access Control for Hon. Judges' chambers, Data Rooms
4. Screening for Metal Detection using DFMD/HHMD at all the building entry points.
5. Panic Alarm Buttons to be installed at the Hon. Judges' Desks & Chambers for raising alarms at the local as well as district monitoring stations.
6. Playback/ export of archived video for the selected cameras & selected time period export only with permission from Hon. High Court – system equipped with workflow & audit trails shall be available in software
7. Courtroom video & audio viewing / playback rights only to the designated Hon. Civil, district & high court judges.
8. System assisted/ automated incident/emergency response management system with pre-defined Standard Operating Procedures.
9. Facility Management Support for Operations & Maintenance of the System
10. Automated SLA monitoring system for compliance monitoring.

### 5.1.2 Solution Overview



The solution envisages the setting up of an Integrated Video Surveillance System comprising Video Surveillance System, Perimeter Intrusion Detection System, Access Control System, Alarm Call Points, Data/Video Network, & Unified Command & Control System for 48 No. of District & Sessions Courts & 160 No. of Civil Courts under the High Court of Madhya Pradesh, Jabalpur

A typical system architecture for the proposed IVSS at district, sessions & civil courts is as follows:

DISTRICT COURT TYPICAL ARCHITECTURE


CIVIL COURT TYPICAL ARCHITECTURE (TYPE-2)

1. The surveillance solution considers use of high resolution fixed cameras. Good resolution cameras are considered for the situational cameras within the premises. All the entrance points within the buildings have high resolution cameras considered for clear identification of the persons entering and leaving the building.

2. A security management software platform is considered as the primary integration platform of all the security systems proposed in this document. The security management software gives a unified interface to the operator for management and monitoring purpose.
3. A robust Ethernet network is proposed for connecting the cameras, workstations, servers, decoders & access controllers to the system. All the cameras are proposed to be powered by using the POE+ capability of the switches.
4. A control room is proposed at the district level for monitoring of alarms & video, local as well as remote. The district monitoring rooms shall have a bank of video monitors for viewing the camera feeds.
5. A monitoring workstation is proposed for the Civil Courts.
6. Portable Monitoring Stations connected to the system using Wi-Fi, shall be available for the Hon. Judges for viewing selective cameras.
7. A state-of-the-art Command & Control Center is proposed in the High Court premises at Jabalpur for alarm monitoring & on-demand video monitoring for all the 208 courts.
8. Certain areas inside the court premises, e.g. Sections, shall be equipped with audio recording facility. The microphones shall be connected to the audio-in of the cameras for this purpose. 2 no. & 3 no. microphones shall be considered per tehsil & district court respectively.
9. All the system components are proposed to be powered using a centralized UPS of sufficient capacity for provisioning of clean, uninterrupted & conditioned power to the equipment.
10. The proposed solution should allow MPHC to locally and centrally monitor its facilities from a remote location securely on a Portable/Fixed personal computer monitor using IP-based Cameras in a bandwidth efficient manner. The solution should also enable viewing of camera feeds on smart phones. The system shall be highly secure.
11. The Solution should capture, store, and analyze digital video images & recordings to enable central monitoring, increase operational efficiency, reduce liability, minimize risk and secure people & property with near zero false alarms.
12. The system should be provided with indoor as well as outdoor IP based & POE based Fixed Cameras, PTZ Cameras, multi-sensor Panoramic Cameras, lens, housing & mountings to capture video, which would be viewed & controlled through the Video Management Software, recorded and stored.
13. Power supply source to the camera and other outdoor & indoor equipment should be UPS backed up and conditioned power supply. Successful bidder should offer relevant power conditioning equipment for the safety of the site equipment. Appropriate IP66 outdoor casings and housings should be used for the outdoor. All power cabling from/to UPS/POE/other equipment shall be in bidder's scope. Power take-off points for UPS's shall be provided by MPHC.
14. The Outdoor cameras shall be housed in IP66/NEMA4 casings & shall be vandal-proof. All housings shall be of Stainless Steel / Aluminum & shall be of the same make as that of the camera / shall alternatively be pre-approved by camera OEM without any conditions (supporting documents shall be furnished).
15. The Server shall make continuous recording of all cameras for 30 days at the specified resolution. (Shall be site configurable per camera for lesser days also).
16. The IVSS System will consist of, but not limited to the following:

Field Elements:
- Fixed Day/Night Cameras
- Panoramic Cameras
- PTZ Cameras (with Day/Night capability)
- Field switches
- Passive Networking Components
- Junction Box
- Access Controllers
- FRS Terminals
- Portable Monitoring Stations
- Door Frame & Hand-held Metal Detectors

17. Control Room (Data Center) location will require below bill of material at a broad level:

- Video monitors
- Decoders
- Monitoring workstations
- Core Switch LAN components
- Management, analytics and recording servers
- SAN/NAS
- Video Management Software with IVA, Network Management, & other specified Software with integrations of all supplied systems.
- Control Room Infrastructure
- **The nature of work under this tender shall be LSTK (Lumpsum Turnkey). The court-wise indicative bill of quantities is provided in Annexure-n. However, bidders are advised to make themselves acquainted with the site requirements & may undertake a sample site survey for arriving at their own estimations for cabling & other project requirements.**
- The video surveillance system shall consist of video cameras, servers & storage equipment, active networking elements, monitors & workstations and associated local area network (OFC & Ethernet cables). Audio surveillance using high-quality noise-cancelling microphones shall be implemented in courtrooms.
- Biometric (Facial Recognition) Terminals shall be installed for access to high-security zones, fitted with EM lock, within the court premises. An Exit Switch & emergency break-glass shall be provided inside the secured areas. The Terminals shall be connected to a local/central server using IP connectivity.
- The court premises shall also be fitted with door-frame metal detectors with video monitoring capability. The metal detection data shall be tagged to the video of the person entering the frame for the purpose of audit trail. Hand-held metal detectors shall also be used by the security personnel.
- The tehsil courts shall use a touch-screen monitor+workstation to monitor the video feeds whereas the district courts shall use a bank of monitors, connected to the network through decoders, and workstations for monitoring live video feeds of the local cameras as well as the feeds coming from respective tehsil courts.
- The system shall also give monitoring facility on tablet PCs proposed for the Hon. Judges.
- The vendor shall also design & develop control room infrastructure at the district court premises, including the associated civil, furniture, air-conditioning, electrical & networking works.
- The electronics equipment, including the cameras & access control equipment, shall be powered through UPS of required capacity with 4-hours power back-up.
- The system shall be designed by selecting high-grade components of proven quality and proper design of system electronics to ensure minimum down time.
- The Video Surveillance shall be governed by the operating system running in a real time mode and shall be able to meet the minimum functional requirements as specified.

The various components of the IVSS& CLASS for MPHC include:

### 5.1.2.1 Video Surveillance

Video surveillance comprises of CCTV cameras, Connectivity, Active Networking, Video Management and Recording Server, Operator Workstation, Video Storage Equipment, Portable Monitoring Stations and Video Monitors.

Video surveillance system gathers video from a location through IP CCTV cameras that work on Ethernet media and TCP/IP protocol. Megapixel cameras are proposed for video surveillance for better imaging and the area of coverage. IP CCTV cameras can be connected through Power over Ethernet (PoE), which saves the additional cost of the power supply, power cabling to the camera. PoE also reduces the point of failure, thereby making the deployment efficient. Video

cameras are proposed to be installed at all the entry / exit gates, entrance lobbies, important internal locations, parking areas etc.

Video cameras enable the real time situational awareness within the premise and provide vital evidence.

The IP CCTV cameras allow the real time viewing and recording of an area. The recorded video can be played back for investigation in case of an incident. The area of coverage of the camera is decided based on the resolution and the angle of view.

The IP CCTV camera/s at every location are connected through the Ethernet Connectivity.

The following types of cameras are proposed to be used in the CC/DSC premises:

| Sr. No. | Type of Camera | Resolution | Objective | Location |
|---------|----------------|------------|-----------|----------|
| 1 | Outdoor Fixed Camera | 5 MP | General Surveillance | Perimeter, Gates, Perimeter Entrance Points/ Openings |
| 2 | Outdoor PTZ Camera | 2 MP | Situational Awareness | Courtyard, parking Areas, Precinct Areas |
| 3 | Outdoor Panoramic Camera | 20 MP | Situational Awareness | Courtyard, parking areas |
| 4 | Indoor Dome Camera | 5 MP | General Surveillance, Analytics, Face identification (internal) | Building Entry Points, Staircase entries, Internal Entry Points |
| 5 | Indoor Panoramic Camera | 20 MP | Situational Awareness | Lobbies, Passages |
| 6 | Indoor Panoramic Camera (with audio recording) | 20 MP | Situational Awareness | Courtrooms |

### 5.1.2.2 Video Analytics

Video analytics adds intelligence to the video surveillance system. Video Analytics work on pre-defined rules over an area of interest within a scene in the field of view of the camera. The VA system can alert the operator in case the rule condition is matched.

Video Analytics can be used on the Gate surveillance cameras to count vehicles and their direction. A synchronous VA on all entry / exit gates can give exact count of vehicles within the premise.

There are multiple types of VA rules such as people counting through a particular gate, tripwire, abandoned object, object removal, motion detection, etc.

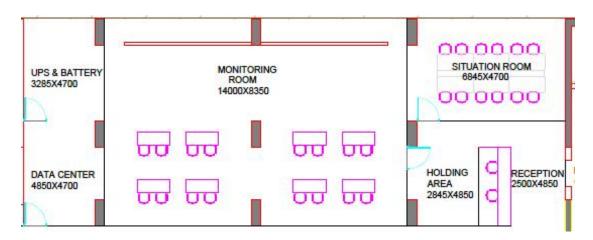### 5.1.2.3 Video Management System

A video management application takes care of the video stream received from a CCTV camera. The application resides on the server and enables a user to view the live video stream and also records the video for viewing and investigation at a later time.

The application also records the video on a unified SAN storage device configured in high-availability mode.

The Video Management Software allows the user to view live feeds from various cameras across the campus on a video monitor / video wall. The application allows viewing of multiple cameras at the same time through tiled display. The application is the heart of the system and can integrate with other components such as sensors, access control, video analytics, and give user a single window solution to access and control other integrated sub-systems. Multiple servers are required to handle the video feed coming from all the cameras from.

### 5.1.2.4  Command & Control Center at Jabalpur High Court

1. A state-of-the-art command & control set-up shall be developed within Jabalpur High Court premises, including a C4I software (Command, control, communication, collaboration & intelligence) for monitoring alarms & on-demand video feeds generated in  the district & tehsil courts.
2. An indicative schematic of the proposed Command & Control Center shall be as follows:



3. The scope of work for the vendor shall include the infrastructure work comprising civil, furniture, interior, electrical, lighting, fire safety, air-conditioning & associated cabling/networking works.
4. The vendor shall be responsible for creating a data center, UPS room, battery room, monitoring room, a situation room & other functional areas as per the design finalized by MPHC. The work shall include designing, planning, supply, installation, commissioning & testing of all the required equipment & components.

### 5.1.2.5  Portable Monitoring Stations

It is proposed to provide portable monitoring stations (latest Tablet PCs) for monitoring select camera views for the use of Hon. Chief/Principal Judges. The device shall also be equipped with a soft-panic button.

### 5.1.2.6  Storage and Recording

The storage and recording device takes care of recording the video streams on a media. The proposed solution comprises of SAN/NAS.

Bidders are advised to estimate their own independent calculation of the camera storage and bandwidth requirement and computing hardware requirement such as management servers, recorder servers. However, Bidders should note that they are required to quote the complete end-to-end storage & computing infrastructure as one lumpsum job and no escalations shall be permitted during the project execution. The storage and bandwidth parameters that should be considered for computation of the same shall be as below:

Table: Indicative Storage Calculation (Please Consider RAID 5 Configuration for redundancy)

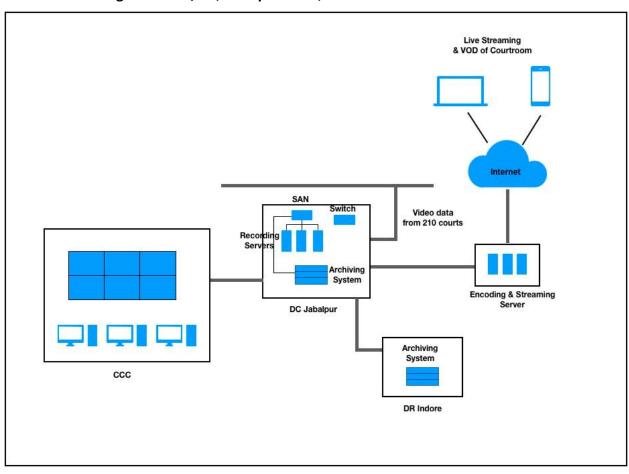| Camera Type | Camera Recording Resolution | Frames / Second | Camera Monitoring Resolution | Frames / Second | Compression | No. of days of Storage |
|---|---|---|---|---|---|---|
| **Indoor Dome Cameras** | 2 MP | 15 (80% activity level) | Full | 25 | H.265 | 30 |

| Camera Type | Camera Recording Resolution | Frames / Second | Camera Monitoring Resolution | Frames / Second | Compression | No. of days of Storage |
|---|---|---|---|---|---|---|
| **Outdoor Box Cameras** | 2 MP | 15 (80% activity level) | Full | 25 | H.265 | 30 |
| **Panoramic** | 2 MP | 15 (80% activity level) | Full | 25 | H.265 | 30 |
| **PTZ** | Full HD | 15 (80% activity level) | Full | 25 | H.265 | 30 |

Additionally, a buffer of 20% usable storage of the total calculated storage shall have to be considered for event recording. All recordings shall be considered as continuous recordings for storage & feed availability. The recordings shall be automatically configured for First-in-First-out mode after the specified duration (**per camera**). Necessary script/algorithm should be part of software application.

Bidders are required to submit their respective rationale, vetted by the camera OEM, for the said calculations. Please note that the bidder & the OEM shall have to justify the rationale during the course of document approval.

**Architectural Diagram – CCC/DC, Jabalpur & DR, Indore**



The system architecture envisages N+N server architecture at 208 no. of courts for video recording as well as management. The N+N architecture has been specifically recommended in the DoJ guidelines for the purpose of achieving failover redundancy.

In order to enable the system for live streaming as well as archiving of courtroom proceedings, the audio-visual recording should be stored at CCC, Jabalpur. It is, therefore, proposed that redundant servers at each location shall be placed at CCC Jabalpur in physical/virtualized environment & recording of all the cameras at optimized/reduced parameters (12FPS; HD Resolution) shall also be done at CCC Jabalpur. CCC Jabalpur shall also have archiving servers

&cold storage for archived courtroom recordings. A dedicated DC set-up shall be created at CCC, Jabalpur & DR site at Indore.

It is also decided that the CCC shall record video data of all the cameras for a period of 7 days on primary storage (SAN)& for a period of 53 days on secondary archival storage at 12FPS & HD resolution.

A DR site is also decided to be set-up at Indore HC premises for storage of audio-visual recordings of courtroom proceedings.

### 5.1.2.7  Video Management Workstation

A video management workstation shall host a client of the Video Management Server, which allows the user to interact with the video management server. The workstation can show video feed of selected camera/s on the screen for the operator to have a closer look. The workstation also allows configuration of the parameters of the system and the cameras. The workstation also allows the user to export a particular video clip for sharing with external entities.

The workstation shall have an interactive & intuitive GUI with touchscreen monitor.

### 5.1.2.8  Network Connectivity

1. The field equipment, namely, cameras, access controllers as well as the data center equipment (servers, NAS, decoders etc) shall be interconnected using a Ethernet data/video giga-network comprising a CR switch & Layer-2 field switches.
2. It is proposed to use a Network Management System that will monitor the health of all the network as well as edge equipment at the state (HCMP) level & also provide a functionality to monitor the SLA for better contract management with the service provider.
3. The system shall use a structured cabling schema, for data as well as electrical, for physically connecting the equipment.
4. The Civil Courts under the district shall be connected to the district CR through a 10MBPS leased line (*Note: not part of this project)* for viewing alarms & select cameras.
5. At every outdoor camera location, an IP 55rated, lockable/sealable rack shall be installed for housing the power supply, UPS (including isolations)& the required communication equipment. The electrical & the data cabling at the field location shall be done as per the relevant ISO/IEC guidelines for outdoor cabling. The aim is to protect the cablefrom Mechanical damages, Rodents, moisture ingress & EMI.All the outdoor field equipment shall be suitable for outdoor use under harsh environmental conditions.The pole required to be erected for mounting cameras shall be constructed as per guidelines provided in this document, post review of applicable drawings by MPHC.
6. The IP system should ensure highly secure and ready video access from virtually anywhere on MPHC Security Network. Authorized personnel (within its individual user rights, specific to individual) should be able to rapidly zero in on video / images of specific locations, people, and events, anytime and anywhere, without reviewing countless hours of video recordings.
7. The system shall allow conditional access to the authorized users to the security system from MPHC LAN/WAN through the gateway UTM Firewall. It shall be Bidder's responsibility to configure such access mechanism in Security Network.
8. The Successful Bidder will commission the network as per the recommended architecture to achieve the desired video transmission. 25%port redundancy, as a minimum, shall be available at each switch location.
9. The network should be designed in such a way that the actual network bandwidth utilization shall be 70 % of the total bandwidth available in each of the network paths.
10. The successful bidder shall be responsible for end-to-end implementation of connectivity of all the locations under this tender and shall quote and provide/ supply any item(s), which are required for successful implementation and commissioning of the system as well as its management.
11. The required networking equipment / components for end to end structured connectivity from CR Rack/ Control room to individual Surveillance Cameras shall also be provided by the bidder at each location.

12. The complete ownership of the network proposed will be of MPHC. However complete maintenance will be in the scope of the bidder including rectification of minor or major faults/breakages in the network equipment.
13. The bidder shall carry out installation of active components, passive components and accessories supplied for successful integration and implementation of the systems at each locations connected under this tender.
14. The bidder shall be responsible for configuring and fine-tuning of subsystems to achieve overall network performance with high-level physical & cyber security.

### 5.1.2.9  Access Control System

The ACS system is proposed for the Hon. Judges' Chambers & the data centers. The ACS shall use facial recognition authentication technique. The FRS terminals shall be connected to local/ central server.

### 5.1.2.10 Panic Switches

Hon. Judges' desks shall have a silent alarm call point connected to the local camera to be used in emergency/duress situations by the Hon. Judges. The alarm shall be raised/visible at the monitoring stations in the CR. Alternatively,  the alarms shall also be audible on the sounders installed outside each courtroom for summoning immediate help.

### 5.1.2.11 Control Room

Control rooms are proposed to provide complete situational awareness with adequate redundancy at the district level. The control rooms are literally the heart of the entire security & shall house a bank of monitors. The monitors shall be connected to the system using decoders.

The District Courts shall have 4 or 6 No. of monitors for viewing the cameras.

### 5.1.2.12 Physical Screening

All the building entry points/ doors (used ones) shall be equipped with DFMDs & HHMDs for metal detection/ screening. The baggage shall be screened physically on a selective basis (without using technology).

### 5.1.2.13 UPS

It is proposed to power all the network switches through a centralized UPS of sufficient size equipped with batteries for a power back up of 4 hrs. The edge equipment shall be powered using Power-over-Ethernet.

### 5.1.2.14 Live Streaming & Archiving of Courtroom Proceedings

In the matter of Swapnil Tripathi vs Supreme Court of India, the Hon'ble Supreme Court of India has directed that -

a.  Barring cases falling under certain categories, all the courtroom proceedings should be live streamed.

b.  Live-Streamed courtroom proceedings should be archived & made available on the website.

c.  Live-streaming shall commence as soon as the judges arrive in the courtroom and shall continue till the Bench rises

d.  The presiding judge of the courtroom shall be provided with an appropriate device for directing the technical team to stop live-streaming, if the Bench deems it necessary in the interest of administration of justice;

e.  Live-streaming of the proceedings should be carried out with a delay of two minutes

f.  Courtroom proceedings will continue to be live-streamed unless the presiding judge orders the recording to be paused or suspended;

g.  Cameras should be focused only on the judges and advocates pleading before the Bench in the matter being live-streamed;

h. Cameras shall not film the media and visitor's galleries;

i. Cameras may zoom in on the Bench when any judge is dictating an order or judgment or making any observation or enquiry to the advocate; and

j. The following communications shall not be filmed:

- Discussions among the judges on the Bench;

- Any judge giving instructions to the administrative staff of the courtroom;

- Any staff member communicating any message to the judge or circulating any document to the judge;

- Notes taken down by the judge during the court proceedings; and

- Notes made by an advocate either on paper or in electronic form for assistance while making submissions to the court.

In line with the above-mentioned functional requirements mandated by the Hon'ble Supreme Court of India, MPHC has decided to implement a solution for recording, live-streaming, archiving, its retrieval based on video-on-demand through MPHC website and integration with MPHC's CIS (Case Information System) of audio-visual content (video, synchronised audio & VC content) associated with courtroom proceedings.

There are 1782 no. of courtrooms in total of 208 no. of court complex under MPHC. Each courtroom shall have four microphones installed in it. Two Microphones shall be wall mounted while 2 shall be table-top/ goose-neck (~450mm) type (final selection shall be as per the site-conditions). The microphones shall be attached to a base station, which will encode the audio & provide an Ethernet output. A panoramic camera shall be installed in each courtroom to record video. The VMS shall synchronize audio with the video feed captured by the courtroom camera.

The base station shall be equipped with buttons to start, pause or stop audio recording or to control live streaming. A trigger to bookmark 'Start' & 'Stop' events in the audio-visual recording shall also be provided by the base station. The VMS software shall also have a feature to disable the audio or live streaming of video in the courtroom using either the workstation or Portable Monitoring Station. There will also be a provision to select & display the case number for correctly tagging the video to the respective case number.

**The link to the bookmarked recorded courtroom proceedings shall be provided to Case Information System (CIS) for its necessary tagging with the case specifics/ details.**

For the purpose of system sizing, following assumptions shall be made –

| | |
|---|---|
| Average No. of case/court hearings per courtroom per day: | 12 |
| Average No. of case hearings per courtroom per year | 240*12 |
| Average duration of a typical case hearing | 30 min |
| Archival of courtroom proceedings (Subsequent storage for additional period shall be planned later.) | 5 years |
| Average no. of users per case | 5 users |
| Average no. of users per day | 1500 Courtrooms x 12 cases x 10 users = 180000 |
| Total concurrent users at any given time | 180000/12 = 15000 users |
| The audio-visual recording parameters | 12 FPS at HD resolution 720p (1280x 720) |
| Storage requirement for a single courtroom session (30 mins) | 0.52 GB |

| | |
|---|---|
| Total usable storage requirement for one year for courtroom proceedings | 1500 court rooms x 12 cases Per-Day x 240 Workings Days x 0.52 GB = 2250 TB<br><br>Note: 10% cache using SSD drives shall be created for faster access of frequently viewed cases. |
| Total archival storage requirement for one year for courtroom proceedings (with 20% buffer+10% RAID5) | 3000 TB |
| Total archival storage requirement for 5 years at Jabalpur DC | 15 PB |
| Total archival storage requirement for 5 years at DR at Indore | 15 PB |

The DC at CCC, Jabalpur shall store the videos feeds from all the cameras of 208 courts at 12 FPS; HD resolution in primary storage for 7 days & in archival for 53 days (Totaling 60-days). The audio-visual recordings of courtroom proceedings shall be archived for 5 years at the DC. A back-up set-up shall be created at the DR site at Indore for creating back up of all the recordings of courtroom proceedings.

Each camera shall provide separate user-programmable streams for local monitoring (Full resolution, 25FPS, H.265), recording (Full HD resolution, 15 FPS, H.265) monitoring at District Court (HD Resolution, 15 FPS, H.265), monitoring & recording at CCC, Jabalpur (HD Resolution, 12 FPS, H.265). All the cameras shall have in-built recording on SD card for recording & subsequently synchronizing of the (7-days) video with the local as well as remote recording set-ups in the event of network outage.

A video streaming set-up comprising encoding servers, streaming servers & web servers shall be created at DC Jabalpur for enabling live streaming of courtroom proceedings. The archived videos shall also be made available to users on demand.

The case calendar on a daily basis shall be imported or made available by the CIS (Case Information System). The videos shall be tagged to the respective case numbers & the same shall be live streamed & viewable against the published calendar on the MPHC website. Conversely, the link of the case number-wise tagged video shall be made available to, in an integrated manner, to the CIS software for display of the same in its interface. Viewers shall be able to view live or archived video from the case calendar interface provided by the IVSS& CLASS or from the corresponding CIS interface.

The solution is expected to enable MPHC to live stream as well as archiving of the courtroom proceedings (in particular, cases involving recording of evidence) for 5 years. Integration of VC with the system shall also be included in the scope.

## 5.2. Mandatory Technical Requirements

1. The Successful Bidder shall conduct a site survey of designated locations. The successful bidder has to provide the detailed **BOQ & calculate the design needs and obtain MPHC's signoff before commencing the Job.**

   a. Proposed system shall be an open standard based integrated system aimed at providing high-speed manual/automatic operation for best performance. System should be easy to maintain. All equipment used in this system should support IPV6 protocol. All hardware & software supplied shall mandatorily be **ONVIF compliant**. It shall be possible to replace systems/cameras/devices supplied with a different make by plug & play.

b.  Architecture of the system should be fully modular and should be designed in a manner to enable the complete system to be gradually enhanced and enlarged according to the future operations and security requirements.

c.  Surveillance system shall use video signals from various types of indoor/outdoor CMOS colour IP cameras installed at different locations, process them for viewing on workstations/monitors at Central Control Room /local control rooms and simultaneously record all the cameras after compression using MPEG4/H.265 or better standard.

d.  The system should be complete with IP Cameras, Switch and Servers with video management software for recording, storing and playing, Colour Video Monitors, Mouse-Keyboard, Joystick, PC for System Administration/ Management/ Maintenance etc.

e.  System should ensure that once recorded, the video shall not be altered or tampered, ensuring that the audit trail is intact for evidential purposes. The recorded video shall be acceptable in the Indian Courts of law, that is, the video transmitted by the cameras shall not use any software reformation for its rendering or storing. The system should offer recorded video corresponding to any incident in primary storage disk for its presentation in the court of law without affecting the smooth functioning of the system (particularly, recording) OR any loss of data. All the data communications taking place within the network need to be AES (128 bit) encrypted and SSL authenticated so that any unauthorized access to the video data can be prevented.

f.  The development platform and IDE used for the development of all software proposed for the purpose of IVSS& CLASS should not be more than 5 years old from the date of publication of this tender. A declaration to this effect must be provided by the software OEMs. The declaration shall contain information about the name, version, date of release and technology OEM.

g.  Bidders are required to submit a statement indicating Country of Origin (CoO) for servers, switches, cameras, monitors, storage, networking hardware alongwith the technical bid.  The same shall be verified (at any stage of the evaluation process) with the certificate of Country of Origin required to be submitted at the time of supply as well as with the certificates submitted by the OEM for obtaining Indian (BIS) Standards.

h.  The recording resolution, compression and frame rate for each camera shall be user programmable. The camera should have capability to generate multiple streams (separate for recording, monitoring, remote recording, viewing on portable monitoring stations & analytics), each user programmable for the above-mentioned streams. It shall be possible to record camera views on continuous, scheduled and event-triggered basis.

i.  The system should provide facility using secure authentications for remote viewing to log on and view any camera/recordings/logs/alarms from anywhere on MPHC Security LAN/WAN.

j.  Power for all the field equipment will be through POE & should be conditioned using locally connected UPS & other required accessories. All equipment supplied shall operate on the standard supply voltage (230 V AC ±10%, 50 Hz ±3Hz single phase). All Power sockets & Plug Tops shall have L, N & E meeting Indian requirements (Plug Type-D).

k.  Power for all control room equipment would also be conditioned using an online UPS.

l.  All the control equipment e.g. switch, passive networking items, Servers, Controllers, etc. shall be provided in a standard Network Rack in the control room of required size.

m. Bidders should confirm that all recordings will be admissible as evidence in any court of law and should be able to demonstrate the following standard features: Image

Quality, tamper-proof image recording and storage, tamper-proof export, digital certification, time & date stamps & full audit trail.

