NATIONAL COMPETITIVE BID (NCB)
OPEN TENDER

BHARATIYA RESERVE BANK NOTE MUDRAN (P) LTD
NOTE MUDRAN NAGAR
MYSURU -570003

Phone: 0821 – 2582905,2582915,2582925,2582935,2582945

Fax : 0821 – 2582099, E-Mail: Mysurupress@brbnmpl.co.in

Website :www.brbnmpl.co.in

Not Transferable

Security Classification: Non-Security

TENDER FOR "UPGRADATION OF CCTV SYSTEM, SERVERS WITH IP CAMERAS AND IMPLEMENTATION OF VIDEO ANALYTIC FEATURES" AT BRBNMPL MYSURU

Tender No. 104 /MYS/MAINT(U)/ 2017-18   Dated 16-01-2018

This tender document contains 80 pages

The tender document is sold to:

M/s. _____

Address _____

Details of Contact person in BRBNMPL regarding this tender:

Name: S M Pawale   Designation: Asst. General Manager

Address: As above

Phone : 0821 – 2469007, Fax : 0821-2582885

Email: smpawale@brbnmpl.co.in

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*The representative of the bidder should bring the sealed & signed copy of Section XVII; else will not be allowed for bid opening.

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NATIONAL COMPETITIVE BID
STANDARD BIDDING DOCUMENTS

Section I: Notice Inviting Tender (NIT)

Tender Sl. No. **104 /MYS/MAINT(U)/ 2017-18**   Date: 16-01-2018

1. Sealed tenders are invited from eligible and qualified tenderers for supply of following goods & services:

Schedule No.	Brief Description of Goods / Services	Quantity (with unit)	Earnest Money (in Rs.)	Remarks
1	**UPGRADATION OF CCTV SYSTEM, SERVERS WITH IP CAMERAS AND IMPLEMENTATION OF VIDEO ANALYTIC FEATURES.**	01 Lot	Rs.24.00 Lakhs	

Type of Tender (Two Bid / PQB / EOI / RC / Development / Indigenization / Disposal of Scrap / Security item etc.	Two Bid – Open Tender
Price of the Tender Document	Rs. 500.00
Closing date and time for receipt of tenders	14:30 Hrs on 21/02/2018
Place of receipt of tenders	Admin Building, BRBNMPL, Mysuru
Time and date of opening of tenders	15:00 Hrs on 21/02/2018
Place of opening of tenders	Admin Building, BRBNMPL, Mysuru
Nominated Person / Designation to Receive Bulky Tender (Clause 21.21.1 of GIT)	AGM/DGM (Utility Maint.)

2. Interested tenderers may obtain further information about this requirement from the above office selling the documents. They may also visit our website mentioned above for further details.

3. Tenderer may also download the tender documents from the web site and submit its tender by utilizing the downloaded document, along with the required non-refundable fee as mentioned above

4. Tender documents may be purchased on payment of non-refundable fee of Rs.500.00 (Rupees five hundred only) per set in the form of account payee demand draft/ cashier's cheque/certified cheque, drawn on a scheduled commercial bank in India, in favour of BRBNMPL, Mysuru, payable at Mysuru.

5. If requested, the tender documents will be mailed by registered post/ speed post to the tenderers, for which extra expenditure per set will be Rs. 100.00 (Rupees hundred only) for the post. The tenderer is to add the applicable postage cost in the non-refundable fee mentioned in Para 3 above.

6. Tenderers shall ensure that their tender document's each pages should be serially numbered, duly sealed and signed, complete in all respects as per instructions contained in the Tender Documents, are dropped in the tender box located at the address given below on or before the closing date and time indicated in the Para 1 above, failing which the tenders will be treated as late and rejected.

7. In the event of any of the above mentioned dates being declared as a holiday/ closed day for the purchase organisation, the tenders will be sold/ received/ opened on the next working day at the appointed time.