2. The Video Surveillance system shall have intelligent video analytics software on any of selected cameras (individually & in parallel).

3. The video analytics system needs to be capable of being upgraded to new and improved video analytics algorithms as they become available. The same shall be free to MPHC & shall be a part of Warranty/AMC.

4. All the cameras will be connected to a Control Room (Data Center), which will be equipped with video management modules and storage modules. Provisions will be made to record and view live incidents at all surveillance premises. Recorded clips can also be viewed readily on requirement. The Control Room (Data Center) will be equipped with a set of video monitors (in case of District locations) to aid the officials in monitoring events. Abnormal activities should be identified, annunciated and indicated by the system.

5. After commissioning the Video Surveillance, the same shall be demonstrated for all its capabilities to the relevant user department to make them familiar with the system on mutually agreed dates.

6. Bidders will have to justify the technical eligibility for the equipment model offered, even though the equipment may be approved.

7. The Bidders need to propose the solution with the components, which are suitable for the weather conditions in Madhya Pradesh.

   a. Bidder should be able to demonstrate to MPHC the complete functioning of the system along with the software deliverables as described in this document during technical evaluation. The complete working system comprising of one outdoor PTZ Camera with controller, one fixed camera, one panoramic camera and system software with Analytics, PC/workstation etc. should be demonstrated.

   b. To the extent possible, Cameras should be installed on the existing structures, buildings, flood light towers, watch towers, boundary walls (using diamond topped drilling), etc. by providing necessary brackets, hooks, nuts & bolts. All camera accessories & fitments are in the scope of the bidder.

   c. The system design shall permit the on-line addition of new system /subsystems (new work station, peripherals, cameras, encoders etc.) with no disruption to either the operation or system communications for future expansion. The offered software should have in-built capability / provision to take care for future expansion and new services & features etc. The user configurable menu driven modules should be available in the software for any addition/deletion/change in the configurations. No hard coding is allowed for the above functionality. Surveillance System should be scalable to meet additional business, safety and security requirement of MPHC.

   d. The system should be scalable to interface with MPHC network/Switches. All system communications shall be based on the ISO, Open system Interconnect (OSI) reference model. All communication solutions should be Ethernet Based.

   e. All cables, electronic/electrical equipment, enclosures, mounting accessories, etc. used shall meet the environmental conditions prevalent at the project location/s in addition to suitable protections against lightning/surges.

8. The system shall be designed by selecting high-grade components of proven quality and proper design of system electronics to ensure minimum down time.

9. The Video Surveillance shall be governed by the operating system running in a real time mode and shall be able to meet the minimum functional requirements as specified.

10. All certificates of offered model no of camera should be enclosed with technical bid and it should have complete model no of camera including all alphabet & Number. UL certificate for a series of cameras will not be considered, please note. Bidders are required to provide a web link for online verification of UL certification in their technical proposals.

11. The system shall have an extensive set of self-diagnostic routines, which shall locate and identify the system failure at least up to individual equipment level.

12. The system shall be internally protected against system errors and hardware damage resulting from electrical transients on power wiring and signal wiring which may be generated by switching large electrical loads or by power line faults or by lightning surges and connecting & disconnecting devices or removing or inserting printed circuit boards in the system.

13. All the products provided should be of reputed make and latest model. Assembled products are not acceptable. Bidder should specify the criteria for capacity planning & sizing, performance criteria for arriving at the recommended configuration.

14. All proposed cameras should be from single OEM. The panoramic cameras can be proposed from a different OEM.

15. Following authorizations shall be made available from OEMs:
    o Technical compliance to the specifications and authorization for participating in the tender on manufacturer's behalf.

    o Authorization for providing test reports complying the specifications at the time of inspection.

    o Authorization that the items quoted by the tenderer are in production and would be supported for service for at least 10 years from the date of the final commissioning.

16. Manufacturer must provide reference list of installation for similar products/ components in relevant PTR documents provided in Part III.

17. The warranty shall consist of repairing or replacing defective parts for a period of 1 year from the date of supply & for 4 years of post-warranty comprehensive AMC.

18. The bidders will have to submit a Solution Assurance Certificate from the OEMs regarding the workability of the proposed solution, as per the format provided in Part III.

19. The Command & Control System shall offer SOPs English & Hindi (configurable/selectable per user) & the same is required to be demonstrated during the POC by the bidders.

20. The work shall be executed to the highest standards using **best quality material**. The system design shall use state-of-the art techniques/tools. The contractor shall ensure that the entire specification is complied with the tender document. It shall be the responsibility of the contractor to demonstrate compliance of technical as well as functional specifications. Meeting individual requirements shall not be deemed as meeting the overall efficient functioning of the total system.

21. The completed installation shall be subject to checks at all stages and tests as prescribed in the bid or as deemed necessary by the Registrar General. The same shall be done by the Purchaser and the contractor shall be liable to rectify such defects as brought out by the Purchaser during these checks and tests and make good all deficiencies at his own cost.

22. The specifications provided in this tender are minimum & shall be suitably upgraded (at all levels) by the bidder to meet the functional requirements.

23. The design, construction & integration by the bidder shall confirm to high standards of design, engineering & workmanship in all aspects.

24. All the cameras should be UL, FCC & CE Compliant.

25. MPHC reserves the right to modify the quantities, to add or delete component quantities or to transfer components from the BoQ of one site to another.

26. Bidders should note that the procurement of access control system (ACS) shall be made in phased manner to meet out the requirement of the District Judiciary. The proposed

implementation phases shall be decided during the joint survey to be conducted with the selected vendor.

27. The tender stipulates installation of multi-sensor panoramic cameras in courtroom. However, there may be site-specific situations wherein multiple indoor dome cameras in place of a single multi-sensor camera would be operationally feasible. MPHC may, at its sole discretion, decide to select the type of cameras, from amongst the types specified in the tender, in courtrooms as per the site condition &/or practical constraints. The final quantities shall be determined by MPHC during the joint site survey to be carried out with the selected vendor.

28. Bidders are advised to provide site-wise UPS sizing as well as estimated Power Consumption & Storage Calculations in Microsoft Excel sheets as a part of their technical proposals.UPS Sizing shall be done by bidder for all locations for all electronics included in the Control Room & field switches with 30% spare capacity & distributions & with 4 hours back-up. The sizing rationale shall be provided in the technical bid. The UPS shall be provided with minimum 10 KVA rating with 3-Ph Input & Output. The batteries shall be gel type maintenance free valve regulated maintenance free. For CCC, Jabalpur UPS, the requirement is of modular UPS in N+1 Configuration.

29. Audio surveillance using an Audio Monitoring Base Station with 4 Zone/ channel high-quality noise cancelling microphones & best-in-class channel separation shall be implemented in courtrooms. The output of the base station can be connected to an audio-in port of the camera or it can be an IP device (Connected to a switch, with POE Power). The audio output should be properly synchronized with the video. Two Microphones shall be wall mounted while 2 shall be table-top/ goose-neck (~450mm) type (final selection shall be as per the site-conditions). The capability is required to be successfully demonstrated during the proof of concept phase.

30. All cameras shall be compliant with H.265 compression latest standards.

31. The proposed solution shall have a capability to live-stream the audio-visual recordings of the selected courtroom cameras using either a separate audio-visual stream from the camera or from the recorded video on website of the High Court, with proper tagging of the same with the respective case no., in an integrated manner. The capability is required to be successfully demonstrated during the proof of concept phase.

32. Bidders are advised to note that  Software Requirement Specification (SRS) & Functional Design Specification (FDS) documents are required to be developed by the selected vendor & get the same approved by MPHC & the Consultant before commencement of integration exercise in Phase I.

33. Bidders should note that the OEMs of cameras, IT & Networking equipment shall be required to enter into back to back agreement for after sales service and support.

34. With regard to the supported protocols mentioned in the camera specifications, bidders are advised to comply with the tender requirement. In case of a specific non-compliance, if the same is functionally met by the system/solution, the same shall be acceptable. However, the onus of meeting as well as proving such compliance lies on the bidder. In case of specific non-compliance in ROHS, WEEE, ISO14001, & REACH certification requirements for cameras, if the requirement is met by the system/solution or equivalent certification, the same shall be acceptable. However, the onus of meeting such compliance or proving the equivalence lies on the bidder.

35. The sensor size is being standardised as "Sensor size of 1/3" or better" for all types of cameras, without affecting the specified light sensitivity.

36. Inter-court Connectivity, connectivitybetween courts & CCC/DC or connectivity between DC & DR& the associated hardware (e.g. routers) is not in the SI scope & shall be provided by MPHC.

37. VMS software licenses are the sum total of camera quantity. However, IVA requirement is for select cameras. Bidders should assume the quantity to be 20% of the outdoor fixed & indoor dome cameras.The IVA requirement is for general/ basic analytics, such as Area/ region wise loitering detection, multiple trip-wire, abandoned object, motion detection, camera tampering, cord-cut, no mask detection, social distancing compliance etc.

38. All the networking equipment should support open standard-based and vendor neutral SDN Open Flow for the purpose of configuring & managing network resources via dynamic, automated SDN programs.
39. All the networking equipment, IP Cameras, Servers, Workstations support NTP protocol and perform time synchronization with the local NTP Server running on Server/Switch.
40. Vendor to note that they shall be fully responsible to comply to the total scope of work indicated in the tender on turnkey basis and meet all the functional requirements specified in the tender, through hardware and software, during detailed engineering and vendor shall be fully responsible for the Bill of materials submitted by them.
41. Vendor shall be fully responsible for proper engineering, integration, installation, performance and operation of all equipment including bought out items supplied by them as per the requirement.
42. The storage of items/equipment at site shall be vendor's responsibility for the items/equipment supplied by the Vendor. Handling of material at site is vendor's responsibility.
43. In case the approved makes are not mentioned for any of the project components, Bidders shall consider supplying reputed makes for such components. Bidders shall confirm and take consent on the make / specification of such components from MPHC before such component is ordered.
44. Notwithstanding anything contained in this document, regardless of what appears in the indicative schedule of quantities, it shall be the responsibility of the vendor to supply, install, commission, test & maintain all the components required to make the proposed IVSS & CLASS) total & fully functional b) function as per the functional requirements set in this document, without any financial or any other obligation to MPHC.

45. Bidder confirms that he has checked that complete requisition is received by him along with all annexure and attachments.
46. The offer against above-mentioned requisition is in full compliance with respect to defined scope of work and supply.
47. Bidder confirms that all the items / model offered are completely suitable for the ambient conditions, process data and meets functional requirements as specified in this Requisition / Specifications / Datasheets. Selection of model number is solely Bidder's responsibility.
48. Bidder shall replace or rectify the offered items at no extra charge and time implication, if found unsuitable at a later date, at any stage of the project.
49. Bidder confirms that the statutory certifications and approval will be provided by him as per the Requisition for the items in his scope of supply and work
50. Bidder confirms that the offered items are exactly in line with this Requisition requirements. Wherever, the offered items are selected as better option or higher option or not able to meet the requirements or deviated from the requirements, the same is listed / highlighted in the "Deviations / clarifications List" only.
51. Deviations listed elsewhere in the offer other then the "Deviation / Clarification List" shall not be considered as deviation. In case of No Deviation, then also Bidder to submit the deviation format duly signed & stamped with "NO DEVIATION" stated therein.
52. Bidders confirms that items offered by him or from its sub-Bidder, are proven and has checked before offering that the same has proven track record of satisfactory performance in the past for the similar application.
53. If the Bidder is an agent only then they shall get in writing from their principals / manufacturer the guarantee and the undertaking with respect to the offer / quality / selection and performance of the offered items. Bidder has attached letter from the principals / manufacturer along with the offer.

## 5.3. Scope of Work

The High Court of Madhya Pradesh is desirous to setup state of the art latest Integrated Video Surveillance System for 208 No. of subordinate courts of the High Court of Madhya Pradesh, Jabalpur.

### 5.3.1 SITC

The scope of the job includes, supply, design, installation, implementation, testing and commissioning, training, providing complete documentation (including user manuals), providing 12 months warranty and 48 months post warranty CAMC (charges for 48 months post warranty CAMC shall be considered for evaluation) for the total solution including all hardware, network, software, upgradation, materials, services, training and support etc. for providing an Integrated Video Surveillance System comprising Video Surveillance System, Perimeter Intrusion Detection System, Data/Video Network, & Unified Command & Control System for 48 No. of District & Sessions Courts & 160 No. of Civil Courts under the High Court of Madhya Pradesh, Jabalpur, so as to fulfill the objectives listed in this document.

1. Design, Supply, installation, testing, integration and commissioning of all hardware, networking elements and software as per the requirements of this tender.
2. Configuration of Hardware, Networking devices and Software as per system design, tender requirements & site requirement.
3. Integration of all components as per requirements in this tender document
4. Preparation of control rooms as per requirements in this tender document
5. All necessary cabling / wiring / sockets /components and allied infrastructure conforming to respective quality / standard norms are also included in the scope of this job.
6. All necessary design, Procurements, Factory Acceptance Test, drawing submission for approval, Dispatch, Transportation, Receipt at Site, Storage & local transportation at site, all Site works, compliance of labour laws & other Statutory requirements, Site testing, resolution of punch lists, Preparation of measurement sheets & to get the same verified by Client for all Billing jobs,
7. Final Documentation, Site Acceptance Test of the fully integrated system, handover, getting all statutory clearances / approvals, supply for all mentioned & required software (with perpetual licenses),
8. 1 year warranty
9. **Comprehensive AMC for 4 years after completion of warranty period.**
10. Training on system operation to staff at the site.
11. The Successful Bidder shall be responsible to complete the works in all respects and in doing so, provide/supply all facilities not covered above specifically, but nevertheless required for the satisfactory performance of complete system. Bidder shall be liable for any damage to existing infrastructures during the course of its work. Adequate Manpower (including Supervisory Staff), PPE & safety accessories shall be arranged by the bidder.
12. The bidder's scope also includes the provisioning of any ladder, boom lift etc. for the installation of cameras at the various locations.
13. The bidder's scope includes supply and laying of electric cable from the nearest possible power source to the field equipment.
14. All resources, including tools, machinery, JCB, Pneumatic/other Jackhammer, boom lifts, portable DG Sets, Compressors, welding machines, cutting machines, drilling machines, other power tools, hand tools, consumables, workmen, staff (including PPE, safety accessories like Safety Belts, Safety Harness, Wire Ropes, Scaffolding, Fire Blankets, Fire extinguishers, etc.) including compliance to Labour laws, Regulatory / Statutory guidelines/rules shall be in bidder's scope.
15. All conveyances, boarding, lodging, etc. of bidder's personnel shall be in the bidder's scope.
16. Bidder's scope shall include supply, installation, integration (including commissioning) of any hardware/software / services that could be required for the completeness of the system irrespective of whether the same is specifically mentioned or not. Bidder shall be responsible for the technical soundness of the equipment and services rendered by them. In the event of any deficiency in design/manufacture/installation/integration/commissioning etc., the bidder shall re-design / modify the same with no time & cost implications admissible from MPHC.
17. Pre-dispatch Acceptance Test (PDAT) of the integrated system & inspection clearance of the relevant sub-systems with MPHC shall be in bidder's scope. The PDAT may be conducted at a local warehouse, before eventual delivery to MPHC. Documents required

for the same & other intimation details are mentioned under the section for "Third Party Inspection".

18. System Acceptance Test (SAT) shall be performed for the complete system after liquidation of punch points provided by concerned personnel from MPHC, complete system integration, testing & commissioning.

19. Any statutory/regulatory approvals that may be required during the course of the Project/Warranty/AMC shall be arranged by the bidder (approval shall be in the name of MPHC, all required liasoning & approvals shall be obtained by the bidder).

20. Project planning shall be in bidder's scope. Bidder shall submit all relevant Daily, Weekly & Monthly Reports (as per approved formats) with plans & schedules to MPHC. He shall highlight & indicate any delays/hold-up's & steps taken to overcome those delays along with the required catch-up plans.

### 5.3.2 Spares

1. Commissioning Spares: All commissioning spares required for installation, testing, integration, any repair and commissioning of system shall be at bidder's scope.

2. Warranty Spares: All spares required for maintaining the complete system during the warranty period of 12 months shall be at bidder's scope. The warranty period shall commence only after the complete system has been integrated, commissioned & handed over (after liquidation of punch points).

3. Post Warranty Spares (During comprehensive AMC): All spares required for maintaining the complete system during the comprehensive AMC period of 48 months shall be at bidder's scope. The exact quantity and types of spares shall be mutually decided with the Bidder.

Following spares shall be maintained by the Bidder per Region during the AMC period as mentioned:

| Sr. No. | Component Type | Spare Quantity | Spare Type |
|---|---|---|---|
|  | Video Surveillance |  |  |
| I. | Camera (all types) | 25 Nos. each | Vendor Spare |
| II. | Servers | 5 Nos. each | Vendor Spare |
| III. | SAN/NAS Box | 5 Nos. each | Vendor Spare |
|  | Networking |  |  |
| I. | Switches (all types) | 10 Nos. Each | Vendor Spare |
| II. | All Passive Components such as patch cords (Ethernet & OFC), pigtails, splicing kits, splicing enclosures (all types) | At least 100 numbers each | Vendor Spare |
| III. | Hard disks (of the type and capacity used in storage) | At least 50 numbers each | Vendor Spare |

4. All spares/hardware/etc. required to maintain the system in working condition till the completion of CAMC shall be in bidder's scope.

5. All the spares shall be in SI scope. No separate payment shall be made to the SI. It is the responsibility of the SI to maintain the vendor spares & make them available for inspection by MPHC during any stage of the contract.

### 5.3.3 Approval of Drawings

1. Successful Bidder after placement of order shall be fully responsible to get all drawings prepared & reviewed from MPHC before supply/manufacturing/dispatch.

2. Approval of drawings by MPHC does not relieve the Successful Bidder from its responsibility of performance guarantee of equipment / system covered under this tender.

3. All System Architecture, GA, Network Configuration, Earthing Layout, Wiring, Layout drawings, BOM's (with Type, Model No., Make, Version, Revision – both for hardware & Software, including for bought-out items), UPS Sizing Calculations, Electrical Load Calculations, Storage Calculations, other Procurement Drawings, Datasheets, Construction & Installation Drawings, Functional Design Specifications, Construction related & Commissioning related documents, etc. shall be furnished for review by MPHC (documents for approval may be submitted in parts with Drawing Numbers & revision Numbers clearly marked on them along with a Transmittal Index) as 3 Sets to each party & also the relevant soft copies by e-mail.

4. All Quality Assurance Plans & Test Report Formats shall also be generated by the successful bidder for review & approval of MPHC prior to the start of such activities.

### 5.3.4 O&M Management

1. It is proposed to avail 1 of supervisory operational resource (Minimum Experience of 5+ years) support for supervising operations & 4 No. Control Room Operators (Minimum Experience 2+ years; Possessing CR Operator Certificate from a reputed institution) for the Command & Control Center at Jabalpur for a period of 5 years.

2. It is proposed to avail 1 or 2 No. of operational resource/s' support (Control Room Operators – Total 53 No. - Minimum Experience 2+ years; Possessing CR Operator Certificate from a reputed institution) for the successful operations of the system for a period of 5 years at all the district courts.

3. ***The FM resources should be on the bidders' payroll.*** Necessary documentary evidence will have to be submitted by the vendor to MPHC before providing the services.

4. The system is expected to cover comprehensive warranty for all the components for a period of 1 year calculated from the date of successful completion of the project. A comprehensive annual maintenance contract for a period of 4 years, after completion of the warranty period, is also considered as a part of the system.

5. 1 No. experienced technical resource & adequate spares shall be considered for each of Indore, Bhopal, Jabalpur & Gwalior District Courts as a part of the FM support for providing maintenance support to all the courts under west/south, central, east & north regions respectively.

### 5.3.5 AMC & Warranty Terms & Conditions

- The Contractor shall be solely responsible for the maintenance, repair of the whole system supplied and implemented. The Registrar General, High Court of Madhya Pradesh shall not be liable to interact with any of the partners/ collaborators of the Contractor.

- The Contractor shall have adequate Technical Support Center to meet the criteria for fault restoration/faulty unit repair times as mentioned in the Section-V. The Contractor shall furnish the names, locations, complete postal address, Telephone numbers and FAX numbers of all Technical support Centers at the time of signing the Contract.

- The Contractor shall also provide the name of alternate contact person or Technical Support Center with address & telephone /FAX no., which may be contacted by Registrar General, High Court of Madhya Pradesh or its authorized staff for support in case of no response/poor response from the designated Technical support center. This, however, shall not preclude from imposing the penalties, if any, as applicable as per the terms & conditions of this tender.

- Any change in Address, Phone number, Fax Number etc. shall have to be intimated in writing by the Contractor to the Registrar General, High Court of Madhya Pradesh, Jabalpur.

- The Contractor shall ensure that all the Technical support centers are manned by fully competent and responsible Engineers and are capable of attending faults / supporting their engineers at the High Court of Madhya Pradesh Jabalpur.

### 5.3.6 Warranty Service Level Requirements – SLA

1. Service Hours and Preventive Maintenance:-The Service window for the IVSS & CLASS system would be 24x7x365.

2. For first 03 years preventive maintenance is to carried out on yearly basis and thereafter the preventive maintenance is to be carried out 06 monthly basis and when required by the High Court.

3. Scheduled Downtime:-

    (a)   Scheduled downtime is defined as the period of time when the IVSS& CLASS in not functioning on account of Holidays.

    (b)   It will be expressed in Hours.

    (c)   The maximum scheduled downtime for any audio video unit would be 4 days every calendar month.

    (d)   The preventive maintenance would be carried out with a minimum advance notice of 24 hours in writing and subsequent acceptance of the same by Registrar General, High Court of Madhya Pradesh.

4. Mean Time To Resolve (MTTR):-

    (a)   MTTR is defined as the arithmetic average of the time taken to attend to resolve the issues logged over a defined period of time.

    (b)   The Severity Levels for measuring MTTR are provided in the following table:

| S. No. | Severity Level |
|--------|----------------|
| 1.     | High           |
| 2.     | Low            |

5. The various Service Level Requirements and related penalties for default are given below:

| Parameter | Details | Measurement Criteria | Penalties per day of delay / per fault / per occasion |
|-----------|---------|----------------------|-------------------------------------------------------|
| Mean time to resolve (MTTR) | (i) Within 24 Hours from the call logging time – for all High Severity events (ii) Within 48 hours from the time of attending the problem for all Low severity events | Calculation of fault duration per instance based on complaint reported /logged | (i) For High Severity events, Rs. **10,000/-.** (ii) For Low Severity events, Rs. 1,000/-. |

6. The Successful Bidder needs to maintain the Service Levels as follows:

    (a)   99% of the times for the MTTR of High Severity Events

    (b)   95% of the times for the MTTR of Low Severity Events

7. The penalty will be applicable on per fault basis even if there is a commonality of fault at any point causing full or part failure of services. Penalty will be deducted from the performance guarantee submitted against due execution of the Contract or from the bill amount that is due for payment to the contractor.

8. After the expiry of Warranty, it shall be optional for Registrar General, High Court of Madhya Pradesh not to enter the contract further with the contractor. If Registrar General, High Court of Madhya Pradesh is not satisfied with the performance of the Contractor during Warranty it reserves the right to terminate the same during its currency, after giving notice to the Contractor.
9. The Contractor has to maintain adequate spares for maintaining the SLA (Service Level Agreement) parameters as mentioned below. Any cost involved to meet the service level requirements specified above is to be borne by the Bidder.
10. In case the Service Level Requirements are violated continuously for a period of one month, the Purchaser reserves the right to terminate the Contract by giving a written notice to the Successful Bidder.

### 5.3.7 Comprehensive Annual Maintenance Contract (CAMC) Post Warranty

Complete system will be covered under post warranty Comprehensive AMC as per rates quoted in the price bid for a period of 48 months from the date of completion of warranty. The post warranty comprehensive AMC rates quoted in price bid for 4 years shall be included in the evaluation.

I. During the post warranty comprehensive AMC period all software/ services etc. as required to rectify any defect / fault; will be provided by the successful bidder at no extra cost to MPHC. Material / hardware /spares as required for such maintenance would also be provided by the bidder. No extra amount is payable by MPHC for this post warranty CAMC other than quoted CAMC rates. Bidder shall at all times (during commissioning, warranty & CAMC period) maintain spares for all electronic/electrical items, jointing kits, etc. at Site to ensure bare minimum equipment downtime. A list of such spares available & the consumption pattern (monthly) shall be furnished to MPHC. Bidder shall be responsible to replenish & maintain this minimum quantity of spares, as per their consumptions.

II. Comprehensive AMC comprises of the following services as a minimum

   a. Routine maintenance service: This is an on-site maintenance, which should be carried out four times in a year. Purpose of visit is to check system health and problem solving.

   b. Breakdown maintenance service: In case of system breakdown, Successful bidder shall depute Engineers to restore the system at the earliest, within 24 Hours.

   c. Software support and technical services: Software additions / modifications, technical assistance to Purchaser's Engineers, technical discussions with Purchaser's Engineers /Technicians at successful bidder's facility etc. are included.

   d. During warranty period / defect liability period, the bidder shall depute at least one person who shall be placed in the control room and who shall be responsible for the daily maintenance of the system. Any replacement (including packing, shipping, any required payments, etc.) shall be the bidder's responsibility without any financial commitments from MPHC. All replacements shall be completed in max 2 working days.

   e. Network breakdown – Since IVSS consists of OFC backbone network, the Bidder shall provision a fusion splicing machine with all necessary accessories to splice / join a cable on site. The deputed person shall have knowledge of splicing.

   f. For the entire period of the project, which includes the defect liability period of 1 year and the 4 years CAMC, the bidder shall depute at least one engineer and two technicians per region who shall be placed in the control room and who shall be responsible for the daily maintenance of the system. The personnel

deployed to site shall have thorough knowledge of the system and at least two years of experience in maintenance of similar system. An experience certificate to this effect to be handed over to MPHC. **The person deployed shall be under the payroll of the bidder. Bidder shall not offload service delivery to any of it's partners, sub-vendors or other organisations or businesses.** The personnel deployed shall be able to install & integrate new Cameras (from multiple vendors) as & when needed during the warranty & CAMC periods. The personnel shall also be responsible to ensure the health of hardware, electronics, software, communication network, software back-up's, attending of problems/issues reported& their resolution, upgradation, submission of reports (daily, weekly & monthly).

g. CAMC shall also include training of MPHC personnel for the various categories defined under "Training and Handholding".

h. Confidentiality of the network, configurations, systems, administrative/other passwords, and other sensitive documents/drawings/layouts/reports shall be maintained. Bidder's legally authorised signatory shall signa non-disclosure agreementto this effect.

III. Quarterly prorata payment of finalized CAMC amount will be made after successful completion of period of respective post warranty CAMC, should MPHC enter into CAMC for that respective year.

IV. MPHC shall reserve the right to offer CAMC services to the vendor beyond the project period of 5 years, at the maximum escalation limit of 10 % of the last years AMC value. This will be binding on the successful bidder / vendor and shall be a pre-condition for releasing the CAMC PBG.

### 5.3.8 Resident Support

I. The bidder should troubleshoot and replace any part of the covered systems, which becomes defective during the normal course of operation. After replacing defective items with spare one on free of cost, the defective items shall be taken back by bidder.

II. The bidder shall replace any part that fails during contract at no cost to MPHC, under **"UNLIMITED PART REPLACEMENT" in CAMC**

III. The bidder shall supply and maintain the **" STOCK"** of all items as detailed at Section 5.3. These items are the property of bidder but shall be accessible for use to MPHC during any emergency and as per direction of Engineer – in – charge for which a proper record shall be maintained by MPHC. Bidder shall replenish any part that gets consumed from "ON SITE STOCK" within 48 hours.

IV. The bidder shall take back spares maintained as ON SITE STOCK on completion of the contract period and after full adjustments of payments.

V. The resident engineer shall ensure that any issue and problems not solved locally are discussed with other OEM experts to ensure proactive actions or immediate problem resolutions. Bidder shall provide the organization structure to escalate the problems.

VI. The bidder shall provide a substitute resident engineer in case the regular resident engineer is on leave for more than a day. In such cases the bidder shall make some advance planning with intimation to MPHC and make all efforts to substitute the engineer immediately.

VII. Telephone / Telefax facilities for solving breakdowns shall be provided round the clock without any charges to the bidder.

### 5.3.9 Penalty Clause

- In the event the Resident Engineer is not available/absent for more than a day Rs.2000 for first day and Rs.1000 on every subsequent day will be deducted from the CAMC bills.
- If the IVSS& CLASS system/component is down for more than 24 hours, Rs.2000/day will be deducted from the CAMC bills.In case of non-availability of IVSS& CLASS system on the subsequent days, MPHC has the right to get the job done by any other agency with the spares available in site stock at the risk, cost and responsibility of the contractor. In addition, 10% of the service charges will be deducted from the contractor's dues.

### 5.3.10 Bank Guarantee for CAMC

The vendor shall furnish Comprehensive AMC Bank Guarantees (BG) equivalent to 10 % of CAMC value. The CAMC BG shall be submitted to MPHC before the expiry of warranty period failing which the Performance Bank Guarantee shall stand forfeited. The CAMC BG shall be valid for a minimum period of 60 months.

### 5.3.11 Upgrades

Any upgrades to software with respect to firmware and revisions during the period of contract, warranty and CAMC should be provided by the successful bidder at no extra cost to MPHC. The responsibility to provide such updates, upgrades or patches will lie with the vendor.

### 5.3.12 Training and Handholding

The Successful Bidder will train MPHC personnel at three levels

1. Training for the control room operator
2. Training for the supervisory staff
3. System Administrators

#### 5.3.12.1 Scope of the Training

The selected bidder shall be responsible for providing detailed user, administration and maintenance training for the proposed IVSS& CLASS.

Training should be conducted in 2 categories:

1. Pre handover training shall be provided to users and designated MPHC personnel
2. Post handover training shall be conducted on a half yearly basis in the warranty period and in the first year of the AMC period, to users and designated MPHC personnel
3. MPHC may ask for additional training programs from time to time, in the AMC period, which may be delivered by the residential engineer to be deployed by the bidder.

Training shall be delivered at the campuses decided by MPHC, at designated times.

Following is a broad scope of the training:-

Control Room Operator
- Operational training on Security Management System Application
- Operational training on VMS
- Operational training on Cameras
- Operational training on Perimeter Intrusion Detection System
- Operational training incident response and control room operations

System Administrator
- Technical Manager's training on system configuration, system architecture and maintenance.

**Training Requirement Details**

| Training | Training | Personnel | Training Iteration (Phase-wise) |
|----------|----------|-----------|--------------------------------|

| Level | Duration | | Post Handover | | |
|---|---|---|---|---|---|
| | | | Pre-handover | Warranty Period | AMC Period |
| Control Room Operator | 2 Man-days (For instructor) | 25 Persons | 2 Times | 2 times in 1 year | 2 times each year |
| System Administrator | 2 Man-days (For instructor) | 5 Persons | 2 Times | 2 times in 1 year | 2 times each year |

The Bidder will have to prepare course content in coordination with MPHC for three types of trainings. Course material, to be pre-approved by MPHC will have to be prepared and provided to all the trainees.

### 5.3.13 MPHC Scope

1. MPHC shall make available the sites to the Successful Bidder to carry out the job from administrative point of view.
2. Successful Bidder should specify the space requirement as infrastructure for implementing its system based on which, MPHC shall provide storage space for placing the equipment. It shall be Bidders' responsibility to take care of the delivered material till the time the project is commissioned and handed over (including loading, unloading, local shifting, storage, safety & security). Bidder shall be responsible to prepare/arrange for a closed storage shed/facility for the storage of items supplied by the bidder & also for adequate facility for its staff & other associated facilities. Any damage to / loss of items from site shall be replenished by bidder without any time & cost implications to MPHC.

### 5.3.14 System Acceptance Criteria

The system will be accepted by MPHC based on the following criteria:

1. All systems to be verified operational as defined in the Scope of Work above.
2. Surveillance system installed and functioning, as described in the Tender document &approved FDS submittals.
3. All manuals and drawings are delivered to MPHC(both Hard & Soft copies).
4. All software licenses are delivered to MPHC. Master Server license, Software analytics license, PC licenses, camera licenses & all other should be handed over to MPHC.
5. All punch lists are liquidated & signed-off.

# 6. Technical Specifications

## 6.1. Outdoor Fixed Camera

| Features | Minimum Specifications |
|---|---|
| Image sensor | 1/2.7'' progressive scan HD CMOS |
| Lens | 3.6 to 9 mm or better |
| Field of view | 38˚~ 95˚(horizontal) 22˚ ~53˚(vertical) 43˚~ 108˚(diagonal) |
| Day and night | Automatic/manual/scheduled |
| Minimum illumination /light sensitivity | Color mode: F1.2 @0.5 lux black and white mode: F1.2 @0.03 lux with IR illuminator |
| Light sensor | Senses the level of ambient light to determine when to switch day/night mode. |
| Video compression | H.265/motion JPEG |
| Revolutions and frame rates (H.265) | 2560*1920@30 FPS |
| | 1920 X 1080 @ 30fps(1080p), |
| | 1280 X 720 @ 30fps (720p) |
| | 1024 X 576 @ 30fps |
| | 960 X 544 @ 30fps |
| PoE | It should be PoE enabled and outdoor ready with IK10 enclosure |
| Certification and housing | IP67 and IK 10 rated housing, camera should have sun shield, wall mount bracket and waterproof Ethernet cable |
| Remote, auto-focus support | Camera should remote zoom and autofocus |
| Motorized lens | Yes |
| Digital I/O (Audio I/O, Alarms) | Audio in x 1 |
| | A/V out x 1 |
| | DI x 1 |
| | DO x1 |
| Audio/Video out port | Camera should allow the connection of an option Y cable or mini cable with BNC connector. Camera should allow to connect a video monitor to the mini cable with BNC connector (The functional objective of being able to connect to a video monitor has to be met using either a BNC Connector or using a web browser). |
| | Camera should have option to connect an external microphone |

| Features | Minimum Specifications |
|---|---|
| | Camera should have provision for fine-tuning the focus. |
| Local storage (S.D or micro SD) | Camera should have micro SD/SDHC (128 GB) |
| Supported protocol | DHCP, HTTP, HTTPS, NTP, RTP, RTSP, SMTP, SSL/TLS, TCP/IP, Secure Real Time Transport Protocol (SRTP), Bonjour, SNMP, and Secure Shell (SSH). Differentiated-service-code-point (DSCP) marking and class-of-service (CoS) marking |
| ONVIF | ONVIF 2.0 support |
| Certification | The system shall be ROHS, WEEE, ISO -14001 and REACH compliant |
| Auto detection & configuration | The camera should be automatically discovered and configured when connected to VMS or network switch |
| | All proposed cameras should be from single OEM. |

## 6.2. Outdoor Panoramic Camera

| Features | Minimum Specifications |
|---|---|
| General | Should meet the Functional specification of clear identification of number plate & face at a radial distance of 25 meters at a camera height of 4 meter. |
| Quality Image | Minimum 5-megapixel progressive scan HD CMOS (Per Lens); Should have minimum 3 lenses/sensors. |
| Lens | Fixed 6 mm, DC-Iris |
| Field of view | 180˚ (horizontal) 30˚(vertical) and ~182˚ (diagonal) |
| Day/night operation | The camera should provide day/night functionality automatically switches to night mode in low-light scenes. |
| Minimum illumination /light sensitivity | Color mode: F1.2 @0.4 lux black and white mode: F1.2 @0.2 lux |
| Video compression | H.265, motion JPEG |
| Resolutions and frame rates (H.265) | 30FPS at full Resolution |
| PoE | It should be PoE enabled and outdoor ready with IK10 enclosure |
| Digital I/O (Audio I/O, Alarms) | Audio in x 1 |
| | A/V out x 1 |
| | DI x 1 |
| | DO x1 |

| Features | Minimum Specifications |
|---|---|
| Certification | The system shall be ROHS, WEEE, ISO -14001 and REACH compliant |
| | It should be FCC, CE, UL certified |
| ONVIF | ONVIF 2.0 Support |
| Supported protocol | DHCP, HTTP, HTTPS, NTP, RTP, RTSP, SMTP, SSL/TLS, TCP/IP, Secure Real Time Transport Protocol (SRTP) Bonjour, SNMP, and Secure Shell (SSH) |
| Application -ready platform | Camera should have option to add functions by installing and running applications directly on the camera. |
| IR Illumination | Should cover radial distance of upto 20m.Bidders can propose external IR (with all the necessary ports/ power supply & wiring) if the camera doesn't support the same. |

## 6.3. Outdoor PTZ Camera

| Features | Minimum Specifications |
|---|---|
| Image device | 1/3'' CCD/CMOS/MOS or better |
| Horizontal Resolution | Minimum 2MP or better as applicable |
| Frame rate | 30 FPS (minimum) in all resolutions |
| Compression | MPEG4/H.265/MJPEG/MXPEG support |
| Streaming | Minimum 3 (three) streams |
| Alarm output | Minimum 1 |
| Alarm input | Minimum 1 |
| Focus mode | Auto/Zooming/One push manual |
| Panning range & speed | 0 degree to 360 degree endless, max 200deg per second |
| Tilting range and speed | 0 to 15 deg above horizontal to 90 deg down, max 120 deg per second |
| Presets | 50 presets or higher |
| Dome ID | Minimum 100 (Dome ID denotes camera ID required for camera set-up. Any equivalent ID structure for camera set-up &/or identification is acceptable.) |
| Group Touring | Auto track, Auto pan, preset control, patrol modes |
| Pre/Post alarm buffer | Yes |
| ID/Password | User ID/Password |
| | HTTP (SSL/TSL) |
| Physical Layer | 10/100 base Tx Ethernet |

| Features | Minimum Specifications |
|---|---|
| Protocol | Minimum TCP/IP, HTTP, RTP, RTSP |
| IP support | Static/dynamic or both |
| Remote administration | Remote configuration and status using web based tool |
| System update | Remote system update over network using web client |
| PC client | PC application client with a channel recording feature support |
| Web client | Viewer through HTTP (min) system configuration setting /streaming |
| Simulations connection | 5 user or more |
| Lens type | Varifocal min 4.3-129 mm or equivalent or better |
| Wide dynamic range | True WDR 100dB or equivalent or better |
| Auto exposure | Automatic level control/electronic level control |
| Minimum illumination | Color :0.3 lux F1.4 |
|  | B/W: 0.05 lux F1.4 |
| Signal process | Digital signal process |
| Motion detection zones | 4 or higher privacy zone |
| Auto gain control | Yes |
| Electronic shutter | 1/50-1/1000 or better (in lieu of verification of electronic shutter speed OEM certified shall be acceptable) |
| White balance | Yes |
| Day and night | Yes (as per minimum illumination) |
| Iris control | Yes for varifocal cameras |
| Operating temperature | -10 to 55˚ C & 40˚C at 95% RH |
| Power source | Device shall work on PoE. Suitable PoE power injector or 230V AC power adaptor shall be included. |
| On screen display | Yes (English) |
| Housing-indoor | Plastic/aluminum construction with IK 10 rated |
| Housing-outdoor | Plastic/aluminum construction with IP-66, built in heater /IK 10 rated, inbuilt dehumidification device, preferable outer glass body shall be coated with special coating to remove rain water automatically to have clear view. |
| Mounting bracket | Standard wall mount for indoor & pole mount for outdoor as indicated in the supply order |

## 6.4. Indoor Fixed Dome Camera

| Features | Minimum Specifications |
|---|---|
| Quality Image | Minimum 5 megapixel progressive scan HD CMOS |
| OEM | All proposed cameras should be from single OEM |
| Lens | 3-9 mm or better, DC-Iris/Auto Iris |
| Field of view | 36˚to 88˚ (horizontal) 27˚ to 67˚ (vertical) and 44˚to 110˚(diagonal) |
| Day/night operation | The camera should provide day/night functionality automatically switches to night mode in low-light scenes. |
| Minimum illumination /light sensitivity | Color mode: F1.2 @0.4 lux black and white mode: F1.2 @0.2 lux |
| Video compression | H.265 motion JPEG |
| Resolutions and frame rates (H.265) | At 5 MP (2592×1944), the frame rate shall be 25 FPS or better for viewing. All the streams shall be user configurable (with respect to resolution, frame rate & compression standard). All the cameras (sensors) shall have minimum 5 streams. |
| PoE | It should be PoE enabled and outdoor ready with IK10 enclosure |
| Camera adjustment angle | Pan: 350˚ |
| | Tilt: 72˚ |
| | Rotate: 350˚ |
| Digital I/O (Audio I/O, Alarms) | Audio in x 1 |
| | A/V out x 1 |
| | DI x 1 |
| | DO x1 |
| Certification | The system shall be ROHS, WEEE, ISO -14001 and REACH compliant |
| | It should be FCC, CE, UL certified |
| ONVIF | ONVIF 2.0 Support |
| Local storage (S.D or Micro SD) | Micro SD/SDHC of minimum 128 GB |
| Supported protocol | DHCP, HTTP, HTTPS, NTP, RTP, RTSP, SMTP, SSL/TLS, TCP/IP, Secure Real Time Transport Protocol (SRTP) Bonjour, SNMP, and Secure Shell (SSH) |
| Application -ready | Camera should have option to add functions by installing |

| Features | Minimum Specifications |
|---|---|
| platform | and running applications directly on the camera. |

## 6.5.  Indoor Panoramic Camera

| Features | Minimum Specifications |
|---|---|
| General | Should meet the functional specifications of clear identification of number plate & face at a radial distance of 25 meters at a camera height of 4 meter. |
| Quality Image | Minimum 5-megapixel progressive scan HD CMOS (Per Lens); Should have minimum 3 lenses/sensors. |
| Lens | Fixed 6 mm, DC-Iris |
| Field of view | 180˚ (horizontal) 30˚(vertical) and ~182˚ (diagonal) |
| Day/night operation | The camera should provide day/night functionality automatically switches to night mode in low-light scenes. |
| Minimum illumination /light sensitivity | Color mode: F1.2 @0.4 lux black and white mode: F1.2 @0.2 lux |
| Video compression | H.265, motion JPEG |
| Resolutions and frame rates (H.265) | 30FPS at full Resolution |
| PoE | It should be PoE enabled and outdoor ready with IK10 enclosure |
| Digital I/O (Audio I/O, Alarms) | Audio in x 1 |
| | A/V out x 1 |
| | DI x 1 |
| | DO x1 |
| Certification | The system shall be ROHS, WEEE, ISO -14001 and REACH compliant |
| | It should be FCC, CE, UL certified |
| ONVIF | ONVIF 2.0 Support |
| Supported protocol | DHCP, HTTP, HTTPS, NTP, RTP, RTSP, SMTP, SSL/TLS, TCP/IP, Secure Real Time Transport Protocol (SRTP) Bonjour, SNMP, and Secure Shell (SSH) |
| Application -ready platform | Camera should have option to add functions by installing and running applications directly on the camera. |
| IR Illumination | Should cover radial distance of upto 20m. |

### 6.6. ANPR Camera

| Features | Minimum Specifications |
|---|---|
| Image sensor | 1/3'' progressive scan HD CMOS |
| Resolution | Minimum 5 megapixel progressive scan |
| Lens | 3 to 9 mm or better |
| Day and night | Automatic/manual/scheduled |
| Minimum illumination /light sensitivity | Camera should be able to record the activity at a minimum illumination of 0.04 lux in color mode and 0.01 lux in Black/White mode. |
| Light sensor | Senses the level of ambient light to determine when to switch day/night mode. |
| WDR | >100db |
| Frame Rate | 25/30 FPS (PAL/NTSC) at Full Resolution |
| POE Standard | Power over Ethernet (PoE) IEEE 802.3af Class 2 |
| Video compression | H.265 or better |
| Resolution and frame rates | Minimum 3 user configurable (resolution, frame rate & compression) streams |
| PoE | It should be PoE enabled |
| Certification and housing | IP66 and IK 10 rated housing |
| Remote, auto-focus support | Camera should remote zoom and autofocus |
| Motorized lens | Yes |
| ONVIF | ONVIF 2.0 support |
| Certification | FCC, CE, UL certified |
| IR Illumination | Should cover radial distance of upto 20 m. |
| Edge Processing | The camera shall be provided with the associated edge processing equipment / server. |
| Detection | Detection - 100% Recognition of number plates – More than 90 % |

### 6.7. Audio Recording System

| Features | Minimum Specifications |
|---|---|
| Base Station | 4xAudio Ins for connecting upto 4 microphones; audio output OR Ethernet Port for connecting to Courtroom Camera Audio In or Switch. Built-in Speaker & headphone jack for monitoring live audio and playback. feature to |

| Features | Minimum Specifications |
|---|---|
| | disable any one or all the microphones; Best-in-class channel separation |
| General | Wall/Table mounted omnidirectional, low impedance, built-in AGC, Mic/Line Level Output, high-quality noise cancelling Microphone; Should be able to pick up normal sounds within a radial distance of approx. 5m. Two Microphones shall be wall mounted while 2 shall be table-top/ goose-neck (~450mm) type (final selection shall be as per the site-conditions). |
| Housing | High impact ABS |

## 6.8. Field Switch - 4 Port (Outdoor) POE

| Features | Minimum Specifications |
|---|---|
| General | Layer-2 Managed Industrial Switch with 4 Port 10/100/1000 Base-T GE Switch with 2 OFC, 1GBPS SFP ports (IPv6 Compliant) To be IEEE802.3 compliant, MTBF> 1 lakh hours. <br><br> The switch shall be PoE enabled with 802.3af / 802.3at support/ power budget based on the proposed cameras |
| SFP | SFP ports will support any combination of 10/100/1000T, 100X, 100FX, 100BX(Bi-directional), 1000X, 1000SX, 1000LX, 1000ZX or 1000ZX CWDM SFPs |
| L2 Features | Should support STP, RSTP, MSTP, STP root guard, Voice VLAN <br><br> IGMP v1/v2/v3, MLDv1 and v2, IEEE 802.3ac VLAN tagging, IEEE 802.1Q Virtual LAN (VLAN) bridges, IEEE 802.1v VLAN classification by protocol and port |
| L3 Features | Should support Static RIP, RIPv1 &v2 |
| | Should support RPR/IEEE 802.17/equivalent for sub 50ms ring protection in following scenarios: single, dual fibre cuts in ring |
| Quality of Service | Should support Policy-based QoS based on VLAN, port, MAC and general packet classifiers <br><br> Should support strict priority, weighted round robin or mixed Scheduling <br><br> Should support 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port |
| Security | Should support <br><br> ACL based on L2/L3 headers, Dynamic VLAN assignment <br><br> DHCP snooping, IP Source guard, DAI, Private VLAN, <br><br> Authentication (MAC, Web and IEEE 802.3x), sFlow, <br><br> Radius, TACACS+, LAG, Loop protection and loop detection, |
| Management | Should support: <br><br> CLI, GUI, IEEE802.3az, RMON 4 groups, SNMPv3, LLDP |

| Features | Minimum Specifications |
|---|---|
| | Digital optical monitoring, cable fault detection |
| | DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 |
| | USB interface for taking backup of software release files configurations, SSLv2 and SSLv3, |
| | The switch shall have pro- active intelligence to create an ICMP polling for service reachability based on IP address and configure pro- active action upon loss or re-establishment of the service reachability |
| | Event-based triggers allow user-defined scripts to be executed upon selected system events based on Time, Date, day and Event based |
| Certifications | UL60950-1, CAN/CSA-C22.2 No.60950-1-03, |
| | EN60950-1, EN60825-1, AS/NZS60950.1, UL, cUL, ROHS |
| Temperature | 0°C to 65°C |

## 6.9. Field Switch - 8 Port POE

| Features | Minimum Specifications |
|---|---|
| General | Layer-2 Managed Switch with 8 Port 10/100/1000 Base-T GE Switch with 2 OFC , 1GBPS SFP ports  (IPv6 Compliant) To be IEEE802.3 compliant, MTBF> 1 lakh hours. |
| | The switch shall be PoE enabled with 802.3af / 802.3at support/ power budget based on the proposed cameras |
| SFP | SFP ports will support any combination of 10/100/1000T, 100X, 100FX, 100BX(Bi-directional), 1000X, 1000SX, 1000LX, 1000ZX or 1000ZX CWDM SFPs |
| L2 Features | Should support STP, RSTP, MSTP, STP root guard, Voice VLAN |
| | IGMP v1/v2/v3, MLDv1 and v2,  IEEE 802.3ac VLAN tagging, IEEE 802.1Q Virtual LAN (VLAN) bridges, IEEE 802.1v VLAN classification by protocol and port |
| L3 Features | Should support Static RIP,  RIPv1 &v2 |
| | Should support RPR/IEEE 802.17/equivalent for sub 50ms ring protection in following scenarios: single, dual fibre cuts in ring |
| Quality of Service | Should support Policy-based QoS based on VLAN, port, MAC and general packet classifiers |
| | Should support strict priority, weighted round robin or mixed Scheduling |
| | Should support 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port |
| Security | Should support |
| | ACL based on L2/L3 headers, Dynamic VLAN assignment |
| | DHCP snooping, IP Source guard, DAI, Private VLAN, |
| | Authentication (MAC, Web and IEEE 802.3x), sFlow, |
| | Radius, TACACS+, LAG, Loop protection and loop detection, |

| Features | Minimum Specifications |
|---|---|
| Management | Should support: |
| | CLI, GUI, IEEE802.3az, RMON 4 groups, SNMPv3, LLDP |
| | Digital optical monitoring, cable fault detection |
| | DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 |
| | USB interface for taking backup of software release files configurations, SSLv2 and SSLv3, |
| | The switch shall have pro- active intelligence to create an ICMP polling for service reachability based on IP address and configure pro- active action upon loss or re-establishment of the service reachability |
| | Event-based triggers allow user-defined scripts to be executed upon selected system events based on Time, Date, day and Event based |
| Certifications | UL60950-1, CAN/CSA-C22.2 No.60950-1-03, |
| | EN60950-1, EN60825-1, AS/NZS60950.1, UL, cUL, ROHS |
| Temperature | 0°C to 45°C |

## 6.10. Field Switch - 24 Port

| Features | Minimum Specifications |
|---|---|
| General | Layer-2 Managed Switch with 24 Port 10/100/1000 Base-T GE Switch with 2 OFC , 1GBPS SFP ports  (IPv6 Compliant) To be IEEE802.3 compliant, MTBF> 1 lakh hours. |
| | The switch shall be PoE enabled with 802.3af / 802.3at support/ power budget based on the proposed cameras |
| SFP | SFP ports will support any combination of 10/100/1000T, 100X, 100FX, 100BX(Bi-directional), 1000X, 1000SX, 1000LX, 1000ZX or 1000ZX CWDM SFPs |
| L2 Features | Should support STP, RSTP, MSTP, STP root guard, Voice VLAN |
| | IGMP v1/v2/v3, MLDv1 and v2,  IEEE 802.3ac VLAN tagging, IEEE 802.1Q Virtual LAN (VLAN) bridges, IEEE 802.1v VLAN classification by protocol and port |
| L3 Features | Should support Static RIP,  RIPv1 &v2 |
| | Should support RPR/IEEE 802.17/equivalent for sub 50ms ring protection in following scenarios: single, dual fibre cuts in ring |
| Quality of Service | Should support Policy-based QoS based on VLAN, port, MAC and general packet classifiers |
| | Should support strict priority, weighted round robin or mixed Scheduling |
| | Should support 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port |
| Security | Should support |
| | ACL based on L2/L3 headers, Dynamic VLAN assignment |
| | DHCP snooping, IP Source guard, DAI, Private VLAN, |

| Features | Minimum Specifications |
|---|---|
|  | Authentication (MAC, Web and IEEE 802.3x), sFlow, |
|  | Radius, TACACS+, LAG, Loop protection and loop detection, |
| Management | Should support: |
|  | CLI, GUI, IEEE802.3az, RMON 4 groups, SNMPv3, LLDP |
|  | Digital optical monitoring, cable fault detection |
|  | DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 |
|  | USB interface for taking backup of software release files configurations, SSLv2 and SSLv3, |
|  | The switch shall have pro- active intelligence to create an ICMP polling for service reachability based on IP address and configure pro- active action upon loss or re-establishment of the service reachability |
|  | Event-based triggers allow user-defined scripts to be executed upon selected system events based on Time, Date, day and Event based |
| Certifications | UL60950-1, CAN/CSA-C22.2 No.60950-1-03, |
|  | EN60950-1, EN60825-1, AS/NZS60950.1, UL, cUL, ROHS |
| Temperature | 0°C to 45°C |

## 6.11. CR Switch

| Features | Minimum Specifications |
|---|---|
| General | 2 No. stacked Layer 3 Switches (set) with 24 No. of 10/100/1000 Base-T ports and additional 2*SFP slots. The switch should have dedicated stacking ports with required stacking cabled. Should work / connected in HA mode with no Single Point of Failure (SPOF). |
| L2 Features | Should support STP, RSTP, MSTP, STP root guard, Voice VLAN |
|  | IGMP v1/v2/v3, MLDv1 and v2, IEEE 802.3ac VLAN tagging, IEEE 802.1Q Virtual LAN (VLAN) bridges, IEEE 802.1v VLAN classification by protocol and port |
| L3 Features | Should support Static RIP, RIPv1 &v2 |
|  | Should support RPR/IEEE 802.17/equivalent for sub 50ms ring protection in following scenarios: single, dual fibre cuts in ring |
| Quality of Service | Should support Policy-based QoS based on VLAN, port, MAC and general packet classifiers |
|  | Should support strict priority, weighted round robin or mixed Scheduling |
|  | Should support 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, foreach switch port |
| Security | Should support |
|  | ACL based on L2/L3 headers, Dynamic VLAN assignment |
|  | DHCP snooping, IP Source guard, DAI, Private VLAN, |
|  | Authentication (MAC, Web and IEEE 802.3x), sFlow, |

| Features | Minimum Specifications |
|---|---|
| | Radius, TACACS+, LAG, Loop protection and loop detection, |
| Management | Should support: |
| | CLI, GUI, IEEE802.3az, RMON 4 groups, SNMPv3, LLDP |
| | Digital optical monitoring, cable fault detection |
| | DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 |
| | USB interface for taking backup of software release files configurations, SSLv2 and SSLv3, |
| | The switch shall have pro- active intelligence to create an ICMP polling for service reachability based on IP address and configure pro- active action upon loss or re-establishment of the service reachability |
| | Event-based triggers allow user-defined scripts to be executed upon selected system events based on Time, Date, day and Event based |
| Certifications | UL60950-1, CAN/CSA-C22.2 No.60950-1-03, |
| | EN60950-1, EN60825-1, AS/NZS60950.1, UL, cUL, ROHS |
| Temperature | 0°C to 45°C |

## 6.12. Monitors

| Features | Minimum Specifications |
|---|---|
| General | Very narrow & black bezel (<3mm) CCTV Monitor suitable for continuous (24x7x365) use with MTBFof more than 80,000 Hrs; MIL-STD-1275 Surge & spike protection |
| Screen | 42" LED |
| Resolution | 1920x1080 or better |
| Monitor Mounting | Mounting kits, Brackets & Supports to suit installation requirements. |
| Certifications | UL, FCC, CE |

## 6.13. Workstations

| Features | Minimum Specifications |
|---|---|
| Processor | Intel Core I-7 Processor, latest generation |
| Memory | Min. 8GB, DDR-3 or better |
| Graphic Card | Minimum 4 GB onboard video memory |
| HDD | 500 GB or better; SATA @ Min. 7500 RPM – 8MB Cache |
| Ethernet | Dual Port Gigabit Ethernet, Auto Negotiating Ethernet controller |
| OS | Windows 8 Professional (64 bit)  / Latest Windows OS / Linux |
| Monitor | 21" LED, Ultra HD Display |
| Speakers | Shall have built-in / external speakers |

| Features | Minimum Specifications |
|---|---|
| Others: | Antivirus & Internet Security softwares, Industrial Grade Station suitable for 24 x 7 x 365 operation. Optical Disk Drive, All USB Storages shall be password protected for access, keyboard, mouse, other Software as defined in this Tender & also those required to achieve the functional requirements & overall system integration. Ability to extract user specific video & alarm data to external DVD/USB storage devices as MPEG4/AVI formats with a default digital certificate for signing the exported recordings, alarms & audit logs. An additional utility shall be provided to display the exported recording, view the audit log/alarms and verify the digital signatures. A visual indication shall be provided to whether the exported recording and audit log / alarms have been altered/tampered with. MIL-STD-1275 Surge & spike protection. To be free from EMI, RFI, VHF, Mobile disturbances. |