8. The sealed tender offer super scribed as **Tender For "UPGRADATION OF CCTV SYSTEM AND SERVERS WITH IP CAMERAS AND IMPLEMENTATION OF VIDEO ANALYTIC FEATURES" AT BRBNMPL, MYSURU against Tender No. 104 /MYS/MAINT(U)/ 2017-18 dated 16-01-2018** " should be addressed to **"The General Manager", BRBNMPL, Mysuru-570003** so as to reach us on or before **14.30 hrs.** on **21/02/2018**. **Tender Offers not super scribed as above are liable for rejection**.

   a. Copy of each page of Tender documents should be duly signed & seal affixed and submitted along with the Techno-commercial bid as a token of acceptance of tender conditions. The certificate as provided in annexure- A also must be signed and enclosed.
   b. The first sealed envelope should contain:
      1. DD for ₹ **500/-** towards cost of tender document.
      2. EMD amount of ₹ **24 Lakhs (as Demand Draft) payable to BRBNMPL at Mysuru** as detailed in clause 18 of General Instructions to tenderer (GIT)
      3. Signed tender documents, along with Techno-commercial bid. The envelope should be sealed and properly super-scribed as above.
   c. The second sealed envelope should have price bid as per Section XI with superscription "**Price BID-Tender No.104/MYS/MAINT (U)/2017-18, dated 16/01/ 2018".**
   d. The above two envelopes should be put in **single** envelope, sealed and properly super-scribed as **Tender For "UPGRADATION OF CCTV SYSTEM AND SERVERS WITH IP CAMERAS AND IMPLEMENTATION OF VIDEO ANALYTIC FEATURES" at BRBNMPL, Mysuru." , against Tender Enquiry No: 104/MYS/MAINT (U)/2017-18, dated 16/01/2018".**
   e. The tender offer may be sent by Regd. Post/ Courier. Parties desirous of handing over Tender Offer by hand should drop the Tender Cover in the Tender Box kept in the Administration Building ground floor, after recording the offer details in the register kept on the tender box.

9. The tender documents are not transferable.

For and on behalf of BRBNMPL, Mysuru

Sd/-
(SM Pawale)
Asst. General Manager

Section II: General Instructions to Tenderer (GIT)

This Section-II shall be downloaded from website: www.brbnmpl.co.in under the section 'Downloads' and signed & stamped and submitted along with the **Technical bid** as acceptance of terms & conditions*. (Offer without the copies of Section-II shall liable for rejection)*

Section III: Special Instructions to Tenderers (SIT)

The following Special Instructions to Tenderers will apply for this purchase. These special instructions will modify/ substitute/ supplement the corresponding General Instructions to Tenderers (GIT) incorporated in Section II. The corresponding GIT clause numbers have also been indicated in the text below:

In case of any conflict between the provision in the GIT and that in the SIT, the provision contained in the SIT shall prevail.

(Clauses of GIT listed below include a possibility for variation in their provisions through Special Instructions to Tenderer (SIT). There could be other clauses in SIT as deemed fit.)

SL. No.	GIT Clause No.	Topic	SIT Provision
1	1,2,3,4,5,6,7	PREAMBLE-Introduction, Language of Tender, Eligible Tenderers, Eligible Goods and Services (Origin of Goods), Tendering Expense, TENDER DOCUMENTS, Amendments to Tender Documents	No Change
2	8	Pre-bid Conference	Not applicable
3	9	Time Limit for receiving request for clarification of Tender Documents	No Change
4	10,11,12,13,14,15	Documents Comprising the Tender, Tender Currencies, Tender Prices, Indian Agent, PVC Clause & Formula, Alternative tenders	No Change
5	16	Documents Establishing Tenderer's Eligibility and Qualifications	No Change
6	17	Documents establishing Good's Conformity to Tender document	No Change
7	18	Earnest Money Deposit (EMD) Note: Bidders claiming exemption of EMD should submit the DGS&D (or) NSIC registration certificate without fail along with their techno-commercial offer.	No change
8	19	Tender Validity	No Change. (120 days from date of opening of tender.)
10	20	Signing and Sealing of Tender Note: The following SIT provision is made with respect the following clause 20.4. Number of Copies of Tenders to be submitted : One copy only (duplicate copy not required) 20.9 : E procurement : Not permitted.	No Change.