## 6.14. SAN/NAS Storage

| Features | Minimum Specifications |
|---|---|
| External Storage | SAN with required storage to record all the cameras as per the parameters mentioned in section 5.1 (point XIX) & management software. The storage shall have the usable storage capacity calculated by the bidder for all existing & new Cameras (at all locations) + 20% spare space, whichever is higher using RAID 5. Calculations shall be submitted as part of detail engineering. To be free from EMI, RFI, VHF, Mobile disturbances. To be ONVIF Compliant. |
| Storage Controller | The System should supporting Unified storage architecture.<br><br>It should have at least two controllers running in an active-active mode with automatic failover to each other in case of one controller failure. |
| Connectivity | The storage box shall have required number of 8 Gbps FC server ports (backward compatible to 4GBPS) across both controllers based on the design proposed by the Bidder + 25% redundant Ports.<br><br>The Storage box shall accept FC, iSCSI, SAS, FCoE as front end connectivity; |
| Cache | The system should have a minimum of 4 GB per controller<br><br>Cache. It should be possible to use SSD drives as an extension to cache |
| Expansion | Shall support connection of storage expansion enclosures |
| RAID | Shall support all industry standard RAID configurations. |
| Disk Support | SAS - 15K RPM SAS - 10K RPM<br><br>NL-SAS 7200 RPM, SSD drives<br><br>The Storage should support Disk Expansion trays/enclosures to accommodate 3.5" and 2.5" disks.<br><br>Hard disks of capacity equivalent to 10 % of the usable storage shall be supplied |
| OS Support | SAN shall support operating systems such as MS Windows 2008/2012, RHEL, SUSE, Microsoft Hyper-V, VMWare in |

| Features | Minimum Specifications |
|---|---|
| | standalone and clustering environment. |
| Redundancy | Shall have redundant hot swappable components like controllers, disks, power supply, fans with standard security features |
| Data Protection and Data Security | Shall have data protection features and data encryption features. |

## 6.15. Recording, Archiving & Back-up& Management Servers

| Features | Minimum Specifications |
|---|---|
| General | The following specifications are indicative minimum specifications for the server system. Bidders are advised to work with the software OEMs, to propose a suitable server configuration and quantity. The software OEMs (VMS, C4i, Archiving/Back-up Software/ Content Manager Software) should provide a written assurance for the workability/technical feasibility of the proposed solution. |
| Processor | Two socket x86-64 architecture, E5-2600 Series Processor 2.4GHz with 1 populated CPU |
| RAM | Minimum 16 GB DDR 4 (in 8GB Modules) expandable to 128GB |
| HDD | 10K HDD (1.8TB x 3 numbers with RAID) or (Storage + System requirements + 50% spare space x 3 numbers with RAID) whichever is higher & shall be scalable. |
| Network Interface | Minimum 4 x 1 Gbps NIC |
| Raid Support | RAID controller should support all HDD slots on the chassis; RAID controller should support RAID 1, 5, 6  HOT Pluggable |
| External Interface | 5 USB Ports, 2 VGA, Serial Port , ODD, USB Keyboard, Mouse, Monitor |
| Form Factor | 2U rack Mounted |
| Others | Dual redundant hot pluggable SMPS each capable of powering fully populated chassis, Redundant Fans, Sound Card & speakers, Internet+Antivirus Security packages, other Softwares as defined in this Tender & also those required to achieve the functional requirements & overall system integration. Mirrored on-board cache, Support for SATA drives. MIL-STD-1275 Surge & spike protection. To be free from EMI, RFI, VHF, Mobile disturbances. |

## 6.16. VMS/ IVA Software

| Features | Minimum Specifications |
|---|---|
| Functional Requirement | VMS based on the open architecture which facilitates integration with other IT systems with the help of APIs (distributed free of charge) |
| Platform | Windows / Unix / Linux |

| Features | Minimum Specifications |
|---|---|
| Functions | Event handling, motion detection, |
| Compatibility | The VMS should be built on the open standards and shall be compatible with products from industry leading manufacturers |
| Recording | Should record audio / video |
| | Continuous recording, by trigger (motion or alarm), by schedule |
| Storage | Distributed, fault tolerant database architecture |
| | Multi-level storage: should support multi level storage (live recording on primary disk, archiving on secondary, and so on) should delete video after configurable duration |
| Video Search | Should be able to search video based on date / time, camera. Should have advanced / smart / quick search function |
| | Should be able to export searched video to standard video codec (or with video player in case of proprietary format) |
| Viewing | Simultaneous viewing and recording from various cameras by multiple users |
| | Multi Monitor viewing |
| | Camera sequence mode |
| | Control PTZ function of PTZ camera |
| | The VMS should have viewing client (not applicable incase of web based VMS) to enable the feed display on the workstation / remote location |
| | Drag and drop camera viewing |
| Event Management | Register event, associated video, and alert operator on screen with audio |
| | Motion detection, sound detection, camera tampering events should be alerted to the operator |
| Camera Management | Show connection status of cameras, alert operator in case of connection failure to any camera |
| | Manage firmware upgrades, setting IP addresses |
| Security | User management, password management, user access level management |
| General Features & Specifications | Multi-map Presentation Options and User-Friendly PTZ Controls |
| | Graphic Video Footprints with Real-Time PTZ Controls |
| | Sensor Management Tools, Alarm Management Options, |

| Features | Minimum Specifications |
|---|---|
| | and data Editing |
| | Capable of Managing an assigned area of interest |
| | Capable of Ingesting video and sensor inputs into an open architecture format, onto one screen |
| | Provides a monitoring capability of the video/ sensor subsystem, to be relayed to the key operations center |
| | Multi-site video surveillance, and command and control |
| | Provides a multiple-perspective geographic display of site locations with site-specific surveillance information including Sensor locations and alarm conditions. |
| | Provides a remote ability to set and/or modify operational characteristics of surveillance devices and storage |
| | Online control of Pan/Tilt/Zoom (PTZ) cameras, sensors, |
| | Ability to Record and Retrieve stored video. |
| | Integrated-alarm visualization rule and device control displays in either a single or double monitor format |
| | Ability to slue PTZ cameras to alarm-generated areas. |
| | Automatic tracking and classification of objects such as cars and people and push content to security personnel over local LAN as required. |
| | Capability of Real-time analysis of connected cameras to detect abnormal activity and Security threats. |
| | Capability to filter large amounts of video and support display of  time Line, Customizable Site Map, Live Video, Video Playback, Integrated Site Map , Remote live view, Multi-site capability, Event based Recording  all over local LAN |
| | Capability of video analytics based on defined policies pre fed at the time of installations with features like Motion & Blackout masking, map configurations, disk usage limits, software health monitoring |
| | Definable and available triggers should be for: Vehicles Moving , Vehicles Parking, Vehicles Starting to Move, People Moving, Anything Moving, Camera Obstructed, Cord Cut, Hardware alarm Input, Unknown Starting, unknown Moving, Unknown Parking, Item left Behind, Item Removed, People Loitering. |
| | Motion Tracking, Object Classification, Mosaic (Camera image stitching), Object Persistence, Alarm Policy Settings, Alarm on object type, Alarm on object direction, Alarm on camera manipulation, Automatic Alarm Response, Automatic PTZ control, Audible Siren, Alarm I/O (relay), |

| Features | Minimum Specifications |
|---|---|
| | NAS or SAN support, Event based search |
| | Motion Detection component that automatically detects moving objects in the field of view of a camera, and is capable of filtering out movement in configurable directions and movement due to camera motion (e.g. from wind) |
| | Ability to deploy the Alarm Components on PC computer servers or on remote, ruggedized, externally-mountable, stand-alone platforms |
| | Camera Obstructed - should activate alarm if the field of view is obstructed. |
| | Cord Cut - Will alarm if the video signal is lost<br><br>No Mask Detection<br><br>Social Distancing Compliance/violation Detection |
| | Hardware alarm Input - Should be able receive signals from external devices through alarm I/O and act accordingly |
| | Software should be an Open IP-Surveillance product, enabling simultaneous digital video recording from network, mega-pixel and analog devices, intelligent video analysis and remote access to live and recorded images from any networked computer. |
| | Software should allows to add, edit, delete or disable and enable Policies for video management |
| | Option of remote viewing and control over any android handheld to keep updated while in the field |
| | Software should be jointly and simultaneously able to manage video analytics and video management as one product |
| | Software should be able to store video to local hard disk, a RAID configuration or even a storage-area network (SAN). |
| | Software should support display of time Line, Customizable Site Map, Live Video, Video Playback, Integrated Site Map , Remote live view, Multi-site capability, Encryption, Event based Recording |
| | Option of On-screen digital Video tracking & digital zoom on tracked area |
| | Option of On-screen object follow thru within tracked area |
| | Management of Recorded video with On-screen time graph and multiple color coded event indicators for selective and simultaneous view of alarm and non alarm situations for |

| Features | Minimum Specifications |
|---|---|
| | quick viewing |
| | User friendly and time graph based selection for playback and instant archival of video events on external media |
| | On selection of specific area on video with specific date and time period , instant retrievals of all past events/ activities at this selected area should be retrieved and viewed instantly as a single video / movie clip |
| | Software should be intelligent and capable of automatically discriminating between objects like people, animals, vehicles |
| | Intelligent Object tracking in adverse weather condition and poor visibility |
| | Should be able to filter large amounts of video and focus human intelligence |
| | Multi-map Presentation Options and User-Friendly PTZ Controls |
| | Graphic Video Footprints with Real-Time PTZ Controls |
| | Sensor Display and Management Tools, Alarm Management Options |
| | Enhanced Displays for Video Forensics and Access to Video Archive Systems |
| | Capable of Managing an assigned area of interest |
| | Capable of geo-referencing and supporting cross-cueing of sensors |
| | Provides a monitoring capability of the video/ sensor subsystem, to be relayed to the key operations center |
| | Multi-site video surveillance, and command and control. |
| | Provides site-specific surveillance information including sensor locations, coverage and alarm conditions |
| | Insertion and Deletion of Cameras & Sensors |
| | Provides a remote ability to set and/or modify operational characteristics of surveillance devices and storage. |
| | Online control of Pan/Tilt/Zoom (PTZ) cameras |
| | Capable of selecting and displaying simultaneous, multiple camera views for a single geographical location. |
| | Ability to Record and Retrieve stored video. |

| Features | Minimum Specifications |
|---|---|
| | Software should simultaneously perform and view following: record live video, playback recorded video, provide alert messages, viewing of live video form selected camera, Connected and live video analytics servers in the network, Time selection with motion and alert graph for recorded video data with different color indication for motion and alert indication along with video. |
| | Software shall offer a Maps application for importing maps, creating maps, linking maps, editing maps which enables a user to integrate interactive maps in the system. A map is a visual representation of where cameras are located at a site. When you view them in you can see where cameras are placed, and then you can click a camera to view live video and view following information. |
| | Software shall provide a Forensics software application that detects past and real-time security events using stored forensics data collected from surveillance video feeds. |
| | Software Forensics Analyzer shall allow the user to quickly search for and detect security events that occurred in the past. Examples include : |
| | a. Scan days and weeks of pre-recorded video within minutes |
| | b. Locate and extract information about potential security breaches |
| | c. Allow users to run regular queries to detect patterns. |
| | d. Allow users to apply any rule to any amount of collected or stored video data. |
| | Software shall provide the ability to set up security rules for surveillance cameras. |
| | Software shall detect, identify, classify, and track objects in real time. The software should then immediately generate alerts or alarms if user-defined security rules are violated |
| | Software shall classify objects groups as the following: |
| | Person, Vehicle |
| | Software shall have a sophisticated rule-based engine with powerful analytics capabilities that provides automatic event notification, |
| | Video distribution and process activation in response to events and behaviors. |

| Features | Minimum Specifications |
|---|---|
| | Software shall be able to create rules and responses based on digital or contact closure input events from external devices, such as Critical infrastructure-related events, Network connection failures, Fatal errors, Hard disk failures, Software service down, Video encoder failures, Security-related events, Digital input pin change, Video lost, Onscreen alarms. Maintenance-related events, User event notification using SMTP (Mail) |
| | Software shall be to perform the following tasks simultaneously: |
| | a.     Digitizing and compressing video. |
| | b.      Writing video to files on local hard disks and maintaining an   accurate index of the stored video files. |
| | c.     Deleting older video files as needed, to free up space to record newer video files. |
| | d.     Selectively transferring recorded video to long-term storage media. |
| | Software shall be capable of managing online storage that is, online video shall be available for immediate playback. Storage shall be intelligently managed so that the video that is most likely to be requested by users will be retained online. |
| | Generating and managing system logs and audit reports, Defining the reporting level for system events generated by various services, Filtering log files and events |
| | The VMS software shall have a feature to raise soft panic alarm at the corresponding CRs & the CCC at Jabalpur using the Workstation as well as the Portable Monitoring Stations. Also, the software shall have a provision to intimate the police in case of emergency (provision of telephone connectivity & modem etc shall be the responsibility of MPHC). |

## 6.17.  UPS (Required Capacity)

| Features | Minimum Specifications |
|---|---|
| Output Parameters | |
| Output Power Capacity | UPS Sizing shall be done by bidder for all locations for all electronics included in the Control Room & field switches with 30% spare capacity & distributions. Outputs shall be Single phase. Incomers (3 Nos) shall be 415VAC ±10%, 50Hz ±3Hz, 3-Phase, Wall mounted ACDB with double pole isolations (for incomers & outgoings) properly selected. Sizing calculations shall be furnished component-wise for which the UPS system would be catering. |

| Features | Minimum Specifications |
|----------|------------------------|
| Battery Type | Maintenance-free. Complete with Battery Racks. Sizing shall be done by bidder for all electronics included in the Control Room with 50% spare capacity & distributions. All charging/discharging/other tests shall be in bidder's scope. |
| Typical recharge time | 3 hour(s) |
| Mechanical Parameters | |
| Interface Port(s) | RS-232, USB, UPS failure/incomer failure shall be annunciated. |
| Back-up | 120 minutes |
| | UPS & Battery: The UPS and battery system must be planned and provided considering the best practice. The UPS systems should have the following major features: IGBT Rectifier and Inverter Output power factor of 0.9 Input Power factor of 0.99 Overall efficiency of > 94% at 100% load True online double conversion Input THDI |

## 6.18. Decoders

| Features | Minimum Specifications |
|----------|------------------------|
| Processor | Intel Core I7 Processor, latest generation |
| Memory | Min. 8GB, DDR-4 or better |
| Graphic Card | Minimum 4 GB onboard video memory. The decoder shall support connecting three video monitors per decoder. Video memory shall be provided to ensure zero lag (subject to min 2GB/card) |
| HDD | 500 GB or better; SATA @ Min. 7200 RPM – 8MB Cache |
| Ethernet | Dual Gigabit Ethernet Ports, Auto Negotiating Ethernet controller |
| OS | Windows 8 Professional (64 bit) / Latest Windows OS / Linux |
| Speakers | Shall have built-in / external speakers |
| General | Shall be capable of connecting three monitors per decoder |
| | Antivirus & Internet Security softwares, Industrial Grade Station suitable for 24 x 7 x 365 operation. |
| | Optical Disk Drive, All USB Storages shall be password protected for access, keyboard, mouse, other Softwares as defined in this Tender & also those required to achieve the functional requirements & overall system integration. Ability to extract user specific video & alarm data to external DVD/USB storage devices as MPEG4/AVI formats with a default digital certificate for signing the exported recordings, alarms & audit logs. An additional utility shall be provided to display the exported recording, view the audit log/alarms and verify the digital signatures. A visual indication shall be provided to whether the exported recording and audit log / alarms have been |

| Features | Minimum Specifications |
|---|---|
| | altered/tampered with. MIL-STD-1275 Surge & spike protection. To be free from EMI, RFI, VHF, Mobile disturbances. |

## 6.19. PTZ Controllers

| Features | Minimum Specifications |
|---|---|
| General | Fully functional dynamic keyboard controllers with joystick |
| | Controls all pan / tilt and zoom functions |
| | Control up to 255 units from a single keyboard |
| | Many preset options and advanced tour programming |
| | Compatible with DN-PTZ camera |
| Key Application | Wired keyboard control operation of PTZ & other functions for weatherproof dome cameras. |
| Pan / Tilt / Zoom Protocol Languages Supported | Selectable |
| PTZ Data Transfer Baud Rates Supported | Selectable 1200 bps / 2400 bps / 4800 bps / 9600 bps / higher |
| Additional Features | Dynamic joystick for smooth camera movements, preset location option for quick access to frequently monitored Areas. All joystick movements shall also be possible using external mouse attached to the decoder Station. |

## 6.20. Passive Components

| Component | Minimum Specifications |
|---|---|
| 1. Outdoor (Field) Junction Box | 1. IP66 junction box suitable for outdoor application, suitable for use in corrosive environments, extreme weather conditions and flame proof.<br>2. The box shall have customized locking mechanism.<br>3. The box shall have wire management (including OFC, power, Ethernet Loop).<br>4. The box shall fit all the field equipment (Amplifier, Media Converter/Switch, Power Supply, LIU, PoE injector, Patch Panels etc.) with proper mounting arrangements.<br>5. The door shall be surface mounted with 130° opening. It shall have concealed removable hinges with captive pin. Hinges can be mounted to allow left or right hand opening.<br>6. Sealing shall be ensured by an injected one-piece polyurethane gasket or better.<br>7. Bidders will have to estimate the size of the junction box which shall accommodate all the equipment installed on the field for any location.<br>8. The junction box shall be of SS construction complete with SS mounting arrangements, accessories, bolts, nuts, washers, screws, etc.<br>9. Battery & UPS compartment shall be separate from the other accessory compartment.<br>10. JB shall have power isolation provisions using Double pole |

| Component | Minimum Specifications |
|---|---|
| | MCB for incomers & outgoings in addition to RCCB's. |
| | 11. JB shall have terminals for power wiring & for connection of communication wires (part of OFC cable), properly segregated. |
| | 12. JB shall have an outside indication of voltage, current & LED indication of incoming power availability. |
| | 13. All individual components in the Junction Box shall be provided with clear & legible printed acrylic labels indicating the component type. |
| | 14. The junction box shall also have a drawing pocket complete with all as-built drawings for the relevant Junction Box. |
| | 15. All cable entries shall be through double compression SS cable glands (only from the bottom of Junction Box). |
| | 16. Unused cable entries shall be provided with SS plugs. |
| | 17. Junction box shall be provided with an additional FRP canopy to completely cover the Junction Box from rainfall (in any direction). The Canopy shall have suitable coverage. |
| 2. Joint Closures | 24 Port Joint Closure Cylinder Min. 3 –way air/water sealable with splice tray. To be suitable for burial in marshy/water logged areas (w/o ingress of water). |
| 3. CAT-6 Cable | Cat.6, U/UTP, AWG23 cable. 100 Ohm impedance. Data transmission frequencies of up to 450 MHz; metal-free ; flame-retardant; ISO/IEC 11801 ed. 2.2; IEC 61156-5 2nd ed.; EN 50173-1; EN 50288-6-1; TIA 568-C.2; Fire rating: IEC 60332-1 Compliant |
| | Supply of UTP CAT 6 Cable shall include cabling from Switch to individual outlets in Casing Capping/PVC Cable Duct/ Flame resistant mechanically protective Conduit as per requirement, supply & installation of Information Outlet at the equipment end, factory crimped patch cords of required length at both the patch panel end as well as equipment end, including material, fittings & fixtures, screws etc. Cable lengths & CAT-6 cabling with connections/PoE/extenders to ensure that collision detection mechan S&S shall work as expected & timeout errors are eliminated. |
| | For Outdoor: GI round wire(or equivalent with equivalent strength. However, the bidders are advised to get themselves satisfied, with necessary documentary evidence, before proposing any alternate armour) armoured cable shall be used. |
| 4. Power Cable (LV) | 3-Core, 2.5 sq mm, with annealed electrolytic multistranded copper conductor with resistance > less than 8.2 7.41 Ohm/Km; Fire retardant, low smoke, low toxic, PVC black outer sheath meeting BS-5308, insulated (min 0.3 mm inner+1.8 mm outer sheath) Rated for 1.1KV, For Outdoor: GI round wire Armoured with galvanized steel wire with 90%+ coverage; IS 694:1990 reaffirmed 1995 or latest compliant. |
| | Cable drum lengths shall be adequately considered to minimise joints. |
| | Higher Cable sizes (if required) to meet the distance/higher current consumption requirements (from sources upto 500 mtrs away) shall be considered by the bidder instead of the 2.5 sq.mm cables indicated, at no extra cost to MPHC. |
| | Shall prevent moisture ingress even due to outer sheath damage / poorly sealed joints. Cable shall be suitable for direct burial also. |
| | Cable shall have it's running meter stamped/marked every 1 mtr |

| Component | Minimum Specifications |
|---|---|
| | (to be resistant to damages caused by cable pulling activities). UV resistant outer insulation of Black colour. |
| 5. Ethernet Extenders | Should support Transmission Distance >900m; Should transmit individual Ethernet data channels with Pass through PoE over standard UTP cable; Shall meet IEEE 802.3af standard for Power over Ethernet; MTBF > 100,000 hours; Operating Temperature upto & even >55 DegC. Any power provisioning required for the same shall be in bidder's scope. |
| 6. LIU | LIU should be provided for terminating the optic fiber cables. It shall provide minimum bending radius and the splice trays shall function as a splice cover for pigtail splicing. It shall be made of aluminum with powder coating in compliance with latest industry standard. Cable glands shall be provided for secured anchoring of incoming cables. Rubber grommets shall be provided at the cable entry point for tight sealing. The splice tray shall be made of ABS materials. 12/6 Port (All OFC cores to be terminated) |
| 7. Pigtails | Pigtail with semi-tight buffer PA/PBT, Ø 0.9 mm, yellow, multimode G651 50/125(OM3/OM4/better) or single mode G652.D 9/125 µm (OS1, OS2/ better), length 1 m. Fitted with one LC connector in acc. with IEC 61754-20. Zirconia (ceramic) ferrule with a PC polished end face geometry, connectors tuned in accordance with IEC 61755-3-1 and qualified in acc. with IEC 61753-1 for category U (uncontrolled environment). material PEI / UL 94 V-0, strain relief and white plastic dust cover Mechanical specifications: Mating cycles: delta IL < 0.2 dB after 500 mating cycles Pull-out force fiber pigtail: ≥ 5 N |
| 8. Optic Fiber Patch Cords | Duplex , 50/125 micron MM fiber , SC connector at both end , length as below with factory mount ceramic connector at both end Length – 3 m / 10 m / 20 m |
| 9. CAT 6 I/O | The RJ45 connector shall be screened to ensure protection against EMI and for Alien cross-talk compliance. It offers the 500 MHz performance required to be used to form a 100 meters Class EA channel as specified in ISO/IEC 11801:2002/A1:2008 and EIA/TIA 568 B2-10. All outlets fitted with shutters. |
| 10. CAT-6 Patch Cord | Factory-crimped Patch Cords (1m/2m/as required) CAT 6; 4 pair UTP Cable 23 AWG Solid Bare Copper polyethylene insulation |
| 11. Patch Panel | 12/24 Port Cat-6 Patch Panel; All Ports ISO/IES 1801:2000 &TIA/EIA 568-B.2-1 & FCC Compliant; Rear wire Manager |
| 12. Field Rack 9U | Wall Mount; Height - 9 U, Width - Depth: 600mm*600mm minimum Powder quoted steel Body with front door of glass. Completely covered & have security locks Uninhibited access to all mounting points inside the racks Proper ventilated with One Two fans Power cable management One Power strips having 7 Nos - 5A/15A sockets each incl 1 no additional as spare (Power strip/distribution shall meet MIL-STD-1275 surge & spike protection). All incoming & outgoing shall be through Double Pole isolation MCBs in addition to RCCB's. Rack shall be supplied in fully assembled condition with all hardwares |

| Component | Minimum Specifications |
|---|---|
| | & components installed to MPHC site. |
| 13. Rack 42U (Rack I) | 42U; Adjustable 19" rail in the front and rear for fixing the server and networking equipment; The rack shall be floor mounted. Top and bottom cable entry facility with cable glands; Front section with glass door and lock and back cover; Cable mangers of 1U Floor mount with caster wheels- Inbuilt power distribution unit with at least 8 4 Nos of 220 VAC, 5A outlets as spare for future usage (this is in addition to the actual requirement per such Rack); Minimum 4 nos of cooling fans for proper cooling should be provided; Mounting hardware should be provided for fixing switches, patch panels and network components. Rack shall be supplied in fully assembled condition with all hardware& components installed to MPHC site. Redundant Power supply & distribution. (Power strip/distribution shall meet MIL-STD-1275 surge & spike protection). All incoming & outgoing shall be through Double Pole isolation MCBs in addition to RCCB's. |
| 14. Rack 24U (Rack II) | 24U; Adjustable 19" rail in the front and rear for fixing the server and networking equipment; The rack shall be floor mounted. Top and bottom cable entry facility with cable glands; Front section with glass door and lock and back cover; Cable mangers of 1U Floor mount with caster wheels- Inbuilt power distribution unit with at least 8 4 Nos of 220 VAC, 5A outlets as spare for future usage (this is in addition to the actual requirement per such Rack); Minimum 4 nos of cooling fans for proper cooling should be provided; Mounting hardware should be provided for fixing switches, patch panels and network components. Rack shall be supplied in fully assembled condition with all hardware& components installed to MPHC site. Redundant Power supply & distribution. (Power strip/distribution shall meet MIL-STD-1275 surge & spike protection). All incoming & outgoing shall be through Double Pole isolation MCBs in addition to RCCB's. |
| 15. OF Patch Cord | SC to SC OM3/better Patch Cords ( 3 Mtrs); Optic fiber patch cords should be suitable for multimode SC/ST type fiber cable connectors with plastic moulded plug type connectors in compliance with latest industry standard. Optic fiber patch cords should be of standard make, Corning/equivalent. Min.. Return Loss>50db better than -60dB. |
| 16. HDPE Conduit | 2" Flame resistant mechanically protective Conduit Pipe with required accessories (couplers etc) for underground/wall mount cable laying. The conduit shall be laid along the length of cable & shall be glanded at both ends. Supply of necessary Glands, couplers, etc shall be part of bidder's scope. Colour shall be orange. |
| 17. GI Pipe | 2" C-Class GI Pipe with required accessories for road/gate/other required crossings. |

18. Surveillance Signages

| Material | Stainless steel / Aluminum Sheets |
|---|---|
| Dimensions | Approximately 400*300 mm with frame and fixtures for pole/wall mounted |
| Thickness | Minimum 3mm |
| Quality of Imprint | All text and logos to be silkscreen printed and then finished with protective quoting. |

| Component | Minimum Specifications | |
|---|---|---|
| | | Content and design to be discussed with selected bidder. |
| | | The surveillance signages shall be in 2 languages (Hindi & English). The content shall be decided later. |
| 19. Camera Mounting Poles with Lighting Arrestor and Earthing | Height - as required based on site topography & coverage requirements, including any overlapping coverages with adjacent cameras; Successful bidder to provide the detailed drawings of Poles and specifications of the pole. | |
| | • Poles shall be of SS & shall be suitable for structural purposes as per IS-1161. These shall be grouted with RCC. Pole construction shall not result-in / allow for water collection/stagnation inside the same. | |
| 20. CAT6 Cable (Armoured) | Same as CAT6 Specifications; GI round wire armoured cable. | |
| 21. OFC Cable | 4 core, Uni-tube, Armoured, Direct Burial 62.5 μm /125 μm MM FO cable FOUR-FIBRE, UNITUBE CONSTRUCTION, GEL FILLED, MULTIMODE OPTICAL FIBRE CABLE (OFC) WITH 4 Nos. 62.5/125 MICRONS COLOUR CODED FIBRES AS PER G.651 STANDARDS, ECCST ARMOUR, EMBEDDED STEEL WIRE / FRP STRENGTH MEMBERS, WATER SWELLABLE/WATER BLOCKING TAPE & OUTER UV RESISTANT AND FIRE RETARDANT LSZH SHEATH HAVING ANTI-TERMITE AND ANTI-RODENT PROPERTIES, SUITABLE FOR DIRECT/DUCT BURIAL | |
| 22. Wiegand | 4 pair twisted Cable 23 AWG Solid Bare Copper polyethylene/PP insulation. | |
| 23. Control Cable | 2 pair twisted Cable 23 AWG Solid Bare Copper polyethylene/PP insulation. | |

## 6.21. Services

| Component | Minimum Specifications |
|---|---|
| 1. Cable laying (Indoor) | This will comprise laying of all IVSS cables (CAT 6, Wiegand, Power & Control cable) in a structured format (including fitting of casing/capping, I/Os, glanding, Crimping, Testing, Termination & Installation cost etc.) within the security cabin and the control Room and other buildings. Laying shall include laying, casing+capping, necessary fixtures, dressing, cable tagging, ferruling & subsequent repairs for false ceiling/false flooring/walls/pavements related to the job. Supports shall be provided every 1 to 1.3 mtr interval. |
| | All cable laying shall include civil/mechanical/electrical works for cable laying (as required), laying, dressing, power-provisioning, drilling, clamping, supply & laying in casing+capping/conduit/GI pipe/cable duct/tray complete with fittings & supports, repairs as per procedure, glanding, ferruling, crimping, testing & recording of test results, powering-up & final commissioning. |
| 2. Cable laying (Outdoor) | This will comprise laying (all labour for digging, refilling & re-surfacing) of IVSS cables in a structured format (using appropriate quality piping) from control room (primary and secondary) to various surveillance and office locations (including laying of conduit, dressing, OFC, splicing, I/Os, glanding, Crimping, Testing, termination & installation cost etc.) Digging |

| Component | Minimum Specifications |
|---|---|
| | shall be by using JCB, handtools, pneumatic / electric jackhammers / as required without damage to any others in the area/vicnity. OFC Cables shall be laid at a depth of 1 mtr while LV cables shall be laid at a depth of 700 to 750 mm below FFL. Refilling shall involve using sand layering, brick layering & then soil (followed by repair of any damaged roads/pavement/others) for each of the cable types.<br><br>Hand-holes shall be provisioned with appropriate covers at every 100 meters and wherever the cabling path changes underground.<br><br>Above ground laying shall be in cable ducts/trays. Wherever existing cable ducts/trays are being used, cable clamping & duct covers re-fixing shall be in bidder's scope. Laying of cable in other overhead locations shall involve cable trays with necessary fabrication, fixtures & installation, incl fixing of cable trays (with supports finished & painted). All cable laying shall include civil/mechanical/electrical works for cable laying (as required), laying, dressing, power-provisioning, drilling, clamping, supply & laying in casing+capping/conduit/GI pipe/cable duct/tray complete with fittings & supports, refilling of trenches as per procedure, glanding, ferruling, crimping, testing & recording of test results, powering-up & final commissioning. |
| 3. Power Provisioning | Laying of power cables from identified location in casing+capping / conduit+outdoor cable laying, including supply of necessary fittings, glanding, Crimping, Testing, termination & installation |
| 4. Installation, Testing, Commissioning of all equipment | The vendor shall produce appropriate documents mentioning & equipment for the successful installation, testing and commissioning of all equipment and take the approval of the concerned from MPHC & consultant.<br><br>All the passive cabling shall be tested and certified by the OEM of the passive cabling such as Ethernet and OFC. Reports for the same shall be furnished. |
| 5. Documentation & Training | - The vendor shall create a user manual for each process within the new system.<br><br>The vendors shall also provide user manuals (including O&M Manuals) for each component in the system (incl all brought-out items)<br><br>The vendor shall provide adequate local level training to MPHC employees in terms of the system usage |
| 6. Site Preparation | All the onsite civil, electrical and mechanical works required in terms of the laying, installation and commissioning of the various components of IVSS at every location will be in the scope of the vendor. (Including Storage, Safety & security) |

## 6.22. Access Control Software

| Features | Minimum Specifications |
|---|---|
| General | It is envisaged that the access control system software shall either be |

| Features | Minimum Specifications |
|---|---|
| | a part of the VMS or pre-integrated with the VMS, such that the VMS should be able to manage ACS & video management as one product. The ACS shall be a true 64-bit, ODBC compliant architecture with all the standard features such as user management, access & user rights management, reporting, audit trail, search, integration with VMS (pop-up of nearby camera on ACS alarm/event etc) & Global Anti-pass back. |

## 6.23. FRS Terminals

| Component | Minimum Specifications |
|---|---|
| Support for multi mode/ technology | Proposed Reader should support multi modal authentication like Face Recognition, Multi Technology Card (EM Prox & Smart Card) & Password with Touch Screen for providing multi factor authentication by reading the Face, Cards, Passwords & various combinations. |
| Live Face Detection | Device should be intelligent enough to prevent the kind of security breach by determining whether a face in a video stream is "live" or a photograph. |
| | Device should be able to support the "Walk through Face Recognition" where device can read the user's face from a distance of up to 2 meters min. |
| IP Rating | IP65 |
| | Device should be able to perform in 1:1 & 1: N authentication modes, same should support minimum 1:20,000 face authentication. |
| Memory | Flash / RAM: 16GB / 2 GB RAM |
| Storage | Device should be able to store 20,000 Face & shall not be dependent on any server for storage of Face & hence storage capacity shall not be divided between terminal & server. |
| | Device should be able to store up to 1,00,00,000 transaction logs along with min. 20,000 picture logs. |
| | The Device should be able to store upto 5,00,000 card users. |
| Processor | min. 1GHz Quad Core Processor or better for fast processing. |
| Controller | Device should have in built controller provision for door control and also provide the Wiegand & RS 485 OSDP output and should be compatible with any 3rd party controller to transfer card holder information for Authentication. |
| Image Capture | Device should have min 2MP HD camera to capture the picture of authorized or unauthorized users & shall be transferring the |

| | |
|---|---|
| | same to server on real time basis w/o any delay unless network is down. It should support 0 lux to 25000 lux for extreme dark environments to outdoor lighting conditions. |
| Anti Pass-back | Should support local / Global Anti Pass back feature & shall be configurable user wise. |
| Response Time | The access permission should be less than 1 second & enrollment process shall not take more than 30 seconds for Face. |
| False Acceptance/Rejection | 0.001% FAR; 0.01% FRR |
| Display | Display should have min 5" Color LCD with enhanced touch sensitivity and shall be capturing & displaying USER's picture on main window / screen after authentication for valid / invalid logs both along with other credentials like Name, User ID, Time etc. Systems with changeable custom background to put MPHC logo shall be preferable. |
| Communication | Reader should communicate with central server using TCP/IP protocol over Ethernet or Internet, 10/100 Mbps auto sensing Ethernet with DHCP, SSL, GPRS (Optional). |
| Open Platform | Card reader shall be capable of reading the selected card technologies like EM / Mifare/ HID / Desfire etc. The protocol of data from the reader shall be an open format and non-proprietary. |
| Management | It should be possible to configure, manage and diagnose multiple geographically dispersed readers from a central desktop application without custom programming. |
| | The reader should have full functionality in off-line mode. It should be able to send all events once connectivity is re-established. |
| Tamper-proof | System should give warning alarm in case of tampering with machine. In the event of reader failure / malfunction / tempering, it shall be capable of being detected by the server and appropriate alarms shall be generated at workstations / server. Fault of one reader should not affect the operations of other readers in the network. |
| Update | Software / Firmware updates should be possible through network/communication Port & should be provided free of cost during Warranty & CAMC period. |
| Clock | Shall have built-in RTC Calendar. Should be able to sync the clock with the server. |
| Face Size | Minimum Face Size for Detection (Pixel) more than 60 pixel It must be settable in the menu |

| | |
|---|---|
| | Minimum Face Size for Recognition must be more than 100 * 100 pixel |
| Operating Temperature | 0-50 Deg C; upto 95% RH non-condensing |
| Certifications | CE / FCC / MIC / ROHS / BIS |
| Other | Should be bundled with Emergency Break Glass & Exit Switch inside the secured area |

## 6.24. Smart Rack

| Features | Minimum Specifications |
|---|---|
| | 4-6 KW IT load per Rack Integrated DC with minimum 210U available for IT equipments. The total rack space shall be calculated by the bidder based on its proposed equipment offering & sizing. 30% extra redundancy in available slots (U) should be considered. A detailed rack drawing should be provided as a part of the technical proposal. |
| | Compliant to Tier 2/3 guidelines for Data Center, N + N redundancy for cooling system , Fire Detection & Suppression, PDU, Electrical DB, Water leakage detection and Monitoring system with Auto door opening, providing high availability of each equipment for set of 2 Rack Integrated DC. |
| | DB panel mounted inside cabinet with all internal cabling integrated into the same. Adequate precaution and compliances to be taken care for sizing/ratings of cables and switchgear inside Rack. |
| | Interface Requirement: 8 x 10/100/1000 Base-T Copper Ports, 4 x 10 GB 10G SFP ports from day 1 and support for addition of 2 x 40G SFP ports. Dedicated Management and Sync Ports |
| | Rack mount on line double conversion UPS of 10 KVA up to 94% efficiency at full load and 0.8 output power factor. UPS to be provided with External battery bank with SMF batteries for 30 min. backup on 100% IT load with required rack mount accessories. UPS should follow all standards including UL/CE, ISO 9001 and ISO 14001 |
| | The cooling system shall be zero U rack based type with horizontal uniform cold air distribution with N+N redundancy. |
| | It shall be highly efficient, closed loop circuit, "front to back" cooling solution up to 7kW per cooling unit with ambient temperature range +10° C to +50° C . |
| | The cold air distribution shall be lateral, uniform from 1U to 42U in front of the 19" equipment for efficient cooling. |
| | There shall be no loss of vertical "U" space inside the 19" Rack while mounting the equipment |
| | Indoor operating temperature range: +18°C to +29°C |
| | Indoor Unit Noise Level:49 dBA |
| | Voltage Requirements: 1ph, 230V, 50Hz |
| | Rack U space utilization: Zero U |

| | |
|---|---|
| | Cooling Capacity Range: 5-8 kW |
| | Outdoor Operating temperature range : +5°C to +50°C |
| | Refrigerant: R407C |
| | Outdoor Unit Noise Level :<60dBA |
| | Voltage Requirements: 1ph, 230V, 50Hz |
| | Compressor: Energy Efficient Fixed Speed Scroll Compressor Mounted on Anti Vibration Bush. |
| | Condenser tubing: Air cooled condenser with internally grooved copper tubing for better Heat transfer efficiency and anti-corrosive coating on aluminum fins. |
| | Copper piping with insulation tube of elastomeric, nitrile foam between each sets of outdoor & indoor unit as per specification. Piping to be properly supported by MS clamp. All transmission wiring between indoor to outdoor unit is kept in PVC conduit. |
| | Fans: Low noise axial fans with high air flow, high static head with minimum losses |
| | Biometric reader (with relevant software along with licenses if needed). Integrated DC Rack doors should have electromagnetic lock to permit only authorized persons to open the doors through finger print reader. Design to be as per TIA 942 guidelines |
| | Fire detection and suppression system with Novec 1230 clean agent based, modular type fire suppression system to cover entire racks. Design should be as per NFPA standards guidelines. |
| | Integrated Rack Level Water leak Detection System for each Rack. |
| | Minimum 'U' space to be available to mount IT equipment's should be 60U for set of 2 Rack Integrated DC |
| | Rack mounted Remote monitoring system continuously collects critical information from network connected devices, temperature, humidity, door sensors and other dry contact monitoring. Based on pre-set parameters, automated alerts and messages are sent to the intended recipients. Remote monitoring system with SNMP, email notification, event alerts. Monitoring of Temperature, Humidity, Door Switch sensor, water leak sensor. |
| | Sturdy frame section construction, All profile edges are radiuses. Removable top & Bottom cover with Cable entry provision. Frames should be bayable, scalable and modular, High density with 42U as standard, complete with shelf, cable manager & blanking panels with PDU. Each Rack frame should be 42 U 19'' mounting type with minimum 2000 mm (Height) x 600 or 800 mm (Width) x 1200 mm (Depth). Rack design should be sturdy frame section; corners stiffened with welded MS die cast. Rack to be provided with all basic accessories like, blanking panels, baying kit, sliding keyboard tray, vertical cable manager as well as horizontal cable manager, earthing copper strip with insulators, PDU 32 amp vertical mounting with IEC type socket with 12 nos of IEC C13 Sockets & 4 nos IEC C19 Socket with 2.5 mtr power chord with 32A MCB. Each rack shall have minimum |

| Features | Minimum Specifications |
|---|---|
| | two such PDU's. |

## 6.25. Door-frame Metal Detector

| Features | Minimum Specifications |
|---|---|
| General | Multi-Zone Door Frame Metal Detector (Min. 6 Zone) with Real-time Monitoring & Recording; Operating Frequency<30KHz; Alarm – Acoustic and Optical alarm with Alphanumeric display – better than 4 line x 40 Characters with viewing area more than 140 x 30 mm, height on person bar display (Metal locator), Low battery indication; Calibration – Manual and automatic by built-in key pad. All functions should be programmable & controlled by a microcontroller; in-built camera; Shall be integrated with the VMS in such a manner that the detection data (sensitivity, Threshold, Metal level percentage and zone no. with threshold crossed)should be tagged with the video/snapshot as an audit trail.<br><br>Note: Bidders are required to take into account the additional ports & licenses while designing/ proposing a solution. MPHC shall neither be required to pay any extra charge nor make any provisions for the same at its cost. |
| | The DFMD shall provide a video of the persons entering alongwith the metal detection data. The same shall be available / recorded & managed by the VMS in an integrated manner. Bidders are advised to consider the connectivity with the DFMD & software licenses, if any, to achieve this functionality. The VMS quantity mentioned in the BOQ does not include the DFMD camera licenses nor any network ports & it shall be the responsibility of the bidder to include the same in the proposal cost. |

## 6.26. Hand Held Metal Detectors

| Features | Minimum Specifications |
|---|---|
| General | Shall be able to detect 0.1 gm/6mm dia metal with programmable Sensitivity levels (Min. 15); Audio-visual / vibration Alarm (selectable); high resolution LCD panel; Should have Necessary safety & EMC certificates from NABL. |

## 6.27. EM Locks

| Features | Minimum Specifications |
|---|---|
| Electro Magnetic Lock – Single Leaf | To suit existing doors. Shall be installed & integrated to existing doors & existing Biometric based access control System |
| Power Input | 12/24V with suitable Power adaptors (provisioning of 230VAC power & LAN/other connections from the nearest available sources shall be by bidder, including casing+capping, power sockets, switches & other electrical/RJ45 fixtures & door closers (reputed make, as required). |
| Mounting | Surface Mounting (Readers shall be located on both sides of the door for entry & exit purposes) |

| Features | Minimum Specifications |
|---|---|
| Certifications | UL Certified, BHMA Grade 1 Certified |
| Hold Force | >500 lbs |
| Features | Door Secure Sensor<br><br>Door Position Sensor<br><br>LED Indicators<br><br>Anti-Tamper Switch<br><br>Adjustable time-out facility<br><br>Anti-residual Design<br><br>Door ajar alarm (>specified duration) with sound.<br><br>To suit existing doors. Shall be installed & integrated to existing doors & existing Biometric based access control System |
| EM Lock – Double Leaf | |
| Power Input | 12/24V with suitable Power adaptors (provisioning of 230VAC power & LAN/other connections from the nearest available sources shall be by bidder, including casing+capping, power sockets, switches & other electrical/RJ45 fixtures & door closers (reputed make, as required). |
| Mounting | Surface Mounting (Readers shall be located on both sides of the door for entry & exit purposes) |
| Certifications | UL Certified, BHMA Grade 1 Certified |
| Hold Force | >1000 lbs |
| Features | Door Secure Sensor<br><br>Door Position Sensor<br><br>LED Indicators<br><br>Anti-Tamper Switch<br><br>Adjustable time-out facility<br><br>Anti-residual Design, Door ajar alarms (>specified duration) with sound.<br><br>Bidders should consider 6 doors as double leaf doors and remaining doors are single leaf. |

## 6.28. Smart Cards

| Features | Minimum Specifications |
|---|---|
| | The cards shall be 4 kilobytes memory & shall employ Mifare DESFire EV1 / HID iClass SE Platform for storing & accessing data items. |
| | The platform shall support upto 28 applications with upto 32 files per application. It shall support DES, TDES, 3KTDES |

| Features | Minimum Specifications |
|---|---|
| | & AES Cryptos. |
| | Cards shall be durable, made of PVC and meet ISO 7810 standards for length, width, thickness, and construction. Cards shall be capable of accepting a slot punch on one end, allowing it to be hung from a strap or clamp in a vertical orientation. |
| | The card shall meet the following minimum requirement:<br><br>• Cards shall contain a contact less smart chip that operates at 13.56 MHz and shall conform to ISO 14443 A.<br>• The card shall have 32 application areas to support other applications.<br>• The data inside the card shall be secured with a unique, diversified security key with 64 bit encryption as a minimum so that data stored in that area cannot be accessed or modified until the card and reader have completed a mutual authentication process.<br>• Cards shall support read/write capability with a minimum of 32 Kbits (4KB) of EEPROM memory.<br>• The Card shall meet ISO 7810 specifications and shall be in a form suitable for direct two sided dye-sublimation or thermal transfer printing.<br>• The card shall be capable of completing any write operation, even if the card has been removed from the RF field during that operation.<br>• The Card shall meet the following environmental specifications:<br>• Operating temperature -10 degree C to 55 degree C and Operating Humidity 5% to 95% relative humidity non-condensing<br>• The Card shall be warranted against defect in material and workmanship for lifetime. |
| | The cards shall be compatible with the photo imaging card printer such that cardholder images shall be printed directly onto the access card. |
| | The cards shall be laminated and will be embossed with a unique hologram/negative watermark of user photograph, which will act as a security feature. The cards will be color coded as per the type of the user. The design of the unique security feature, the color coding patterns and the overall card design will be finalized alongwith the finalized bidder. |
| | The Smart Card shall be supplied with 1.5 meter pre-printed lanyard & a solid/rigid plastic card holder with slots for clip |

| Features | Minimum Specifications | | |
|---|---|---|---|
| | or lanyard | | |
| | Smart Card Holder & Lanyard | | |
| | Size (W x H) | 2 1/8" x 3 3/8" | |
| | Material | Rigid Plastic. | |
| | Display Format | Vertical | |
| | Layout: | Vertical | |
| | Color | To be supplied in more than one colour batches. | |
| | Attachment: | Slot & Chain | |
| | Lanyard | To be supplied with Nylon/Polyester material and Multicolour printing | |

## 6.29. Portable Monitoring Stations

| Features | Minimum Specifications |
|---|---|
| Specifications | Wifi + Cellular |
| Battery | Built-in 32.4-watt-hour rechargeable lithium-polymer battery Up to 10 hours of surfing the web on Wi-Fi, watching video or listening to music Up to 9 hours of surfing the web using a mobile data network<br><br>Charging via power adapter or USB to computer system |
| Display | **Retina display**<br>9.7-inch (diagonal) LED-backlit Multi-Touch display with IPS technology<br>2048x1536 resolution at 264 pixels per inch (ppi)<br><br>Fingerprint-resistant oleophobic coating |
| Capacity | 128 GB |
| Makes/Models | Microsoft Surface Pro, Apple iPad |

## 6.30. Alarm Call Points

| Features | Minimum Specifications |
|---|---|
| Voltage | 6/12V DC |
| Housing | Surface Mount |
| Indicator | Bicolour LED (latching) |
| Relay Output | SPDT |

## 6.31. WIFI router

| Features | Minimum Specifications |
|---|---|

| Features | Minimum Specifications |
|---|---|
| Frequency | Dual Band and Dual Radio supporting IEEE 802.11 a/g/n AP, IPV6 Compliant |
| Ports | POE Gigabit Ethernet |
| Antennas | Integrated internal antennas optimized for wall, ceiling, or desktop placement. |
| Power | 802.3af PoE and support for 12V DC Adapter (No adapter is required to be supplied) |
| Data Rates | Up to 100 Mbps with automatic rate adaptation |
| Security | WPA/WPA2 (802.11i) with TKIP or AES-CCMP encryption and PSK or 802.1x authentication |
| Locking | Kensington lock |

## 6.32. Video Wall

| Features | Minimum Specifications |
|---|---|
| Video Wall Controllers | Display Controller to control upto 12 panels, with required outputs, in any matrix combination; Capable of taking universal/multiple inputs (>10) & outputs for video/data along with necessary wall management software; Dual Gigabit Ethernet Ports with support for additional adapters; 4-DVI-D/HDMI Outputs; Support for Full HD resolution at full frame rate for all panels; Intel Xeon i7 64-bit processor with 16GB RAM; 1 TB HDD |
| Video Wall Management Software | Support for Multiclient/console; Software enable user to display, multiple sources up to any size and anywhere on the display wall; auto source detection; Should support for Video, RGB, DVI, Internet Explorer, Desktop Application and Remote Desktop Monitoring Layouts; Built-in auto-layout scheduler; Multiple concurrent client support. |
| Monitors | |
| General | Very narrow & black bezel (<1mm) CCTV Monitor suitable for continuous (24x7x365) use with MTBFof more than 80,000 Hrs; |
| Screen | Min. 55" LED (2x6 Matrix) |
| Resolution | 1920x1080 or better |
| Monitor Mounting | Mounting kits, Brackets & Supports to suit installation requirements. |
| Certifications | UL, FCC, CE |

## 6.33. Servers

| Features | Minimum Specifications |
|---|---|
| General | The following specifications are indicative minimum specifications for the server system. Bidders are advised to work with the software OEMs, to propose a suitable server configuration and quantity. The software OEMs should provide a written assurance for the workability/technical feasibility of the proposed solution. |

| | |
|---|---|
| Processor | Two socket x86-64 architecture, E5-2600 Series Processor 2.4GHz with 1 populated CPU |
| RAM | Minimum 16 GB DDR 4 (in 8GB Modules) expandable to 128GB |
| HDD | 10K HDD (1.8TB x 3 numbers with RAID) or (Storage + System requirements + 50% spare space x 3 numbers with RAID) whichever is higher & shall be scalable. |
| Network Interface | Minimum 4 x 1 Gbps NIC |
| Raid Support | RAID controller should support all HDD slots on the chassis; RAID controller should support RAID 1, 5, 6  HOT Pluggable |
| External Interface | 5 USB Ports, 2 VGA, Serial Port , ODD, USB Keyboard, Mouse, Monitor |
| Form Factor | 2U rack Mounted |
| Others | Dual redundant hot pluggable SMPS each capable of powering fully populated chassis, Redundant Fans, Sound Card & speakers, Internet+Antivirus Security packages, other Softwares as defined in this Tender & also those required to achieve the functional requirements & overall system integration. Mirrored on-board cache, Support for SATA drives. MIL-STD-1275 Surge & spike protection. To be free from EMI, RFI, VHF, Mobile disturbances. |

## 6.34. Layer-3 Core Switch

| 1. | Minimum Specifications |
|---|---|
| General | Layer 3 Managed 24*10/100/1000 Base-T ports and additional 4*SFP slots. The switch should have dedicated dual redundant HA ports with required; The Switches should support Active Active clustering mode & should be in HA mode with no Single-Point-of-Failure. |
| L2 Features | Should support <br><br> • STP, RSTP, MSTP, STP root guard, Voice VLAN <br> •  IGMP v1/v2/v3, MLDv1 and v2, <br> •  IEEE 802.3ac VLAN tagging, IEEE 802.1Q Virtual LAN (VLAN) bridges, IEEE 802.1v VLAN classification by protocol and port |
| L3 Features | Should support <br><br> • Static RIP <br> •  RIPv1 &v2 |
| | Should support RPR/IEEE 802.17/equivalent for sub 50ms ring protection in following scenarios: single, dual fibre cuts in ring |
| Quality of Service | • Should support Policy-based QoS based on VLAN, port, MAC and general packet classifiers <br> • Should support strict priority, weighted round robin or |

| | |
|---|---|
| | mixed Scheduling<br>• Should support 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, foreach switch port |
| Security | Should support<br><br>• ACL based on L2/L3 headers, Dynamic VLAN assignment<br>• DHCP snooping, IP Source guard, DAI, Private VLAN,<br>• Authentication (MAC, Web and IEEE 802.3x), sFlow,<br>• Radius, TACACS+, LAG, Loop protection and loop detection, |
| Management | **Should** support:<br><br>• CLI, GUI, IEEE802.3az, RMON 4 groups, SNMPv3, LLDP<br>• Digital optical monitoring, cable fault detection<br>• DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6<br>• USB interface for taking backup of software release files configurations, SSLv2 and SSLv3,<br>• The switch shall have pro- active intelligence to create an ICMP polling for service reach ability based on IP address and configure pro- active action upon loss or re-establishment of the service reach ability<br>• Event-based triggers allow user-defined scripts to be executed upon selected system events based on Time, Date, day and Event based |
| Certifications | • UL60950-1, CAN/CSA-C22.2 No.60950-1-03,<br>• EN60950-1, EN60825-1, AS/NZS60950.1, UL, cUL, ROHS |
| Temperature | 0°C to 45°C |
| Power Supply | Internal Dual redundant power supply |

## 6.35. Layer-2 Switch

| Features | Minimum Specifications |
|---|---|
| General | Layer-2 Managed Switch with 24 Port 10/100/1000 Base-T GE Switch with 4 OFC , 1GBPS SFP ports  (IPv6 Compliant) To be IEEE802.3 compliant, MTBF> 1 lakh hours.<br><br>The switch shall be PoE enabled with 802.3af / 802.3at support/ power budget based on the proposed cameras |
| SFP | SFP ports will support any combination of 10/100/1000T, 100X, 100FX, 100BX(Bi-directional), 1000X, 1000SX, 1000LX, 1000ZX or 1000ZX CWDM SFPs |
| L2 Features | Should support STP, RSTP, MSTP, STP root guard, Voice VLAN<br><br> IGMP v1/v2/v3, MLDv1 and v2,  IEEE 802.3ac VLAN tagging, IEEE 802.1Q Virtual LAN (VLAN) bridges, IEEE 802.1v VLAN classification by protocol and port |
| L3 Features | Should support Static RIP,  RIPv1 &v2 |
| | Should support RPR/IEEE 802.17/equivalent for sub 50ms ring protection in following scenarios: single, dual fibre cuts in ring |
| Quality of Service | Should support Policy-based QoS based on VLAN, port, MAC and general packet classifiers<br><br>Should support strict priority, weighted round robin or mixed |

| Features | Minimum Specifications |
|---|---|
| | Scheduling |
| | Should support 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port |
| Security | Should support |
| | ACL based on L2/L3 headers, Dynamic VLAN assignment |
| | DHCP snooping, IP Source guard, DAI, Private VLAN, |
| | Authentication (MAC, Web and IEEE 802.3x), sFlow, |
| | Radius, TACACS+, LAG, Loop protection and loop detection, |
| Management | Should support: |
| | CLI, GUI, IEEE802.3az, RMON 4 groups, SNMPv3, LLDP |
| | Digital optical monitoring, cable fault detection |
| | DHCPv6, DNSv6, Telnetv6 and SSHv6, NTPv6 |
| | USB interface for taking backup of software release files configurations, SSLv2 and SSLv3, |
| | The switch shall have pro- active intelligence to create an ICMP polling for service reachability based on IP address and configure pro- active action upon loss or re-establishment of the service reach ability |
| | Event-based triggers allow user-defined scripts to be executed upon selected system events based on Time, Date, day and Event based |
| Certifications | UL60950-1, CAN/CSA-C22.2 No.60950-1-03, |
| | EN60950-1, EN60825-1, AS/NZS60950.1, UL, cUL, ROHS |
| Temperature | 0°C to 45°C |