11	21,22,23	Submission of Tenders, Late Tender, Alteration and Withdrawal of Tender	No Change
12	24	Opening of tenders Note: Please read the guidelines for filling up two part bid tender as mentioned in Page 5 above which is described in detail w.r.to clause 24.4	No Change
13	25	Basic Principle	No Change
14	26,27,28, 29,30,31, 32,33,34	Preliminary Scrutiny of Tenders, Minor Infirmity / Irregularity / Non-Conformity, Discrepancy in Prices, Discrepancy between original and copies of Tender, Clarification of Bids, Qualification / Eligibility Criteria, Conversion of tender currencies to Indian Rupees, Schedule-wise Evaluation, Comparison on CIF Destination Basis.	No Change
15	35 to 49	Additional Factors and Parameters for Evaluation and Ranking of Responsive Tenders, Tenderer's capability to perform the contract, Tenderer's capability to perform the contract, Cartel Formation / Pool Rates, Negotiations, Contacting BRBNMPL, AWARD OF CONTRACT, Award Criteria, Variation of Quantities at the Time of Award, Parallel Contracts, Serious Misdemeanors, Notification of Award, Issue of Contract, Non-receipt of Performance Security and Contract by BRBNMPL, Return of EMD, Publication of Tender Result.	No Change
16	50 to 55	Rate Contract Tenders, PQB Tenders, Tenders involving Purchaser's and Pre-Production Samples, EOI Tenders, enders for Disposal of Scrap, Development / Indigenization Tenders	Not applicable to this tender

(To be signed & stamped and submitted along with Techno-commercial Bid Part –I)

Section IV: General Conditions of Contract (GCC)

This Section-IV shall be downloaded from website: www.brbnmpl.co.in under the section 'Downloads' and signed & stamped and submitted along with the **Technical Bid** as acceptance of terms & conditions. *(Offer without the copies of Section-IV shall liable for rejection)*

Section V: Special Conditions of Contract (SCC)

The following Special Conditions of Contract (SCC) will apply for this purchase. These Special Conditions will modify/ substitute/ supplement the corresponding (GCC) clauses.

Whenever there is any conflict between the provision in the GGC and that in the SCC, the provision contained in the SCC shall prevail.

(Clauses of GCC listed below include a possibility for variation in their provisions through SCC. There could be other clauses in SCC as deemed fit)

Sr. No.	GCC Clause No.	Topic	SCC Provision
1.	1 to 15	Definitions: Interpretation and Abbreviations, Application, Use of contract documents and information, Patent Rights, Country of Origin, Performance Security, Technical Specifications and Standards, Packing and Marketing, Inspecting and Quality Control, terms of Delivery, Transportation of Goods, Insurance, Spare parts, Distribution of Dispatch Documents for Clearance/Receipt of Goods.	No Change
2.	16	Warranty.	Two Years
3.	17& 18	Assignment, Sub Contracts	No Change
4.	19	Modification of contract (Option clause is applicable)	No Change
5.	20 & 21	Prices, Taxes and Duties	No change
6.	22	Terms and Mode of Payment Note: Bidder's attention is invited to refer GCC clause No.6 (Performance Security)	As Per Point No. 3 - Payment clause given below.
7.	23 to 35	Delay in the supplier's performance, Liquidated damages, Custody and Return of BRBNMPL's Materials/ Equipment/ Documents loaned to Contractor, Termination for default, Termination for insolvency ,Force Majeure, Termination for convenience, Governing language, Notices, Code of Ethics, Resolution of disputes, Applicable Law, Secrecy	No Change Place of arbitration will be Mysuru/ Bangalore
8.	36	Disposal / Sale of Scrap by Tender	Not applicable to this tender

1) **Pre-Bid Visit:** The bidders are advised to visit the Plant premises to have understanding about scope of work, volume of work, any doubt/clarification may cleared/done before submitting their offers. Any claim of ignorance about the system or responsibility shall not be entertained in later stage.

2) **Time schedule:** Work shall be completed within 150 days from the date of Issue of LOI / work order. The total time period as specified above for the completion of the job is to be strictly maintained and is the essence of the order.

3) **Payment**:
   a. 80% of the value of Material Supply part will be released as per receipt and acceptance of material at site against equal amount of bank guarantee valid for 6 months. This BG will be released after commissioning and acceptance. Minimum amount of the bill for payment shall be Rs. 01 crore.
   b. Balance 20% of the Material Supply part and 100% of Installation and commissioning charges will be released on successful installation and commissioning and acceptance by the user department and after issue of work completion certificate / FAC.
   c. Payment during AMC period shall be paid on quarterly basis on satisfactory execution of the contract and submission of bills. The contractor shall raise the bill in the 1st week of succeeding quarters for release of payment after fulfilling all the necessary formalities.
   d. Statutory deductions as applicable shall be effected while making payment.

   Any variations in statutory payment and taxes at the time of supply shall be payable / deductible against documentary evidence.

4) **Buyback Offer:** Bidder has to quote the buyback offer for the existing system as per BOQ in section XI : Price Schedule. All the items will be given after removing data storage devices like HDD, Tapes etc.

5) **Security Deposit:** Performance Security Deposit of 10% of the total Contract Value to be submitted within 21 days after issue of LOI / Work order in the form of DD or Bank Guarantee issued by any scheduled commercial Banks in India, valid upto 60 days after the date of completion of all contractual obligations including 2 years Warranty period. Security Deposit shall be released only after completion of all contractual obligations.

   A separate SD for the 10% value of AMC valid till completion of AMC shall be submitted prior to commencement of AMC. The same shall be released after completion of AMC.

6) **Liquidated Damages:** For any delay beyond the time specified above without any valid reason, liquidated damages @ 0.5% of the value of the work shall be levied per week of delay, subject to a maximum of 10% of total value of works completed / final bill value. Quantum of liquidated damages assessed and levied by BRBNMPL shall be final and not challengeable by the supplier / contractor.

7) **Statutory Requirements:** The Contractor should comply with all statutory provisions as applicable such as but not limited to:-

   a) Provisions of the Factories Act, Workman Compensation Act, Employers Liability Act, Contract Labour Act, Industrial Dispute Act, Minimum Wages Act, Payment of Wages Act, EPF and ESI Act including any modification thereof or any other law relating thereto and rules framed there under from time to time.
   b) The Contractor shall indemnify the company from any claim due to any breach of statutory requirements and the company as a principle employer shall enforce the provisions of the act.
   c) The contractor shall obtain license / registration from Labour Authority / any other Statutory Authority including PF & ESI as may be required and shall furnish Statutory

Returns and deposit contributions and Statutory Levies as per the Law of the Land as applicable from time to time. The Contractor shall be liable to furnish with the company all copies returns and documents as would be asked for time to time.

d) Any untoward incident arising out of improper supervision or inadequate safety measures will be the sole responsibility of the contractor. The Contractor shall conform to all the Labour Laws and shall remain solely responsible for the obligation under the relevant statutory provisions.

e) The contractor has to provide all statutory welfare measures for their workers.

8) **Integrity Pact** : Integrity Pact as per Section – XX shall be filled and submitted along with Techno-Commercial Bid.

9) **Materials:** BRBNMPL shall reserve the right to reject any materials if it is found not in conformity with specification and terms and conditions of the order in all respect.

10) **Quantum of work**: Quantities mentioned in the schedule of items are as per the prevailing condition & requirement and may vary during the execution of work. Any such variance will be accounted and paid extra as per the quoted rates.

11) **Repeat Order**: BRBNMPL may place repeat work order for the maximum 50% of total quantity of original contract, at a later date at the quoted rates, If required.

12) **Warranty / Defects Liability Period:** Warranty /Defects liability period against this item / job shall be Two years from the date of Final Acceptance Certificate. The contractor shall be liable to replace/repair any defects within the warranty/defects liability period free of cost to the BRBNMPL.

13) **Recovery & Rectification of work:** In case contractor fails to attend the same as per defect liability period clause above within a week from the date of intimation, it shall be got rectified by the owner through another agency & money spent thus shall be recovered from the contractor. If the work in not completed in all respect or delayed beyond reasonable time or contractor discontinues the work abruptly, then BRBNMPL reserves right to get the remaining work / uncompleted work done through any other agencies at the risk and cost of the contractor. In such case, the pending claims and security deposit of the contractor shall be forfeited.

14) **Safety& Security Measures:**
a) The contractor should scrupulously conform to the safety and security norms as stipulated by BRBNMPL while working in the security area.
b) The contractor shall take all the precaution while executing this work. Protective gear such as safety helmets, boots, belts etc. shall be provided by the contractor at his own cost to all his workers at site. It shall be the responsibility of the contractor to ensure that such protective gear is worn at all times by all personnel working at site. BRBNMPL shall have the right to stop any person not wearing such protective gear from working on the site.
c) BRBNMPL is a security organization and the Govt. of Karnataka declares the premise as Prohibited Area. Hence the contractor has to abide by the security rules of the Company. The contractor has to ensure the character and antecedent of the persons deployed. The contractor must be in a position to produce such documents whenever he is asked to do so. Details shall be furnished as per format when called for. The contractor has to issue printed photo identity card to its workers duly authenticated by the designated security officer of the Company. Contractor should apply for Gate Pass for labours, welding permission and material entry pass etc. as per approved format only, well in advance to avoid any delay in issue of Gate passes.