## 6.36. C4i Software

| Features | Minimum Specifications |
|---|---|
| General | The system will provide a platform to integrate and manage disparate physical security systems, including but not limited to, video, communication, coordination, alarm management, disaster management, GIS etc. with one common interface. |
| | This system should enable automation of security actions/processes as a part of the incident/disaster response management. |
| | This system will support improved situation awareness and allow the end-user to more efficiently and more proactively report security issues. Commercially available products that require minimal development to meet all of the requirements shall only be considered. |
| | The C4I Software, VMS & IVA should work in an integrated manner as a single product & should preferably be from the same OEM. |
| | Modular features (alarm, video, voice, etc) that allows users access to only designated modules Modules are configured by personnel with administrator level |

| Features | Minimum Specifications |
|---|---|
| | access |
| | Addition of "modules" or activity within modules will not obscure other modules |
| | Additional systems can be added without the need to take down or reconfigure the rest of the system |
| Architecture /Hardware | Hardware neutral solution for major components such as servers |
| | Hosting Hardware shall be commercially available with no customized components |
| | Shall support redundant and/or clustered hardware to enable server failover capability. Should be VMware Ready. |
| Network | Supports SNMPv2 and SNMPv3 for network management Integrates into Active Directory System will be able to dynamically push alarm queue information using UDP or other connectionless protocol to a specified IP address or Active Directory FQN Supports multicast connections. |
| Management | Extensive logging features that report to a central management interface All logs, alarm events, user actions will be logged to a management database using SQL |
| | Web based or centralized management interface |
| | Access to logging, programming, administrative features is permissions based (ADS) |
| | Access to monitoring features is permissions based |
| | Permissions have a hierarchical structure |
| | Permissions in the C4I do not supersede permissions in integrated systems |
| | SNMP, OPC and ODBC connection options. |
| Alarm Management | Alarms are linked to corresponding icons in the mapping function Consolidates all alarms from integrated systems to a central alarm queue Dual phase acknowledgement (alarm acknowledgement initially, than acknowledgement on resolution) Two way acknowledgement (i.e. acknowledgement in C4I = acknowledgement in sub-system and vice versa) Acknowledgement in any phase requires operator comments System status monitoring for integrated platforms Received alarms can call up linked cameras Camera call up allow access to live and archived video Provides automated actions based on receipt of certain alarms (e-mail, SMS, auto-call, post on social media, etc) Alarms display response instructions, notification lists, special procedures and/or notices Alarms can be assigned a priority that is visually distinguished from higher/lower priority alarms, with flags (popup window or other feature) for critical items Priorities assigned by subordinate systems are respected |
| Mapping | Hierarchical mapping for alarms and cameras (High Court > District Courts > Tehsil Courts > floor > specialized areas) Zoom features to allow users to zoom in on site and building floor plans Alarms, PA/intercom, VTS, cameras & all integrated equipment/devices represented by icons displayed on site in |

| Features | Minimum Specifications |
|---|---|
| | layers<br>Clicking on icons representing active alarms opens dialog for that alarm<br>Alarm icons change colors/shape/etc to represent current alarm status<br>A single icon may represent multiple alarm events, each capable of activating independently with independent acknowledgement<br>Hovering/right-click or similar action on camera or alarm icon will bring up additional details such as response instructions, location description, point of contact for that alarm, etc<br>Point of contact links to contact information listed above<br>System must accept drawings in AutoCAD<br>System must accept image formats to include Raster, Vector, and 3D Vector formats or the vendor will provide a utility to convert these file types |
| Process Management & Automation | The application must have a logical workflow engine capable of enacting real-life policies that are triggered to include user-generated, logical, time or event based triggering.<br><br>The actions shall include two-way messaging, user input, escalation, parking, forwarding, dynamic GUI reconfigure etc.<br><br>The engine shall be able to undertake tasks automatically or on operator-guidance.<br><br>Shall support unlimited processes<br><br>Shall support Hindi Language |
| Audit Trails | Must provide a comprehensive mechanism for managing audit & compliance.<br><br>Should support automatically auditing the operator's performance. |
| User Management | Should provide graphical tool to create, delete, disable, configure, and modify user or user-groups. |
| | The system should have an in-built functionality to allow Playback/ export of archived video for the selected cameras & selected time period only with permission from High Court. System shall be equipped with automated workflows, with configurable hierarchies/escalation matrices to achieve the functionality. |
| Management Reporting | Shall provide user-defined reports<br><br>Shall have a de-briefing tool for incident reporting with ability to report on all the user/operator & system actions, videos, communications etc |
| Modules | VMS, NVR, DVR, Video Display System, GIS Integration, GPS & VTS, Communication Systems (Intercom/Digital PBX, Cellular Communications-GSM/GPRS/SMS, Broadcast Communications, Public Broadcast/Analog PA/IP-PA with zone selector feature, Variable Message Signages, UHF/VHF Communications, Email, Social Network), BMS, Alarm Management (PIDS, IDS, FAS, CBRNE), Disaster Response Management System, ANPR, Sensor Integration, Access Control System, Integration (for any third-party application like Visitor Information Management System, Parking Management System, Various Sensors Integrations etc) |
| Performance | C4I operation must not interfere with normal operation of integrated systems<br><br>Integrated systems must be able to operate concurrent with the |

| Features | Minimum Specifications |
|---|---|
| | C4I or independently in the event of C4I failure Monitors health/status of integrated systems System architecture must be structured and optimized for both application and network infrastructure performance, data transfers must not impede existing system performance |
| Disaster & Incident Management System (C4I) | I. Organization Registry – Creates database of organizations to help facilitate coordination; allows organizations to record their Offices, Warehouse and Field Sites including their locations so they can be mapped as well as links to other modules such as Human Resources, Assets and Inventory. |
| | II. Project Tracking - By telling you *Who's Doing What, Where, and When,* the system shall provide a valuable tool to help organizations responding to disasters know where the greatest needs are and coordinate with others who are engaged in similar work. |
| | III. Human Resources – Manages the people involved. It tracks where they are, what skills they have and help ensure that everyone is effectively engaged with the work that needs to be done; includes both staff and volunteer management capabilities. |
| | IV. Inventory – Record and automates transactions for sending and receiving shipments; supports multiple Catalogs of Items as well as providing alternative items to ensure more effective use of supplies. Allows organizations to manage requests, donations and warehouses. |
| | V. Assets – Manages assets such as vehicles, communications equipment and generators; tracks where they are, who they have been assigned to, and what condition they are in. This ensures that assets are used effectively and efficiently. |
| | VI. Assessments – Collects and analyzes information from assessments to help organizations more effectively plan their disaster management activities. Data can either be entered into an interactive web form or imported via an Excel template. |
| | VII. Shelter Management – Manages information about the location and status of temporary shelters, including resources required, staff and volunteers assigned to the shelter, and provides a check-in/check-out system for shelterees and their families allowing persons to be tracked and shelter populations to be monitored. |
| | VIII. Scenarios & Events – Plan for different scenarios, including recording what human resources, assets, facilities and tasks will be needed to effectively respond. |
| | IX. Mapping – shall have fully integrated mapping functionality which allows any location-based data to be visualized on a map. Maps provide situational awareness which is essential when either planning to prepare for or respond to a disaster. |
| | Messaging – Provides support for messages to be sent by Email, SMS, Twitter and Google Talk. Distribution Groups can be set up to allow messages to be easily sent to many people at once. Interactive messages allow people to send short message queries to the system and receive automatic responses. |

| Features | Minimum Specifications |
|---|---|
| Collaboration | The C4I shall be a full 2 Dimensional geo-spatial GIS based system for managing and controlling routing operations and incidents. The C4I system shall maintain operational continuity and facility management, whilst addressing several key critical issues regarding security, safety and facility management, such as: Fusion of information from different sensors, systems, data sources like CCTV, Fire Alarm Systems. Interface to various sensors and systems as a future upgrade. Real time management during both routine operation and emergency situations. Ability to analyze potential threat scenarios and incidents. Advanced camera management. Pro-active decision support tool. Comprehensive site planning capability, in terms of security and safety. Utilizing advanced simulations and predictions. Use of advanced virtual scenario generator to train management and staff. |
| | The C4I shall provide both 2D and 3D interactive geo-spatial GIS display that provides situational awareness and real-time location of all sensors, personnel and alarms. |
| | The C4I shall be an open architecture system allowing simple integration to external modules, sensors and systems and to allow for future scalability. |
| | The C4I shall seamlessly integrate with existing cameras, DVR's, access control and all other allocated devices and systems, in order to provide an on-line display of 2D / 3D geospatial situational awareness, live video streams and operational/decision support data, all in one unified C4I system located in the main Control Room, as well as in remote C4I system stations. |
| | The C4I shall facilitate viewing of live and recorded images and controlling of all cameras based on authorization and user privileges. |
| | The C4I shall facilitate popup of video on video wall of Control Room and operator workstation upon alarm and rule based event handling. |
| | The C4I shall have the ability to automatically designate and display camera(s) based on any point selected on the 3D GIS Map. |
| | The C4I shall present the position of the Security personnel who are equipped with GPS/RFID locators, on a 3D GIS interactive map. |
| | The C4I shall manage all security, safety and any other incident that may occur combining the following: 2D and 3D maps providing a visualization of the site – both indoor and outdoor Ability to create and evaluate various simulation scenarios utilizing comprehensive methodologies including: blast effects, flood effects, gas propagation and crowd behavior. Support real-time analysis techniques |
| | The C4I shall be vendor agnostic and have the ability to interface with any type of security, safety or other systems including: <br> • CCTV Surveillance Systems <br> • Access Control Systems |

| Features | Minimum Specifications |
|---|---|
| | • Perimeter Intrusion Detection Systems<br>• Fire, Smoke, Water, Chemical and Gunshot Detection Systems<br>• Mobile Devices<br>• Building Automation Systems including: Elevators, Lights and HVAC Systems |
| | The C4I shall provide support for four distinct displays as follows:<br>Multi-site General Status Display<br>Operational / Electronic log Display<br>2D/3D geospatial situational awareness Display<br>Devices (CCTV cameras, analytics and other visual devices) Display |
| | The C4I shall support five modes of operation as follows:<br>Planning Mode<br>Training Mode<br>Real-Time Mode<br>Debriefing Mode<br>Maintenance Mode |
| | The C4I shall encompass the following components:<br>C4I Server<br>C4I Devices Server<br>C4I Database Server<br>Mouse, Keyboard and Control Stick |
| | System Requirements |
| | Control rooms |
| | The Control Rooms should include the following functional elements:<br>Video Surveillance that provides the ability to control and monitor the video streams and events generated.<br>2 dimensional/ 3 Dimensional geo-spatial GIS System that provides situational awareness of all the sensors in the complex, the geographical location of the alarms and the location of security personnel in the complex.<br>Advanced Event Management that provides the operator/s with a decision support tool to manage all events.<br>Enterprise Level situational awareness by gaining a high level of status on the remote sites. |
| | The C4I shall support Multi operated workstations per Control Room. |
| | The C4I shall support different profiles per workstations and users. |
| | The C4I shall support a multi-site monitor and control configuration. |
| | All C4I workstations shall provide the ability to monitor and control all site's CCTV cameras, devices and legacy systems, retrieve recorded video and images from the NVR/DVR seamlessly, using a unified database. |
| | The C4I shall integrate with access control system, receive alarms from the access control system and pop up video from the appropriate cameras related to the access control alarm. |

| Features | Minimum Specifications |
|---|---|
| | The C4I shall integrate with perimeter intrusion system, receive alarms from the perimeter intrusion system and pop up video from the appropriate cameras related to the perimeter intrusion alarm. |
| | Each control room may have one or More Operators simultaneously using CCTV cameras. Operator control on cameras shall be dependent on the policies decided by The C4I Administrator. The C4I shall provide different privileges and priorities configurations for monitoring and controlling certain cameras, devices or systems. The administrator should be able to configure the system, accordingly. |
| | The C4I system shall allow overtaking control of local or remote site system, from the central command and control station. |
| | The C4I system shall fuse all the information gathered from the wide deployment of sensors and devices thus enabling the operator to be aware at all times of the events and incidents occurring under his/her responsibility. |
| | The C4I shall be vendor agnostic and have the ability to connect to any type of security, safety, facility management or other systems including: <br> CCTV Surveillance Systems <br> DVR / NVR <br> Video analytics <br> Mobile Devices such as GPS, RFID, PDA <br> BAS (Building Automation Systems) including: Elevators, Lights and HVAC Systems. <br> Legacy systems. <br> Future implemented devices/ systems. |
| | 2D / 3D interactive GIS data support |
| | The C4I shall be able to support both 2D and 3D GIS data display. The C4I can originally start as a 2D system with a seamless upgrade path to 3D GIS data display. Such upgrade would not require any SW development other than adding the respective 3D models of the various locations. |
| | The C4I shall be seamlessly integrated with GIS information. |
| | The C4I shall support a "Drill down" display from global information view down to the sensor level view. |
| | The C4I shall support on-demand GIS layered information (ESRI standard compatible) display. |
| | The C4I shall support vector data. |
| | The C4I shall support a display of multiple GIS information. |
| | The C4I shall support uploading new GIS layers to and from the system. |
| | The C4I shall allow the user to show or hide selected layers on the 3D display. |
| | The C4I shall provide an orientation option by pointing a 3D location, and receiving all location GIS attributes (attributes should take in consideration all GIS layers currently uploaded in the |

| Features | Minimum Specifications |
|----------|------------------------|
| | system). |
| | The C4I shall provide the ability to define a 3D geographical ZOI (Zone Of Interest) and receive all ZOI GIS attributes (attributes should take in consideration all GIS layers currently uploaded in the system). |
| | The C4I shall allow the user to "jump" to any required location (address, facility, favorite locations etc). |
| | Layered Map — Ability to use several layers to view special situations. The ISM shall facilitate addition of maps. |
| | Smart CCTV management |
| | The C4I shall provide full integration with all CCTV cameras models and brands (vendor agnostic). |
| | The C4I shall provide full integration with all DVR /NVR systems models and brands (vendor agnostic). |
| | The C4I shall provide full integration with all video analytics models and brands (vendor agnostic). |
| | The C4I shall display each physical camera (and other physical devices) at the exact geographical location on the 3D GIS display. |
| | The C4I shall calculate the cameras Line Of Sight (LOS) coverage pointing out any gaps and overlaps. |
| | The C4I shall provide the ability to view live and recorded video based on authorization and privileges for pre-defined users as defined by the system administrator in the system. |
| | The C4I shall provide manual camera selection. |
| | The C4I shall support Rule based automatic camera(s) selection and PTZ designation upon alert. |
| | The C4I shall allow a user to select an area on the 3D image and the system will automatically designate all relevant fixed and PTZ camera(s) covering that exact GIS point on the map based on geographical calculations and references. |
| | The C4I shall have manual PTZ camera control based on user priorities. |
| | The C4I shall enable the operator to run video playback instantaneously while viewing real time video of the same channel on a split screen. |
| | The C4I shall have the ability to freeze a video frame (snapshot) from any online live camera and export to a standard graphic file format. |
| | The C4I shall have the ability to record video from any online camera and export to a standard video file format. The C4I shall display current sensors status (where supported by the sensors), and shall alert on any faulty sensors. |
| | Remote devices operations - PDA |
| | The C4I shall provide support for remote devices, including PDAs, |

| Features | Minimum Specifications |
|---|---|
| | smart phones, laptops and support the following features: Receive exported Camera(s) snapshot from the C4I. Receive exported short video-clips from the C4I. Receive exported 3D snapshot from the C4I. Receive text messages from the C4I. Receive Action items from the C4I. |
| | Rules engine |
| | The rules-engine shall provide the operator with the ability to define rules for initiating automatic, semi-automatic (manually approved by the user), and manual predefined responses, to various routine and emergency situations. |
| | The C4I Rules engine shall be 3D geographically based. |
| | The C4I Rules engine shall allow setup of any Boolean configuration of any sensor and input to the system to create appropriate system response to alert and routine situations. |
| | The C4I Rules engine shall support ascription of single/multiple alerts, occurrences and incidents. |
| | The C4I Rules engine shall provide incidents escalation mechanism. |
| | Simulations and predictions |
| | The C4I shall support simulations and predictions based on smart algorithms display. |
| | The C4I use of 3D simulations would enhance the training and planning procedures, by allowing an accurate evaluation of implications and consequences of future events on the 3D fully GIS model of the site. The C4I shall support the design and runtime stage of all simulations as a user friendly scenario generator tool. |
| | The C4I scenario generator shall be capable of interfacing with common simulation software's and vendors. |
| | The C4I shall support the use of 3D simulative predictions, based on smart algorithms in the planning, training and real time modes. |
| | The environment parameters which support the predictions accuracy would be fed in real-time to the C4I either manually or automatically (where environment sensors are available for integration). |
| | The C4I shall have the ability to effectively predict, simulate and display human behavior in order to evaluate site evacuation, point to bottle-neck locations and estimate evacuation times. |
| | Operational Modes |
| | Planning mode |
| | The C4I shall provide a Planning operating mode that provides the following features: The C4I shall have the ability to create and maintain emergency plans for all types of alarms, threats and locations. The C4I shall have the ability to plan for the deployment of devices, including cameras and sensors, to ensure total and optimal coverage of the site. This shall allow the user to plan device placement |

| Features | Minimum Specifications |
|---|---|
| | before the facility has been constructed or renovated. The C4I shall have the ability to create comprehensive simulations including: blast effects, gas propagation and crowd behavior. The C4I shall have the ability to analyze and evaluate security gaps and the quality of security. The C4I shall have the ability to effectively evaluate and optimize routes for building evacuation by determining bottle-neck locations and evacuation times. The C4I shall have the ability to create and maintain staff rosters, personnel call trees and action checklists. |
| | Training mode |
| | The C4I shall provide a Training operating mode that provides the following features: The C4I shall have the ability to create advanced training scenarios for various types of groups. The C4I shall have the ability to conduct mission rehearsals during training drills |
| | Real-time mode |
| | The C4I shall provide a Real-Time Operating mode that provides the following features: |
| | Event management |
| | The C4I shall have the ability to manage an unlimited number of alarms. Events received by the system will cause the following: 1. An automatic designation of best/all camera(s) coverage for that event geographical location, on the video display. 2. The sensors that detected the alarm will be shown and highlighted on the 3-D GIS virtual display. The user should be able to receive alarms and manage multiple alarms at the same time. The C4I will enable prioritizing events handling according to: severity, geographic location or event classification. The priority can be changed manually. The C4I should provide the ability to group several events to one incident. The C4I shall provide the ability to ascribe and group several alerts to one incident. The C4I should be able to handle more than one event/incident concurrently with easy switch between the events / incidents. The C4I will provide the operator all the relevant information in regard to: event location in the 3-D GIS environment in order to help in reaching the best decision for the event management. The C4I shall provide security and safety management personnel the ability to deploy security and safety teams and resources to the threat location and track them at all times utilizing GPS or RFID. Once operator accepts the event, the appropriate checklist with the rule based action items to execute, would automatically pop up. |
| | Routine management |
| | Scheduling application (i.e. MS Outlook) – The user would be |

| Features | Minimum Specifications |
|---|---|
| | able to schedule tasks, activities and meetings giving each entity a 3D GIS location, time and attribute. <br> Site status – The C4I shall support all infrastructure and business related status in user define graphical display (e.g. gages, graphs, other). |
| | Tracking/Retracing |
| | The C4I shall provide 3D object tracking - The ability to locate a moving object (human or vehicle), track its movement in a crowded environment and Display the suspect's movement and trail on the 3D GIS map at Real- Time. <br> The C4I shall have the ability to locate and track suspects using recorded video from the CCTV DVR/NVR and display the suspect's movement and trail on the 3D GIS map. <br> The C4I shall provide the ability to track suspects using DVR/NVR from a certain point forward or backward in various speeds. <br> The C4I will support real time or recorded tracking by selecting and setting the cameras on screen based on the advancing path of the tracked object. <br> The C4I shall support a display of the suspect's presumed advancing ways and direction in case of a lost suspect event. |
| Export Individual Video Clips | System should have ability to export video clips whenever there it is asked by the user. System should have below capabilities |
| | Export all video clips from tracking report from a single command across a single or multiple video management C4I systems. |
| | Configure time before and video length to be exported. |
| | Replay all the exported video in sequence in an offline video player that supports video from multiple video management C4I systems. |
| | Enable the video tracking capability to be launched from the live video window, recorded video window, or through the video matrix window. |
| Multiuser Capabilities | System should cater multiple users having below capabilities- |
| | Enable multiple users to access C4I system simultaneously. |
| | Enable multiple users to handle the same alarm at one time. |
| | Enable single or multiple users to view and manage alarms in defined areas. |
| | Enable changes (acknowledge / close / escalate / add comment) by one user to be seen by other users. |
| Permission and Groups | The C4I solution shall have the following user and group permission capabilities: |
| | Ability to utilize Windows or mixed-mode authentication for Microsoft SQL Server installation. |
| | Ability to integrate with Microsoft Active Directory for single sign-on. |
| | Ability to provide multiple security groups and roles: |

| Features | Minimum Specifications |
|---|---|
| | Operators – to access operational functionality in the user interface. |
| | Administrators – to access both the operational functionality and administrative and C4I system related configuration functionality in the user interface. |
| | Power Users – to access operational functionality and some limited administrative functionality. |
| | Video Viewer – to access video console only and granted scope of hierarchy only. |
| | Mobile Operator – to access alarms via PDA or Smartphone. |
| | Ability to create new users with login and passwords and assign users to the appropriate security groups. |
| | Ability to search and auto-filter user lists to find specific users. |
| | Ability to assign security groups / roles to: |
| | View individual security zones and maps. |
| | View alarms in specific security zones and locations. |
| | View and control sensors in specific security zones and locations. |
| | Configure C4I system including maps, sensors, policies, permissions, users. |
| | Ability to grant or revoke the permission of the following functionalities to each security group role: |
| | Access Administration Console. |
| | Access Operation Console. |
| | Access Video Console. |
| | Access Mobile PDA or Smartphone. |
| | Access Business Logic Console. |
| | Access Alert Manager. |
| | Access Video Tracking / Pursuit. |
| | Access Report Wizard. |
| | Acknowledge Alert. |
| | Close Alert. |
| | Delete Alert. |
| | View Alert Details. |
| | View Deleted Alerts. |
| | Print Alert Details. |
| | Export Alerts Details. |

| Features | Minimum Specifications |
|---|---|
| | Email Alert Details. |
| | Add Notes to Alert Details. |
| | Export Video. |
| | Video Snapshot. |
| | Create Video Alert. |
| | Run a Report. |
| | Save a Report. |
| | Save a Report as a New Report. |
| | Print a Report. |
| | Export a Report. |
| | Access Preferences. |
| | Limit access to recorded video to customizable timeframe. |
| Alarm Policies and Business Logic Administration | The C4I solution shall have the following ability to handle the workflow alarms through Visio- like graphical user interface:Bidders may propose alternates/ equivalents to meet the functionality. Any intuitive, graphical, simple & hierarchial GUI shall be acceptable. |
| | Ability to create an alarm policy to raise alarm in the C4I system by defining conditions through configurable GUI-based business logic designer. |
| | Ability to match keywords or text from the alarming Sub system's event description to raise an alarm using criteria including exact match, exact NOT match, contains match, wildcard match and regularly expression match (such as forced door alarm, denied access, door open too long, etc.). |
| | Ability to optionally match alarming Sub system's event status, event severity, and sensor type. |
| | Ability to customize the alarm description the C4I system to use the exact description from the Event Source, a predefined Alert Description, or any customer description. |
| | Ability to customize the alarm severity in the C4I system based on the type of alarm Sub system event and alert location. |
| | Ability to apply the alarm policy across all alarm Sub systems or only selected alarm Sub systems with a single alarm policy. |
| | Ability to apply any alarm policy to one or more monitoring area(s) or zone(s) without having to reapply the policy multiple times. |
| | Ability to apply any alarm policy to one or more sensors without having to reapply the policy multiple times. |
| | Ability to assign specific actions for each alarm: |
| | Email. |

| Features | Minimum Specifications |
|---|---|
| | Command line action. |
| | Correlation and fusion of additional incident related information. |
| | Alarm escalation. |
| | Ability to automatically correlate related data and information to be displayed in real - time for each alarm and related rule. |
| | Correlate date or information from any security Sub system such as related live video, related recorded video, door activity, door commands, operator response instructions, map location, badge images, etc. |
| | Automatically display information in real-time when an alarm is generated. |
| | Display all correlated information together in attached windows when an alarm is generated. |
| | Automatically display related response instructions and tasks for each alarm and related rule. |
| | Ability to assign and apply business logic policy to specific sensors and or security zones. |
| | Ability to create business logic policy to support multi-decision, multi-action, workflow for any alarm through a drag and drop GUI-based designer. |
| | Enable the following activities to be included in the business logic policy: |
| | Enable business logic activity to display live video. |
| | Enable business logic activity to display recorded video based on a relative time offset from the alarm time. |
| | Enable business logic activity to display door activity based on a configurable amount of time and / or events. |
| | Enable business logic decisions based on time of day. |
| | Enable business logic decisions based on severity. |
| | Enable business logic decisions based on location. |
| | Enable business logic decisions based on regular expression text matches. |
| | Enable business logic decisions based on security threat level. |
| | Enable business logic activity to escalate alarm after predefined time. |
| | Enable business logic activity to generate a new alarm. |
| | Enable business logic activity to generate a new alert based on periodic scheduled activities. |
| | Enable business logic activity to perform a notification. |

| Features | Minimum Specifications |
|---|---|
| | Enable business logic activity to send email. |
| | Enable business logic activity to move PTZ camera to pre-set. |
| | Enable business logic activity to act on sensor Sub systems (ACS, camera commands, etc.). |
| | Enable custom Microsoft PowerShell activity to be created and included in the business logic flow. |
| | Enable business logic to correlate multiple alarms together and take follow on action such as auto- acknowledging / closing prior alarms, creating new alarms, etc. |
| | Enable business logic to generate a report. |
| | Enable business logic to escalate an alert to notification service. |
| | Enable business logic to execute a web services call. |
| | Enable business logic to execute ODBC database call. |
| | Enable business logic to invoke an external method call. |
| | Enable business logic to generate a report on an incident in multiple report formats and with different customizable information. |
| | Enable business logic to automatically send report to a predefined email. |
| | Enable business logic to take a HTTP SEND or GET action on predefined URL with or without authentication. |
| | Enable business logic to take a HTTPS SEND or GET action on predefined URL with or without authentication. |
| | Enable business logic to determine whether the current location of an alarm is within a specific geographic boundary / area. |
| | Simulate an alert and follow the step-by-step execution of the business logic prior to application of business logic in production environment. |
| | Enable business logic to call another child business logic policy as a part of the main business logic activity. |
| | Enable business logic activity to aggregate RSS (with or without authentication) or ATOM feeds, filter the feeds and create corresponding alert in the C4I system. |
| | Enable business logic to change the alarm context to that of another alarm. |
| | Enable business logic to lock a specified door, relative door defined in an area or sensor group, or multiple doors defined in an area or group. |
| | Enable business logic to open a specified door, relative door defined in an area or sensor group, or multiple doors defined in an area or group. |

| Features | Minimum Specifications |
|---|---|
| | Enable business logic to open momentarily a specified door, relative door defined in an area or sensor group, or multiple doors defined in an area or group. |
| | Ability to add an alert note through business logic. |
| | Ability to call a mass notification C4I system through business logic. |
| | Ability to specify custom business logic policy controls through a programming language. |
| | Ability to support delays within the business logic. |
| | Ability to interface with web servers from the business logic. |
| | Ability to send messages to a dispatch and incident response C4I system from business logic. |
| | Ability to specify interactive operator decision actions through the business logic. |
| | Ability to nest groups of business logic operations within other operations. |
| | Ability to specify operations to be performed sequentially and / or in parallel. |
| | Enable business logic policies to be saved, loaded and reused as necessary as business logic templates. |
| | Enable business logic activities to be copied and saved as new activity names. |
| | Ability to simulate alarms through business logic designer. |
| | Enable multiple business logic policies to be deployed and to be processing at any one time. |
| | Ability to schedule business logic policies to run at specified times of the day, days of the week, monthly, or yearly within a specified or endless time range. |
| | Ability to execute business logic policies and activities through operator console in an "on- demand" fashion. |
| | Execute on-demand business logic commands from the operator console as a global command. |
| | Execute on-demand business logic commands from the operator console as a Zone / Area based commands to affect all elements in the zone / area. |
| | Execute on-demand business logic commands from the operator console as a sensor-based commands to affect the specific sensor type. |
| | Ability to collapse multiple duplicate alarms to reduce alarm clutter. |
| | Ability for administrator to apply collapsing policies through C4I administrative user interface. |

| Features | Minimum Specifications |
|---|---|
| | Ability to assign alarm collapsing policies. |
| | Ability for alarms to be collapsed based on time duration, matches to sensor name, severity, and alert description regular expression. |
| | Allow user to view number of collapsed alerts through the operational user interface. |
| | Allow user to view the collapsed alerts and collapsed alerts details through the operational interface if required. |
| Complex Event Processing | C4I platform should have CEP functionality to predict high-level events likely to result from specific sets of low-level factors. CEP identifies and analyses cause-and-effect relationships among events in real time, allowing personnel to proactively take effective actions in response to specific scenarios. |
| | CEP methodology should provide proactive monitoring and operational intelligence by delivering real-time alerts and insight into pertinent information, enabling Enterprise managers to operate smarter, faster, more efficiently, and more competitively. Its real-time alerts should base on sets of conditions defined by SOP. |
| | CEP should have number of techniques, including: |
| | Event-pattern detection |
| | Event abstraction |
| | Event filtering |
| | Event aggregation and transformation |
| | Modelling event hierarchies |
| Summary Dashboard | Provide alarm summary of each monitoring zone or monitoring area in graphical chart format. |
| | Display the following charts per global area, monitoring zone or monitoring area. |
| | Open Alert Count by Monitoring Zone / Monitoring Area |
| | New versus Viewed (Open Alerts) |
| | Open Alert Count by Alert Severity |
| | Highest Severity Alert |
| | Enable Monitoring Zone or Monitoring area default to Summary view dashboard or to a map when the zone or area is selected. |
| | Sensor Map View |
| | Enable actions to be taken on each sensor like the icon on the map. |
| | For video cameras, choose the camera to view live video, recorded video, launch tracking capability, generate alert. |

| Features | Minimum Specifications |
|---|---|
|  | For access control door choose the door to unlock door, relock door, allow momentary access for door, lock down door, release lock down, get last activities for door, get activities for door in the last minutes, get door activities for last hour, get door activities for the last day, etc. |
| Alarm Reporting | The C4I solution shall have the following alarm reporting capabilities: |
|  | Ability to generate a full incident report within seconds of the alarm being generated. |
|  | Ability to display report on monitor and print report. |
|  | Ability to select information to be included in report at time of report generation. |
|  | Details of alarm including severity, time / date, description, and location. |
|  | Map of surrounding area associated with alarm. |
|  | Associated door activity and badge holder information if access control alarm. |
|  | Captured video image snapshots. |
|  | Response instructions. |