d) While applying for pass, contractor must enclose copy of address proof (Voters ID card or ration card or driving license or passport etc.), for all the workers for which gate pass has been requested. The details shall be submitted in the prescribed format.

e) BRBNMPL reserves the right to get the antecedents of the employees of the contractor verified through police. The charges of the verification shall be borne by the contractor.

f) Any worker of the contractor, if found by the Company as unsuitable or having doubtful integrity, shall be removed from the premises at the risk and cost of the contractor. The contractor shall vouch guarantee for the integrity of its workers.

g) On award of the contract the contractor shall sign the Non-disclosure format and abide with that

15) **Cleanliness** : Contractor is required to ensure complete cleanliness at the site. Debris generated during the day's work should be disposed of immediately.

16) **Electricity & Construction water:** Necessary source of electricity & water required for civil works will be taken from the available nearby source. In case the same is not available it should be arranged by the contractor.

17) **Accommodation**: On specific request from the Contractor, BRBNMPL may provide quarters as per availability and allotment norms/rules in force for allotment, at a prescribed rent & other charges like Electricity etc., fixed by the Company. In this event, the contractor must always be in a position that whenever any directive for vacating the said premise is issued, he shall, without raising any objection, peacefully vacate the same.

18) **Responsibility against damage caused**: The contractor shall be responsible for any damage caused to the existing system due to (1) Lack of knowledge (2) Wrong Operation (3) Mishandling (4) by Intentional act by its employee etc…the contractor has to pay entire amount/charges for repair / replacement which is limited to maximum of the contract value.

19) **Co-ordinating Authority**: The Asst. General Manager (Maintenance utility Division) or the officer authorized by him shall be the co-ordinating officer. The contractor has to report to such authority and perform the work in close co-ordination with such authority.

20) **Legal jurisdiction:** The court of Mysuru (Karnataka State) only shall have jurisdiction to deal with and decide any legal matter of dispute whatsoever arising out of any work order placed by us.

BIDS submitted not in accordance with the above guidelines & with counter conditions will be liable for rejection. BRBNMPL will examine the materiality/Significance of the deviation /variation if any and shall take its own decision to accept or reject the tender. BRBNMPL's decision on acceptance /rejection shall be final without assigning any reason thereof. BIDS once submitted will not be allowed for revision without the approval of BRBNMPL. Any withdrawal of BID after submission of offer will result in forfeiture of EMD and blacklisting of vendor. Parties not interested to participate in the tender for any reason, may please intimate us.

All Correspondences should be addressed to " The General Manager , Bharatiya Reserve Bank Note Mudran (P) Ltd , Note Mudran Nagar , Mysuru – 570 003

Section VI: List of Requirements

Area of work:

Required Delivery Schedule: The supply, installation and commissioning work shall be completed in all respect within 150 Days

Required Terms of Delivery: The packing and transportation charges shall be borne by bidder only.

Signature and Seal of the bidder

Section VII: Technical Specifications

I. PREAMBLE

Bharatiya Reserve Bank Note Mudran (P) Limited (BRBNMPL) is a wholly owned Subsidiary of Reserve Bank of India is engaged in sovereign function of Designing and Printing of Bank Notes. It has corporate office at Bangalore and has two printing presses at Mysuru in Karnataka and Salboni in West Bengal.   The Company proposes for   "**Up-gradation of   CCTV System and Servers with IP Cameras and Implementation of Video Analytic Features" at BRBNMPL, Mysuru.**   This proposal includes replacing the existing analog CCTV cameras, DVR's, Servers, and Storage with IP based cameras, Servers and storage and also implementation of Video Analytics features including Facial recognition and ANPR & UVS System. The task would be executed by understanding the Company's existing CCTV system for implementing the new solution by the System Integrator/OEM/OEM integrator including Design, Supply, Installation, Testing & commissioning on a turnkey basis, training of Company's officials, handing over etc.