## 6.37. Smart Card Printer

| Features | Minimum Specifications |
|---|---|
| Card Printer | The Photo ID module shall be capable of using industry standard direct to PVC dye diffusion thermal transfer printers for the production of ID cards. |
|  | ID card printers may be connected directly to the image capture workstation or be a shared printer on the local area network, and at a minimum, the printers shall meet the following performance requirements as a minimum: |
|  | High Definition - Dye sublimation / Resin Thermal transfer; |
|  | Print Resolution of 300 dpi, up to 16.7 million colours or better; |
|  | Print speed for CMYKO (cyan, magenta, yellow, carbon black, overlay) printing approximately 30 seconds; |
|  | Washable, replaceable card cleaning rollers; |
|  | CR80 (2.125" H x 3.375" W) card stock; |
|  | Print within 2mm of card edge; |
|  | Card hopper feeder with 100 card capacity; |
|  | Simultaneous dual-sided lamination; |
|  | 2GB RAM capable of buffering cards queued for printing; |
|  | Latest Windows compatible 32 bit printer driver. |

## 6.38. Air-conditioners

| Component | Minimum Specifications |
|---|---|
| 1. Air-conditioners (1.5T / 2T) | 1.5 T / 2 T comfort AC |
| | 1.5 / 2 Ton inverter based Spilt Air Conditioners suitable for wall mounting working on 230 volts, 50 Hz, SPAC power supply with matching capacity stabilizer. i. Refrigerant - R-134A/R-401A ii. Noise Level – Less than 40 db iii. Warranty: • Minimum 5 years on compressor • Minimum 5 years on condenser |
| | Mounting/ Fitting indoor & outdoor units at the respective locations as per standard practice including Leak testing and additional refrigerant charge if required. |
| | Supply, installation, testing and commissioning of suitable size copper refrigerant lines (suction and return) including insulation of minimum 13 mm thickness nitride rubber with aluminum foil covering along with required electrical and control cabling as per standard practice. |
| | Supply and laying of 35mm-40 mm dia. PVC drain piping as per standard practice including U trap per each AC. |
| 2. Precision Air-conditioners | (Industrial Grade suitable for 24 x 7 x 365)  2 TR Micro processor based precision Air-conditioning unit |

## 6.39. Modular UPS (10KVA)

| Features | Minimum Specifications |
|---|---|
| Output Parameters | |
| Output Power Capacity | UPS Sizing shall be done by bidder for all electronics included in the Control Room with 50% spare capacity & distributions. Outputs shall be Single phase. Incomers (3 Nos) shall be 415VAC ±10%, 50Hz ±3Hz, 3-Phase, Wall mounted ACDB with double pole isolations (for incomers & outgoings) properly selected. Sizing calculations shall be furnished component-wise for which the UPS system would be catering. |
| Battery Type | Maintenance-free sealed Ni-Cd battery leak-proof. Complete with Battery Sizing shall be done by bidder for all electronics included in the Control Room with 50% spare capacity & distributions. All charging/discharging/other tests shall be in bidder's scope. |
| Typical recharge time | 3 hour(s) |
| Mechanical Parameters | |
| Interface Port(s) | RS-232, USB, UPS failure/incomer failure shall be annunciated. |
| Back-up | 120 minutes with Ni-Cd batteries |
| | UPS & Battery: The UPS (MODULAR TYPE) and battery system must be planned and provided considering the best practice as per Tier-III standards so that the UPS units can be scaled up tomorrow when the need arises. The UPS systems should have the following major features: |

| Features | Minimum Specifications |
|---|---|
| | • IGBT Rectifier and Inverter<br>• Output power factor of 0.9<br>• Input Power factor of 0.99<br>• Overall efficiency of > 94% at 100% load<br>• True online double conversion  Input THDI |

## 6.40.  Network/ Element Management System

| Features | Minimum Specifications |
|---|---|
| | The EMS shall be able to manage & monitor all the equipment & edge devices, in addition to the networking devices, on a network. |
| | Graphically displays aggregated wired /wireless network information for centralized and simplified management of all infrastructure components as a single system |
| | The NMS shall be hardened 64bit OS delivered as Virtual Appliance or Physical Appliance by OEM. |
| | The NMS Virtual Appliance/Physical Appliance shall come with an initial license to manage all supplied switches in 208 courts. |
| | The software shall enable centralized management of proposed network elements with a variety of automated management of device configurations and provides tools to capture, modify, load, verify configurations |
| | Shall support unified web-based interface and fine-grained interactive search for network analysis, problem solving, help desk visibility and reporting |
| | Shall provide performance management including CPU utilization, Memory utilization, Bandwidth utilization, Top N statistics, threshold based alarming etc |
| | Shall support single glass of pane  providing easy-to-use, exceptionally detailed information about connected end systems |
| | Shall support automating the definition and enforcement of network-wide policy rules controlling QoS, priority, bandwidth, and security |
| | Shall integration with NAC solution supplied for providing granular control over users and applications, and featuring a high-level dashboard view of the complete security posture on a single glass of pane. Network Access Control (NAC) solution helps defining policies for controlling network devices and user access to their networks. The EMS shall be able to integrate with NAC solution for a seamless experience to the users for accessing & controlling the network devices & also offer a high-level dashboard view showing all the elements on the network on a single screen. |
| | Shall support optimizing network management and help desk troubleshooting with anywhere, anytime access to critical information using popular mobile devices and tablets |
| | Shall support integration with NAC, IPS, SIEM and other third party security appliances to respond automatically and remediate |

| | threats in real-time |
|---|---|
| | Shall support comprehensive configuration Management like Bulk configuration, scheduled backup and restore, base lining and notification of changes etc |
| | Shall Transform complex network data into business-centric, actionable information and easily integrate with business apps with Software Defined Networking. EMS shall be able to sit on top of all the sub-systems/ apps, converting their complex data into user-understandable information. |
| | Shall provide flexible reporting capabilities including pre-defined and custom reports with scheduled and flexible delivery options. |
| | Shall provide a simple, open, programmable and centrally managed way to implement Software Defined Networking (SDN) for any network |
| | The software shall have modular architecture supporting other software plug-ins to enrich the network's management capabilities. This shall include Wireless Network Heat Maps, SIEM Management, IDS Management, Network Analysis Module, Network Traffic Analyzer (using sflow/Netflow/IPFixetc), etc |
| | The NMS shall have be hardened 64bit OS delivered as Virtual Appliance or physical appliance by OEM. |

## 6.41. CR/MR Infrastructure

| Component | Minimum Specifications |
|---|---|
| 1. CR/MR Infrastructure (Type I-Medium Installations) | Control Room Infrastructure for Cr of approx. area 25sqm. with false flooring (in Data Room), carpet, wall painting, Operator Workstation, chair, Partition, CR Camera, Fire Detection System, False Ceiling, LED Lighting, Electrical & associated cabling work as per the standard practices. |
| 2. CR/MR Infrastructure (Type II- Larger Installations) | Control Room Infrastructure for Cr of approx. area 40sqm. with false flooring (in Data Room), carpet, wall painting, Operator Workstation, Partition, CR Camera, Fire Detection System, False Ceiling, LED Lighting, Electrical & associated cabling work as per the standard practices. |

## 6.42. Command & Control Infrastructure

| Component | Minimum Specifications |
|---|---|
| 1. Flooring | Floor finishing with Anti-static, fire resistant laminated solid resilient unbreakable and homogeneous flexible quartz reinforced PVC Vinyl tiles composed of 100% vinyl from face to back with alkaline resisting colour pigments and other plastic compounds in different shades and designs and in different sizes and thickness and shall conform to IS : 3462 or its Equivalent British Standard. Quantity: Max Approx. 100 Sqm |
| 2. False Ceiling | False Ceiling: The Data Center, Monitoring Room & Conference Area should have False Ceiling confirming to the following specifications: It should be of Armstrong Mineral Fibre board |

| Component | Minimum Specifications |
|---|---|
|  | 16mm thick and 600mm x 600mm Dune RH 99 tile with Microlook edge in true horizontal level suspended on locking Armstrong Grid system made of Hot Dip Galvanized steel section powder coated as per manufacturers specification including making opening for electrical & air conditioning fitting complete as required. The tiles are to be installed on Armstrong 15 mm grid system having fire rating of 60 minutes as per BS 476 / 23 of 1987 with following properties : Noise Reduction Co-efficient (NRC) of 0.50, Sound Attenuation of 32 db, Light Reflectance of 83%, Thermal Conductivity K-0.052 - 0.057 ,Weight of 4.0 kg/m2 and Humidity Resistance of RH - 99. Quantity: Maximum 50 Sqm. Make: Armstrong / India Gypsum / AMF/ Equivalent |
| 3.  Windows | Cladded Glass  / toughened glass shatter-proof window. |
| 4.  Wall Painting | The existing walls & roof shall be painted in plastic/velvet. Make: Asian Paints / Nerolac / Berger /Equivalent  Glass walls shall be provided with sun-reflecting opaque films. Make:3M / equivalent |
| 5.  Partitioning | Partition, wherever required, Quantity: Max.  20 Sqm As-required. Doors with all the hardware to be provided.  Type of partition & material specs to be provided. |
| 6.  Data  &  Electrical Cabling | Internal electrification, data/audio/video cabling jobs like point wiring, internal Lighting, Distribution boards, IOs etc.; As per the relevant IS or British Standards for data center with 100% redundancy. |
| 7.  Lighting | All electrical lighting shall be of the LED type. |
| 8.  Conference Table | 1 nos. Suitable for 16 Pax sitting. Modular/branded. With provisions to mount/install wireless base stations, PA Systems & Telephones. Shall have LAN & Power points for atleast 50% of seating capacity. All wiring shall be done by the bidder.  Make: Godrej Interio, Equivalent |
| 9.  Conference Chairs | 16 Required No.+50% Comfort office chairs in net with hand rest, relaxible push-back revolving, height-adjustible.: – for all locations  Make: Godrej Interio, Equivalent |
| 10. Operator Work Desks | 2 nos. Modular branded desks suitable for IT use. (for all Stations, Decoders, etc) With provisions to mount/install wireless base stations, PA Systems & Telephones. All wiring shall be done by the bidder. Suitable Cable ducting shall be provisioned. Additional 3 Nos power points (Non UPS) per Operator Desk shall be provided for customer use (over and above the vendor's requirements & PA SystemPower requirements).  Make: Godrej Interio, Equivalent |
| 11. Operator Chairs | 4 nos. Comfort office chairs in net with hand rest, relaxible push-back revolving, height-adjustible (for all Stations, Decoders, etc).  Make: Godrej Interio, Equivalent |
| 12. Miscellaneous | 2 nos. Large LED/LCD display clock – wall mount - with day & date for both Control Rooms |
| 13. Safety | 6 nos. Smoke Detection System for the control Room. Make: System Sensor/ Xtralis / Equivalent |

| Component | Minimum Specifications |
|---|---|
| | Suitable Fire Extinguishers for each section of both control rooms. |
| | 1 nos. Fire Alarm: Intelligent microprocessor based fire detection and alarm system. The Fire Alarm Panel should be A Single Loop Analogue Addressable Type with capability to handle at least 99 Detectors & 99 Device. |
| | · Have Backlit Graphical Display of at least 4 x 40 Characters |
| | · Supporting a Event Log of at least 750 events. |
| | · Possible to give 10 Passwords in 3 Levels |
| | · Compliant with EN 54 Standards. |
| | Make: Honeywell / Siemens / Equivalent |
| 14.  Security | 4 No. IP Dome Cameras of suitable lens. Fixed type Indoor Cameras as per Section 8.1 |
| 15.  Access Control | Biometric |
| 16.  Digital Clock | > 24" diagonal large LED/LCD display clock – wall mount - with day & date |
| 17. Office Cabinets | Office Cabinets, wherever required, Quantity: Max.  10 Sqm As-required |

## 6.43.  All in One Computer

| Features | Minimum Specifications |
|---|---|
| **Monitor** | |
| Screen Size | > 23" |
| Technology | IPS Ultra HD |
| Aspect Ratio | 16:9 |
| Contrast Ratio | 1000:1 |
| Brightness | 235 cd/m$^2$ |
| Response | 14 ms |
| Graphics Input | USB type C port (supporting DisplayPort Alternate Mode) or DisplayPort or HDMI 2.0 port |
| Multi-touch | Yes |
| Pen | Yes |
| Pen-holder/Stand | Yes |
| Resolution | > 5000 lines per inch |
| Remote | Remote with more than 16 customizable, application specific keys |
| Ports | 4 x USB3 ports, 1 x USB C port, 1 x USB3 port (Upstream port connected to computer), 1 x HDMI2.0 port, 1 x DisplayPort, 1 USB-A Port |
| Audio | Audio headset jack, built-in microphone |

| Features | Minimum Specifications |
|---|---|
| OS Support | Windows® 7 or later (latest service pack/build) |
| **Processor** | |
| Processor | Intel® Core™ i5-7300HQ |
| Graphics Card | NVIDIA® Quadro® P3200 6GB GDDR5 |
| RAM | 1 x 16GB DDR-2400 expandable to 32 GB (Accessible through housing) |
| Storage | 256GB SSD PCIe Gen3 (M.2 2280) |
| Operating System | Windows 10 Pro |
| Video Out | 1x Mini DisplayPort (DP1.2, 4K 60Hz) 1x Mini HDMI (HDMI2.0, 4K 60Hz) |
| Other Connections | 1x LAN port(Gigabit) 3xDC Jack |
| Wireless | Wi-Fi IEEE 802.11 ac, Bluetooth 4.2 |
| **Make** | **Wacom, Apple** |

## 6.44. Alarm Sounders

| Feature | Minimum Specifications |
|---|---|
| General | The sounder shall sound a different (selectable) tone of sufficient strength (selectable) so as to be easily identifiable at 20 mtr distance in a noisy atmosphere (70db noise level). Can be connected to the local camera for its operation. |

## 6.45. HDD based Storage Archival System

| Feature | Minimum Specifications |
|---|---|
| **Media Asset management and Archive Software** | |
| Essential requirements | The proposed software should be a unified MAM & Archival |
| | 25 concurrent user licenses are required |
| | The system should provide granular permission levels to control who can access important actions; The system should have options to assign user permissions based on categories. |
| | The proposed system should come with no restrictions on data and should come with an unlimited data management license. |
| | The system should be capable of managing all media files (Image, Audio, Video) and documents (txt, rtf, Doc, docx, Odt, Xml, Xls , xlsx, csv, Pdf, Htm, html,Ppt, pptx, Ods etc.) |
| | Additional metadata fields creation should be possible and there should be no restrictions on the number of metadata fields. The system should support addition of the following metadata field types dynamically: Date field, Text-field, text |

|  | area, Select list |
|---|---|
|  | The proposed system should use open standards and provide an API for third party integrations |
|  | Usage of wild card searches such as &(and), Or operators should be possible in search |
|  | The proposed system should provide capability to export content to remote locations and websites if needed. |
|  | Frame based metadata tagging should be possible. |
|  | The solution should provide Proxy Video, thumbnail and story board view for all archived videos |
|  | Automated dual copies of media should be possible for DR purposes. |
|  | Audio graph should be generated for all audio files and an inbuilt trimming functionality to trim audio files should be provided. |
|  | Secure sharing of media and documents with specific users or groups via email should be possible |
|  | All actions including uploads, downloads, access, search, preview should be logged with detailed audit trail and the IP of the accessed system should be captured. The audit trail report should be exportable to standard file formats such as xls and PDF |
|  | The system should come with basic image editing capabilities such as crop, rotate, resize etc. |
|  | The system should have an approval based workflow. Any media download or retrieval should be possible only after approval by a senior manager/user with approval privileges. |
|  | Automated water mark insertion for incoming media should be possible |
| Architecture | The system should be on a client-server architecture. The client application should be web based and run on all major operating systems such as windows and mac |
|  | The core application and database should be based on a clustered architecture to enable scalability. The cluster should scale to a minimum of 10 nodes. |
|  | The operating system should be either Linux based operating system or on Windows Server 2019 or above |
| Authentication | LDAP and Active Directory (AD) based authentication should also be supported |
| Metadata extraction | All standard file metadata should be automatically extracted and stored for easier search |
| Artificial Intelligence (AI) capabilities | The proposed system should have advanced Artificial intelligence-based face recognition and automated metadata capabilities for faster search. |
| Transcoding | The proposed system should have capabilities to convert video between standard formats listed under media support. The system should also support partial retrieval of clips. The ability to mark the in and out points should be present in the software. |

| | |
|---|---|
| Caching | System should have Intelligent caching for frequently used media and data. Frequently used media should be stored in a faster storage medium for quick retrieval. |
| Document management | System should have the capability to deep index all major documents such as txt, rtf, Doc, docx, Odt, Xml, Xls , xlsx, csv, Pdf, Htm, html, Ppt, pptx, Ods etc. Any textual content in the documents should be quickly searchable |
| Disaster recovery | The proposed system should have inbuilt DR management software. All data in the main site must be replicated in the DR site. In case of a disaster at the main site the system should be smoothly functioning from the DR site for business continuity and higher uptime. All data in DR site should be immediately accessible in case of a disaster/failure at the main site. |
| Media Support | Video-Codecs: XD CAM HD, DV Family, AVC Intra, MPEG2, H.264, H.265<br>Video Wrappers: MXF, MOV, DV, Mp4 |
| | Audio Formats: PCM / LPCM, MPEG Layer 1/2 Audio, AAC, HE-AAC, WMA, AMR, Raw, DV |
| | Image Formats: Png, Jpg, tiff, Jpeg, bmp |
| Licenses | All licenses should be perpetual. |
| System Administration and management | All administration tasks of the proposed system should be supported on a web-based client |
| Specifications for MAM & Archive Server at main location | Make: As per the PTR (Section 2.19)<br>CPU: Dual Intel Xeon Silver 16C/32T or higher<br>Motherboard: CPU compatible<br>RAM: 128GB DDR4<br>HDD: 2 X 200GB 6Gbps SSD on Raid 1<br>OS: Linux based or Windows Server 2019 and above<br>Network Adapter: Dual 10Gbps<br>Power Supply: Dual hot plug |
| Specifications for MAM & Archive Server at DR location | Make: As per the PTR (Section 2.19)<br>CPU: Intel Xeon Silver 16C/32T or higher<br>Motherboard: CPU compatible<br>RAM: 128 GB DDR4<br>HDD: 2 X 200GB 6Gbps SSD on Raid 1<br>OS: Linux based or Windows Server 2019 and above<br>Network Adapter: Dual 10Gbps /40Gbps<br>Power Supply: Dual hot plug |
| Specifications for Transcoding server | Make: As per the PTR (Section 2.19)<br>CPU: Intel Xeon E-2278G 3.4GHz 8C/16T or higher<br>Motherboard: CPU compatible<br>RAM: 128GB DDR4<br>HDD: 2 X 200GB 6Gbps SSD on Raid 1<br>OS: Linux based or Windows Server 2019 and above<br>Network Adapter: Dual 10Gbps/40Gbps<br>Power Supply: Dual hot plug |

**Caching Storage (Tier-2) :**

| Parameter | Description |
|---|---|
| Form Factor | 4U 60 Bay per Chassis |
| Minimum Configuration | 4U/60bay, scale-out NAS, dual nodes subsystem including |

| | |
|---|---|
| per Chassis | 2x12 Core CPU, 128GB (8x16GB) memory, 8x10GbE(SFP+), 4x12Gb/s SAS EXP. Ports, 2x(PSU+FAN module), 2x( SuperCap.+flash module), 60x3.5"drive trays and rack mount kit, scale out to 144 nodes with Nodes failover. |
| Cache Memory (per node) | Default DDR4 64GB, up to 128GB or 256GB |
| Front-end Networking (per node) | 10GbE (SFP+) x 2 or 10GbE (SFP+) x 4 or 25GbE (SFP28) x 2 or 40GbE (QSFP+) x 2 |
| Internal Network (per node) | 10GbE (SFP+) x 2 or 25GbE (SFP28) x 2 or 40GbE (QSFP+) x 2 |
| Drive Interface | 12Gb/s SAS |
| Data Protection | • Disk protection: RAID5, RAID6<br>• Node protection: Erasure code (2+1 or 4+1 or 4+2 or 8+1 or 8+2) or Replica (x2 or x3)<br>• Cluster protection: Rsync |
| Data Service | SED (self-encrypting drives) |
| Protocol Support | CIFS/SMB, NFS, FTP |
| Management | • ACL control<br>• Quota management<br>• User account management<br>• Web-based EonOne management software<br>• Microsoft Active Directory (AD), Linux LDAP and NIS authentication<br>• Storage Resource Management to analyze history records of resource usage<br>• DNS Load Balancer |
| Availability and Reliability | WORM, SMB Multichannel, Self-healing design |
| Safety Standard | • Safety: UL, BSMI, CB<br>• Electromagnetic compatibility: CE, BSMI, FCC |
| Storage Usable Size | 2.5PB |
| Through put | 16.79 Gbps Write and 14 Gbps Read |
| Green Design | • 80 PLUS-certified power supplies delivering more than 80% energy efficiency<br>• Intelligent multi-level drive spin-down |
| Power Supply Unit | • Power supplies:<br>   ○ 4U 60-bay: 1600W (80 PLUS Platinum)<br>   ○ The other form factors: 530W (80 PLUS Bronze)<br>• AC voltage: 100-127VAC @13.8A to 200-240VAC @9.6A with PFC (auto-switching)<br>• Frequency: 47-63 Hz |
| **Deep Archive Storage (Tier-3 Storage):** | |
| | 1. The Archive shall have an initial useable, protected storage capacity of 3000 TB and shall be based on hard disk media or Data Tape but non-linear access to Archive Content is preferred. |

2. Archive Storage should be distributed Primary & DR site 3000TB + 3000TB. Total Maximum size per location would be 15000TB

3. The Archive shall be based on a modular architecture and the configuration must be capable of expansion by adding modules as required. And Required Hard Drive can be added as per the data growth.

4. The Archive shall be fully redundant with no single point of failure in the storage media. All Power Supplies and Disks must be hot swappable without loss of service.

5. If the Archive is based on RAID technology, the Array should be Clustered or Replicated for resilience

6. The Archive will be purchased without disks or Tapes such that standard commercially available disks or Tapes may be sourced from local suppliers with local warranty and added to the Archive storage as required.

7. The Archive must support mixed disks drive capacities or mixed Tape Capacities within the same array.  It is anticipated that 18TB disks will be used initially with the option to use 20TB and larger disk capacities as they become available, in any mix without loss of storage yield

8. Compatible 3.5" Disks must be available from at least two disk drive vendors and be capable of mixed operation within the same module. The system must be compatible with 2.5" disks in future, and capable of supporting mixed 2.5" and 3.5" disks in the same module.

9. The Archive shall support individually removable disk drives for shelf storage, and media transportation. Data shall be written as complete non-segmented files on the disks and replicated for protection against individual disk failure.

10. For disaster recovery purposes it shall be possible to remove any individual disk or Tape and recover media files using an external computer without special software.

11. The security of the Archive shall be based on keeping at least two Replicas of every media file by default with the option to keep a third replica of strategically important content, or a single replica where the storage is deemed to be a backup volume, on a user selectable basis.

12. Suppliers should specify the expected operational disk life. Disk life and replacement cost will be taken into account as part of the total lifetime cost of ownership of the Archive

13. Connectivity shall be based on 1GB Ethernet and/or 10GB Ethernet with RJ45 and Optical connectivity options.

14. The system shall be capable of integrating with Media Management Applications at low level using a publicly available and license-free API. All functions of the Archive shall be accessible through the API including Partial File Restore for specified formats.

15. Optionally the system shall be capable of integrating with Media Management Applications at a high level using a Virtual File System which shall emulate a NFS / SaMBa / CIFS file system and should support FTP, FXP and Vendor Specific protocols listed separately. Where this approach

| | is offered, the Virtual File System shall be capable of creating the necessary file replicas to meet the requirements of section 10 above.<br>16. Where a high-level Virtual File System approach is offered, the file system shall be maintained in dual fault tolerant RAID storage with the option for dual redundancy. The Virtual File System shall also be capable of using a share on an existing Near-Line storage system as the Cache<br>17. It shall be possible to create a Managed Shelf / Vault workflow as a Copy of Last Resort for all, or strategically important static parts of the Archive<br>18. It shall be possible to create a Copy of Last Resort in Public Cloud storage for all, or strategically important parts of the Archive |
|---|---|

## 6.46. Firewall & Cyber Security Solution

| Feature | Minimum Specifications |
|---|---|
| General | The Firewall appliance should be a purpose-built appliance based solution with integrated functions like Firewall, VPN and User awareness. The product licensing should be device based and not user/IP based (should support unlimited users except for VPN). The hardware platform & Firewall with integrated SSL/IPSec VPN application has to be from the same OEM. The quoted NGFW OEM must have NSS Lab's Recommended rating as per latest NSS Labs NGFW Methodology testing with a minimum exploit blocking rate of 95%. |
| Throughput | Throughput capacity of firewall under test conditions should not be less than 70 Gbps. Throughput capacity of VPN under test conditions should not be less than 15 Gbps. Appliance should support Max 25,000,000 concurrent sessions. Appliance should support at least 1,80,000 connections per second. Solution should be based on multi core processors and not on proprietary hardware platforms like ASICs, Should have minimum 16 GB memory with option of upgradable up to 32 GB. Hardware should have field upgradable capabilities for upgrading components like network cards, RAM, power supplies, fan etc. |
| Modes | Solution should have following deployment modes mandatory: a) L3 Mode, b) L2/Transparent Mode. The solution should be deployed in High Availability. Should support hardware fail open cards for critical interfaces. NGFW appliance should have inbuilt storage of 900 GB SSD / HDD. |
| Interface | Interface Requirement: 8 x 10/100/1000 Base-T Copper Ports, 4 x 10 GB 10G SFP ports from day 1 and support for addition of 2 x 40G SFP ports. Dedicated Management and Sync Ports |
| Features | Firewall Feature: solution should be based on "stateful inspection" technology and must support access control for at least 500 predefined /services/protocols with capability to define custom services. Must allow security rules to be enforced within time intervals to be configured with an expiry date/time. The communication between the management servers and the security gateways must be encrypted and authenticated with PKI Certificates. |
| Authentication | Authentication: schemes must be supported by the security gateway and VPN module: tokens (ie -SecureID), TACACS, RADIUS and digital certificates. Should support Ethernet Bonding functionality for Full Mesh deployment architecture. Must support user, client and session authentication methods.<br>User authentication schemes must be supported by the security gateway and VPN module: tokens (ie -SecureID), TACACS, RADIUS and digital certificates. Firewall should support the system authentication with RADIUS and local authentication. Both should work simultaneously. Solution must support DCHP, server and relay. Solution must include the ability to work in Transparent/Bridge mode. |
| Solution | Solution must support gateway high availability and load sharing with state |

| | |
|---|---|
| | synchronization. Solution must support Configuration of dual stack gateway on a bond interface, OR on a sub-interface of a bond interface. Solution must Support 6 to 4 NAT, or 6 to 4 tunnel. |
| User Management | User Identity / Awareness: Must be able to acquire user identity from Microsoft Active Directory without any type of agent installed on the domain controllers. Must support Kerberos transparent authentication for single sign on. Must support the use of LDAP nested groups. Must be able to create rules and policies based on identity roles to be used across all security applications. The solution should have the inherent ability to detect multi-stage attacks. For the purpose of detecting multi stage attacks the solution should include static analysis technologies like antivirus, anti-malware/anti bot however in an integrate mode with the solution. The bidder or SI may use additional appliances (at max 2) for the solution but should be provided by the same OEM in the solution. |
| Detection | The solution should inspect the web sessions (HTTP and HTTPS both) to detect and notify the malicious web activity including malicious file downloads through the internet. Third Party/Separate appliance for SSL offloading will not be accepted. The proposed solution should dynamically generate real-time malware intelligence for immediate local protection via integration with the separate Automated Management and Event Correlation System. This Automated Management and Event Correlation solution must be from the same OEM.Solution should have an ability to remove all the active content and macros sending only a clean document to the end user. Solution should be able to detect & Prevent the Bot communication with C&C. |
| Multi-tier | Solution should have aMulti-tier engine to ie detect & Prevent Command and Control IP/URL and DNS. Solution should be able to detect & Prevent Unique communication patterns used by BOTs ie Information about Botnet family. Solution should be able to detect & Prevent attack types ie, such as spam sending click fraud or self-distribution, that are associated with Bots. Solution should be able to block traffic between infected Host and Remote Operator and not to legitimate destination. Solution should be able to provide with Forensic tools which give details like Infected Users/Device, Malwaretype, Malware action etc |
| Security Management | Security Management: A separate centralized management appliance/software needs to be provided for management and logging of NGFW appliance. In case other security components like APT solution etc. are from the same OEM then a single centralized management, logging (and not multiple management system) should manage all such security devices. Security management Hardware can be an OEM appliance or dedicated server with software. In case of dedicated server, Server should be rack mounted with Intel based 8 core processor with min two nos. of 64-bit processor having 64 GB RAM or OEM recommended whichever is higher for these specifications. Minimum 2 TB Hard disk and minimum dual 10/100/1000 Mbps network port. The central management console and should be able to handle 5000 log/sec. |
| SM Application | Security management application must support role based administrator accounts. Management must provide functionality to automatically save current state of Policy each time when any configuration changes in Security policy is enforced, and should have option to revert back to previous state stored state. It must be capable of storing at least last 5 policies. Management Solution must include a Certificate-based encrypted secure communications channel among all vendor distributed components belonging to a single management domain. The management must provide a security rule hit counter in the security policy. Solution must include a search option to be able to easily query which network object contain a specific IP or part of it. Solution must have a security policy verification mechanism prior to policy installation. |
| Log | The Log Viewer should have the ability view all of the security logs of all functions managed by the solution in one view pane (helpful when troubleshooting connectivity problem for one IP address ) |
| | The Log Viewer should have the ability in the log viewer to create filter using the predefined objects (hosts, network, groups, users...) |
| IPS/IDS | Should be bundled with industry standard Intrusion Prevention & Detection System |

| Cyber Security Software | Should be bundled with Data Center grade cyber security software solution comprising Advance Persistent Threat (APT), Security Incident & Event Management System (SIEM), Data Leakage Protection (DLP), Network Behaviour Solution System (NBSS), Application Performance Monitoring & Management (APMM), Anti-virus/ gateway security/web security solution & any other software as part of the cyber security |
|---|---|

## 6.47. Cyber security Software Suite

| Features | Minimum Specifications |
|---|---|
| General | Should be equipped by necessary licenses with Data Center grade cyber security software solution comprising Advance Persistent Threat (APT), Security Incident & Event Management System (SIEM), Data Leakage Protection (DLP), Network Behaviour Solution System (NBSS), Application Performance Monitoring & Management (APMM), Anti-virus/ gateway security/web security solution & any other software as part of the cyber security |

## 6.48. DC Infrastructure

| Features | Minimum Specifications |
|---|---|
| Data Centre Availability | The availability of data from the hardware at a location must be guaranteed to 99.98% availability. |
| Redundancy and concurrent maintainability | It requires at least n+1 redundancy as well as concurrent maintainability for all power and cooling components and distribution systems. Any such component's lack of availability due to failure (or maintenance) should not affect the infrastructure's normal functioning. |
| Downtime | No more than 1.6 hours of downtime per year |
| | N+1 fault tolerant providing at least 72 hour power outage protection |
| Power | All IT equipment should be dual-powered and fully compatible within the topology of site architecture. |
| | Data Centre shall primarily be divided into two zones: |
| | Server Infrastructure Zone: This zone shall host servers, server racks, storage racks and networking components like routers, switches to passive components. All the Data Centre LAN connections shall be provided through switches placed in this area. Access to this zone, where the surveillance project IT infrastructure is hosted, shall be demarcated and physical access to the place shall be given only to authorized personnel. Indoor CCTV Cameras shall be installed to monitor physical access of the system from remote location. |
| | UPS and Electrical Zone: This zone shall house all the Un- |

| | Interrupted Power Supply units, Main Power Distribution Units (PDUs) to feed the components such as PAC, UPS, lighting, fixtures etc. This shall also house all the batteries accompanying the UPS components. As these generate good amount of radiation, it is advised to house these components in a room separate from server infrastructure zone. |
|---|---|
| | The Data Centre and it corresponding HA/DR site will be the nerve centre wherein all the ICT infrastructure along with the network infrastructure will be installed. The data centre will host all the software applications for various smart city components. The data centre will have adequate provision for data security through implementation of firewall, IPDS, antivirus system, etc. The Physical access to the data centre will also be managed through a biometric access system. |
| | All civil, mechanical and electrical work associated with creating the facility will be in the scope of the SI. |
| | SI is required to locate all hardware/software and related items as per design offered for DC infrastructure including SLA monitoring and Help desk management, in above data Centre complying with standard guidelines as per Telecommunications Infrastructure UPTIME/TIA-942. |
| | Data Centre shall be available for 24 x 365 operation. |
| | The DC infrastructure shall have built in redundancy and high availability in computing and storage to ensure that there is no single point of failure. |
| | Minimum Guiding factors for selection of Data Centre: Following are benchmark requirements which should act as guiding factors for SI to consider while designing the Data Centre |
| | Smart Racks system with Redundant precision air conditioners, power sources, fire suppression system along with access control system at rack level |
| | Data Centre should be as per Telecommunications Infrastructure Standard for Data Centres and should be 27001 Certified. |
| | It should have access control system implemented for secured access. |
| | Indoor CCTV Cameras would be required to be installed to monitor the physical access of the system from remote location |

| | |
|---|---|
| Data Centre Availability | The availability of data from the hardware at a location must be guaranteed to 99.98% availability. |
| Redundancy and concurrent maintainability | It requires at least n+1 redundancy as well as concurrent maintainability for all power and cooling components and distribution systems. Any such component's lack of availability due to failure (or maintenance) should not affect the infrastructure's normal functioning. |
| Downtime | No more than 1.6 hours of downtime per year |
| | N+1 fault tolerant providing at least 72 hour power outage protection |
| Power | All IT equipment should be dual-powered and fully compatible within the topology of site architecture. |
| | Data Centre shall primarily be divided into two zones: |
| | Server Infrastructure Zone: This zone shall host servers, server racks, storage racks and networking components like routers, switches to passive components. All the Data Centre LAN connections shall be provided through switches placed in this area. Access to this zone, where the surveillance project IT infrastructure is hosted, shall be demarcated and physical access to the place shall be given only to authorized personnel. Indoor CCTV Cameras shall be installed to monitor physical access of the system from remote location. |
| | UPS and Electrical Zone: This zone shall house all the Un-Interrupted Power Supply units, Main Power Distribution Units (PDUs) to feed the components such as PAC, UPS, lighting, fixtures etc. This shall also house all the batteries accompanying the UPS components. As these generate good amount of radiation, it is advised to house these components in a room separate from server infrastructure zone. |
| | The Data Centre and it corresponding HA/DR site will be the nerve centre wherein all the ICT infrastructure along with the network infrastructure will be installed. The data centre will host all the software applications for various smart city components. The data centre will have adequate provision for data security through implementation of firewall, IPDS, antivirus system, etc. The Physical access to the data centre will also be managed through a biometric access system. |
| | All civil, mechanical and electrical work associated with creating the facility will be in the scope of the SI. |
| | SI is required to locate all hardware/software and related items as per design offered for DC infrastructure including SLA monitoring and Help desk management, in above data Centre complying with standard guidelines as per Telecommunications Infrastructure UPTIME/TIA-942. |
| | Data Centre shall be available for 24 x 365 operation. |
| | The DC infrastructure shall have built in redundancy and high availability in computing and storage to ensure that there is no single point of failure. |

| | Minimum Guiding factors for selection of Data Centre: Following are benchmark requirements which should act as guiding factors for SI to consider while designing the Data Centre |
| --- | --- |
| | Smart Racks system with Redundant precision air conditioners, power sources, fire suppression system along with access control system at rack level |
| | Data Centre should be as per Telecommunications Infrastructure Standard for Data Centres and should be 27001 Certified. |
| | It should have access control system implemented for secured access. |
| | Indoor CCTV Cameras would be required to be installed to monitor the physical access of the system from remote location |

## 6.49.  Recording Server System

| Features | Minimum Specifications |
| --- | --- |
| General | Bidders should follow specifications mentioned in Section 6.15 as the basic minimum specifications while sizing the server requirement for recording video from all the cameras at 12 FPS & HD Resolution continuous recording. Virtualization environment can be proposed, provided all the required licenses are bundled into the quoted cost. |

## 6.50.  SAN Storage System

| Features | Minimum Specifications |
| --- | --- |
| General | Bidders should follow specifications mentioned in Section 6.14 as the basic minimum specifications while sizing the storage requirement for recording video from all the cameras at 12 FPS & HD Resolution continuous recording. |

## 6.51.  Archiving Server System

| Features | Minimum Specifications |
| --- | --- |
| General | The Archiving Storage System is already specified to include the required processing power to carry out the archiving function. Bidders are advised to proposed separate Archiving Server System only in case their offered solution mandates any other dedicated server system for hosting the management software. |
| | Bidders should follow specifications mentioned in Section 6.15 as the basic minimum specifications while sizing the server requirement for archiving & retrieving video from all the cameras at 12 FPS & HD Resolution continuous recording & archiving & retrieving courtroom proceedings audio-visual recordings. Virtualization environment can be proposed, |

| | provided all the required licenses are bundled into the quoted cost. |
| --- | --- |

## 6.52.  Encoding, Streaming & Web Server System

| Features | Minimum Specifications |
| --- | --- |
| General | Bidders should follow specifications mentioned in Section 6.15 as the basic minimum specifications while sizing the server requirement for encoding & streaming video on the website (live as well as playback of archived video on demand). Virtualization environment can be proposed, provided all the required licenses are bundled into the quoted cost. Bidders are advised to include all the software licensing required for providing live streaming as well as VoD on MPHC website in the cost. In case the streaming service is proposed on a SaaS Model, the necessary licensing cost shall be included as Operational Expenses in Part H of the commercial Bid. **Please note that under no model can the video content be hosted outside the MPHC premises.** |

## 6.53.  Microphones

| Features | Minimum Specifications |
| --- | --- |
| General | The microphones to be installed in Sections of the Tehsil/ District Courts shall be connected to audio-in ports of the respective cameras for audio recording. |
| | Wall/Ceiling mounted omnidirectional, low impedance, built-in AGC,  Mic/Line Level Output, high-quality Microphone; Should be able to pick up normal sounds within a radial distance of approx. 5m. Two |

**Please note that the specifications mentioned in this tender document are the minimum specifications that the proposed system/components are required to meet. However, bidders are free to propose higher specifications.**

## Annexure A - List of Courts

**List of 208 Courts** (48 District Courts & 160 Tehsil Courts) where IVSS & CLASS shall be implemented

| Sr. No. | Name of Court | District |
|---|---|---|
| 1. | District & Sessions Court, Alirajpur | Alirajpur |
| | Civil Court, Jobat, Dist. Alirajpur | Alirajpur |
| 2. | District & Sessions Court, Anuppur | Anuppur |
| | Civil Court, Kotma, Dist. Anuppur | Anuppur |
| | Civil Court, Rajendragram, Dist. Anuppur | Anuppur |
| 3. | District & Sessions Court, Ashok Nagar | Ashoknagar |
| | Civil Court, Chanderi, Dist. Ashoknagar | Ashoknagar |
| | Civil Court, Mungaoli, Dist. Ashoknagar | Ashoknagar |
| 4. | District & Sessions Court, Balaghat | Balaghat |
| | Civil Court, Katangi, Dist. Balaghat | Balaghat |
| | Civil Court, Baihar, Dist. Balaghat | Balaghat |
| | Civil Court, Waraseoni, Dist. Balaghat | Balaghat |
| | Civil Court, Lanji, Dist. Balaghat | Balaghat |
| 5. | District & Sessions Court , Barwani | Barwani |
| | Civil Court, Sendhwa, Dist. Barwani | Barwani |
| | Civil Court, Khetiya, Dist. Barwani | Barwani |
| | Civil Court, Rajpur, Dist. Barwani | Barwani |
| | Civil Court, Anjad, Dist. Barwani | Barwani |
| 6. | District & Sessions Court, Betul | Betul |
| | Civil Court, Bhainsdehi, Dist. Betul | Betul |
| | Civil Court, Aamla, Dist. Betul | Betul |
| | Civil Court, Multai, Dist. Betul | Betul |
| 7. | District & Sessions Court, Bhind | Bhind |
| | Civil Court, Gohad, Dist. Bhind | Bhind |
| | Civil Court, Lahar, Dist. Bhind | Bhind |
| | Civil Court, Mehgaon, Dist. Bhind | Bhind |
| 8. | District & Sessions Court, Bhopal | Bhopal |

| | | |
|---|---|---|
| | Civil Court, Barasia, Dist. Bhopal | Bhopal |
| 9. | District & Sessions Court, Burhanpur | Burhanpur |
| | Civil Court, Nepanagar, Dist. Burhanpur | Burhanpur |
| 10. | District & Sessions Court, Chhatarpur | Chhatarpur |
| | Civil Court, Nowgaon, Dist. Chhatarpur | Chhatarpur |
| | Civil Court, Bijawar, Dist. Chhatarpur | Chhatarpur |
| | Civil Court, Laundi (Lavkuch Nagar), Dist. Chhatarpur | Chhatarpur |
| | Civil Court, Rajnagar, Dist. Chhatarpur | Chhatarpur |
| | Civil Court, Bada Malehra, Dist. Chhatarpur | Chhatarpur |
| 11. | District & Sessions Court, Chhindwara | Chhindwara |
| | Civil Court, Amarwara, Dist. Chhindwara | Chhindwara |
| | Civil Court, Chorai, Dist. Chhindwara | Chhindwara |
| | Civil Court, Junnardeo, Dist. Chhindwara | Chhindwara |
| | Civil Court, Pandurna, Dist. Chhindwara | Chhindwara |
| | Civil Court, Parasiya, Dist. Chhindwara | Chhindwara |
| | Civil Court, Sausar, Dist. Chhindwara | Chhindwara |
| 12. | District & Sessions Court, Damoh | Damoh |
| | Civil Court, Pathariya, Dist. Damoh | Damoh |
| | Civil Court, Hatta, Dist. Damoh | Damoh |
| | Civil Court, Tendukheda, Dist. Damoh | Damoh |
| 13. | District & Sessions Court, Datia | Datia |
| | Civil Court, Bhander, Dist. Datia | Datia |
| | Civil Court, Seodha, Dist. Datia | Datia |
| 14. | District & Sessions Court, Dewas | Dewas |
| | Civil Court, Bagli, Dist. Dewas | Dewas |
| | Civil Court, Kannod, Dist. Dewas | Dewas |
| | Civil Court, Khategaon, Dist. Dewas | Dewas |
| | Civil Court, Sonkatch, Dist. Dewas | Dewas |
| | Civil Court, Tonkhurd, Dist. Dewas | Dewas |
| 15. | District & Sessions Court, Dhar | Dhar |
| | Civil Court, Badnawar, Dist. Dhar | Dhar |

|     | Civil Court, Dharampuri, Dist. Dhar | Dhar |
|-----|-------------------------------------|------|
|     | Civil Court, Kukshi, Dist. Dhar | Dhar |
|     | Civil Court, Manawar, Dist. Dhar | Dhar |
|     | Civil Court, Sardarpur, Dist. Dhar | Dhar |
| 16. | District & Sessions Court, Dindori | Dindori |
|     | Civil Court, Shahpura, Dist. Dindori | Dindori |
| 17. | District & Sessions Court, Guna | Guna |
|     | Civil Court, Aaron, Dist. Guna | Guna |
|     | Civil Court, Chachoda, Dist. Guna | Guna |
|     | Civil Court, Raghogarh, Dist. Guna | Guna |
| 18. | District & Sessions Court, Gwalior | Gwalior |
|     | Civil Court, Bhitarwar, Dist. Gwalior | Gwalior |
|     | Civil Court, Dabra, Dist. Gwalior | Gwalior |
| 19. | District & Sessions Court, Harda | Harda |
|     | Civil Court, Khirkiya, Dist. Harda | Harda |
|     | Civil Court, Timarni, Dist. Harda | Harda |
| 20. | District & Sessions Court, Hoshagabad | Hoshangabad |
|     | Civil Court, Itarsi, Dist. Hoshangabad | Hoshangabad |
|     | Civil Court, Pipariya, Dist. Hoshangabad | Hoshangabad |
|     | Civil Court, Seoni Malwa, Dist. Hoshangabad | Hoshangabad |
|     | Civil Court, Sohagpur, Dist. Hoshangabad | Hoshangabad |
| 21. | District & Sessions Court, Indore | Indore |
|     | Civil Court, Depalpur, Dist. Indore | Indore |
|     | Civil Court, Hatod, Dist. Indore | Indore |
|     | Civil Court, Mhow (Dr. Ambedkar Nagar), Dist. Indore | Indore |
|     | Civil Court, Sanwer, Dist. Indore | Indore |
| 22. | District & Sessions Court , Jabalpur | Jabalpur |
|     | Civil Court, Patan, Dist. Jabalpur | Jabalpur |
|     | Civil Court, Sihora, Dist. Jabalpur | Jabalpur |
| 23. | District & Sessions Court , Jhabua | Jhabua |
|     | Civil Court, Petlawad, Dist. Jhabua | Jhabua |

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|---|---|---|
| | Civil Court, Thandla, Dist. Jhabua | Jhabua |
| | Civil Court , Vijayraghavgarh | Katni |
| | Civil Court , Dhimarkheda | Katni |
| | Civil Court , Barhi | Katni |
| 24. | District & Sessions Court , Khandwa | Khandwa |
| | Civil Court, Harsud, Dist. Khandwa | Khandwa |
| | Civil Court, Punasa, Dist. Khandwa | Khandwa |
| 25. | District & Sessions Court, Mandla | Mandla |
| | Civil Court, Nainpur, Dist. Mandla | Mandla |
| | Civil Court, Niwas, Dist. Mandla | Mandla |
| | Civil Court, Bahubichhiya, Dist. Mandla | Mandla |
| 26. | District & Sessions Court, Mandleshwar | Mandleshwar |
| | Civil Court, Kasrawad, Dist. Mandleshwar | Mandleshwar |
| | Civil Court, Khargone, Dist. Mandleshwar | Mandleshwar |
| | Civil Court, Maheshwar, Dist. Mandleshwar | Mandleshwar |
| | Civil Court, Sanawad, Dist. Mandleshwar | Mandleshwar |
| | Civil Court, Barwaha, Dist. Mandleshwar | Mandleshwar |
| | Civil Court, Bhikangaon, Dist. Mandleshwar | Mandleshwar |
| 27. | District & Sessions Court , Mandsaur | Mandsaur |
| | Civil Court, Bhanpura, Dist. Mandsaur | Mandsaur |
| | Civil Court, Garoth, Dist. Mandsaur | Mandsaur |
| | Civil Court, Narayangarh, Dist. Mandsaur | Mandsaur |
| | Civil Court, Sitamau, Dist. Mandsaur | Mandsaur |
| 28. | District & Sessions Court, Morena | Morena |
| | Civil Court, Ambah, Dist. Morena | Morena |
| | Civil Court, Jora, Dist. Morena | Morena |
| | Civil Court, Sabalgarh, Dist. Morena | Morena |
| 29. | District & Sessions Court, Narsinghpur | Narsinghpur |
| | Civil Court, Gadarwara, Dist. Narsinghpur | Narsinghpur |
| | Civil Court, Tendukheda, Dist. Narsinghpur | Narsinghpur |
| 30. | District & Sessions Court , Neemuch | Neemuch |

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| | Civil Court, Jawad, Dist. Neemuch | Neemuch |
| | Civil Court, Manasa, Dist. Neemuch | Neemuch |
| 31. | District & Sessions Court, Panna | Panna |
| | Civil Court, Ajaygarh, Dist. Panna | Panna |
| | Civil Court, Pawai, Dist. Panna | Panna |
| 32. | District & Sessions Court , Raisen | Raisen |
| | Civil Court, Begumganj, Dist. Raisen | Raisen |
| | Civil Court, Udaipura, Dist. Raisen | Raisen |
| | Civil Court, Bareli, Dist. Raisen | Raisen |
| | Civil Court, Gairatganj, Dist. Raisen | Raisen |
| | Civil Court, Goharganj, Dist. Raisen | Raisen |
| | Civil Court, Silwani, Dist. Raisen | Raisen |
| 33. | District & Sessions court , Rajgarh | Rajgarh |
| | Civil Court, Khilchipur, Dist. Rajgarh | Rajgarh |
| | Civil Court, Sarangpur, Dist. Rajgarh | Rajgarh |
| | Civil Court, Narsinghgarh, Dist. Rajgarh | Rajgarh |
| | Civil Court, Zirapur, Dist. Rajgarh | Rajgarh |
| | Civil Court, Biaora, Dist. Rajgarh | Rajgarh |
| 34. | District & Sessions Court, Ratlam | Ratlam |
| | Civil Court, Alote, Dist. Ratlam | Ratlam |
| | Civil Court, Sailana, Dist. Ratlam | Ratlam |
| | Civil Court, Jaora, Dist. Ratlam | Ratlam |
| 35. | District & Sessions Court , Rewa | Rewa |
| | Civil Court, Hanumna, Dist. Rewa | Rewa |
| | Civil Court, Teonther, Dist. Rewa | Rewa |
| | Civil Court, Mauganj, Dist. Rewa | Rewa |
| | Civil Court, Sirmour, Dist. Rewa | Rewa |
| 36. | District & Sessions Court , Sagar | Sagar |
| | Civil Court, Rehli, Dist. Sagar | Sagar |
| | Civil Court, Banda, Dist. Sagar | Sagar |
| | Civil Court, Bina, Dist. Sagar | Sagar |

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| | Civil Court, Deori, Dist. Sagar | Sagar |
| | Civil Court, Garacota, Dist. Sagar | Sagar |
| | Civil Court, Khurai, Dist. Sagar | Sagar |
| 37. | District & Sessions Court, Satna | Satna |
| | Civil Court, Maihar, Dist. Satna | Satna |
| | Civil Court, Rampur Baghela, Dist. Satna | Satna |
| | Civil Court, Amarpatan, Dist. Satna | Satna |
| | Civil Court, Chitrakoot, Dist. Satna | Satna |
| | Civil Court, Nagod, Dist. Satna | Satna |
| | Civil Court, Unchehra, Dist. Satna | Satna |
| 38. | District & Sessions Court , Sehore | Sehore |
| | Civil Court, Ashta, Dist. Sehore | Sehore |
| | Civil Court, Budhni, Dist. Sehore | Sehore |
| | Civil Court, Nasrullaganj, Dist. Sehore | Sehore |
| | Civil Court, Ichhawar, Dist. Sehore | Sehore |
| 39. | District & Sessions Court, Seoni | Seoni |
| | Civil Court, Lakhnadon, Dist. Seoni | Seoni |
| 40. | District & Sessions Court, Shahdol | Shahdol |
| | Civil Court, Beohari, Dist. Shahdol | Shahdol |
| | Civil Court, Burhar, Dist. Shahdol | Shahdol |
| | Civil Court, Jaisinghnagar, Dist. Shahdol | Shahdol |
| 41. | District & Sessions Court, Shajapur | Shajapur |
| | Civil Court, Shujalpur, Dist. Shajapur | Shajapur |
| | Civil Court, Susner, Dist. Shajapur | Shajapur |
| | Civil Court, Agar, Dist. Shajapur | Shajapur |
| | Civil Court, Nalkheda, Dist. Shajapur | Shajapur |
| 42. | District & Sessions Court, Sheopur | Sheopur |
| | Civil Court, Vijaypur, Dist. Sheopur | Sheopur |
| 43. | District & Sessions Court , Shivpuri | Shivpuri |
| | Civil Court, Khaniadhana, Dist. Shivpuri | Shivpuri |
| | Civil Court, Kolaras, Dist. Shivpuri | Shivpuri |

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| | Civil Court, Pichhore, Dist. Shivpuri | Shivpuri |
| | Civil Court, Karera, Dist. Shivpuri | Shivpuri |
| | Civil Court, Pohari, Dist. Shivpuri | Shivpuri |
| 44. | District & Sessions Court, Sidhi | Sidhi |
| | Civil Court, Rampur Naikin, Dist. Sidhi | Sidhi |
| | Civil Court, Churhat, Dist. Sidhi | Sidhi |
| | Civil Court, Majhouli, Dist. Sidhi | Sidhi |
| 45. | District & Sessions Court, Singrouli (Waidhan) | Singrouli |
| | Civil Court, Deosar, Dist. Singrouli | Singrouli |
| 46. | District & Sessions Court, Tikamgarh | Tikamgarh |
| | Civil Court, Jatara, Dist. Tikamgarh | Tikamgarh |
| | Civil Court, Niwari, Dist. Tikamgarh | Tikamgarh |
| | Civil Court, Orchha, Dist. Tikamgarh | Tikamgarh |
| | Civil Court, Khachrod, Dist. Ujjain | Ujjain |
| | Civil Court, Badnagar, Dist. Ujjain | Ujjain |
| | Civil Court, Nagda, Dist. Ujjain | Ujjain |
| | Civil Court, Mahidpur, Dist. Ujjain | Ujjain |
| | Civil Court, Tarana, Dist. Ujjain | Ujjain |
| 47. | District & Sessions Court, Umaria | Umaria |
| | Civil Court, Birsinghpur Pali, Dist. Umaria | Umaria |
| | Civil Court, Manpur, Dist. Umaria | Umaria |
| 48. | District & Sessions Court, Vidisha | Vidisha |
| | Civil Court, Basoda, Dist. Vidisha | Vidisha |
| | Civil Court, Kurwai, Dist. Vidisha | Vidisha |
| | Civil Court, Lateri, Dist. Vidisha | Vidisha |
| | Civil Court, Sironj, Dist. Vidisha | Vidisha |

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