II.   General Technical Requirement of the System

1. The system shall have a provision for PTZ control cameras and fixed cameras at both indoor and outdoor multiple locations and to live monitoring at Control room and designated locations over the LAN using the latest technology such as **Tri- Stream technology** enabling high quality video recording over network at the SAN and lower resolution transmission to networked PCs at rates that won't cause bandwidth issues.

2. System shall use video signals from various types of indoor/outdoor colour HD cameras (IP based) installed at different locations, process them for viewing on Workstations/monitors /Video Wall at Central Control room local control rooms and simultaneously record all the cameras after compression using H.264 / H.265 Standard and streamed over the IP network, at full HD the frame rate should be 25fps (PAL) minimum. The picture quality of recorded replay should be as clear as live video without any loss of frame.   Mouse-Keyboard controllers shall be used for Pan, Tilt, Zoom, and other functions of desired cameras.

3. System shall have provision to include enterprise command control console (Touch screen type) in future.

4. System shall provide sufficient storage of all the high resolution camera (Minimum 600) continuous recordings for a period of 90 days or more @ 25 FPS at full HD or better quality using necessary compression techniques for all cameras (**The storage capacity should be minimum 1400 TB usable capacity after Raid 6 configuration and scalable upto 2000 TB for minimum 600 cameras**)

5. The system shall be designed to make provision to accommodate additional cameras / location(s) with proposed IP VIDEO SURVEILLANCE SYSTEM.

6. The Area under surveillance shall be monitored and controlled from Central/Local Control Room(s) through workstations and must display Camera ID / Location Name for all the cameras.

7. All camera recordings shall have Camera ID & location/area of recording as well as date/time stamp shall be programmable by the system administrator with User ID & Password. Also, system must have provision to create multiple user ID with restricted access by providing selective privileges like live monitoring , recorded footage viewing etc.

8. Facility of camera recording in real-time mode (25 FPS)/15/12.5/10 or lower FPS as well as in any desired combination must be available in the system.

9. System shall be pentaplex i.e. it should provide facility of Viewing, Recording & Replay, backup/ transmission and remote access simultaneously. The offered system shall have facility to export the desired portion of clipping (from a desired date/time to another desired date/time) on DVD or Pen drive. Viewing of this recording shall be possible on standard PC using standard software like windows media player etc.

10. Central Control Room will have Video Wall with required number of workstations along with controllers for camera operation and other local control room will have clients work station with monitor. For monitoring purposes, LED Video wall shall be setup with suitable mounting arrangements, as per user requirements. Facility for viewing and controlling all the cameras at various other locations, as required, shall be provided.

11. Database Server shall keep track of all configurations & events. This will help in proper System administration & management of redundancies etc.

12. All the workstations in LAN should be provided with software to view and control the cameras and retrieve the recorded video images from the CAMERA SERVER / SAN seamlessly.

13. The bidder shall propose the most suitable economical integrated system solutions.

14. Development of an effective network to provide 100% uptime for the entire links.

15. The system should be designed in such a manner that operational data is not lost in case of any failure of equipment or communication network.

16. Provision of suitable disaster recovery mechanism.

17. The functional requirement is only indicative. The system vendor shall quote the latest system available at the time of submitting the Bid.

18. The system should have the capacity of functioning 24x7*365 days in Indian Conditions.

19. The camera shall be designed for commercial/industrial 24/7*365 use based upon standard components, proven technology using open and published protocols, support for H.264/H.265 & IPv6 and POE as per IEEE 802.3af standard.

20. The camera shall be equipped with an integrated event functionality, which can be trigged by External input, Video Motion Detection, Audio Detection, Schedule, Camera tampering, Local storage full etc. Response to triggers shall include Notification, using TCP, SMTP or HTTP Image upload, using FTP, SMTP or HTTP Activating external output recording to local storage and triggering alarm appropriately.

21. The live video, recording & replay should be smooth & continuous without any jerks

22. All the fitting and fixtures for IP / CCTV camera, their cabinet, workstation computers, Server, Storage, UPS installations/fixing at specified locations will be done by firm only as per the instruction of BRBNMPL Engineers/officials.

23. The proposed solution/systems shall provide seamless integration of third party security infrastructure like computer, server, and network or storage hardware, wherever possible. **The vendor shall provide the list of compatible makes and models (minimum 3) from the list of approved makes which can be integrated in the offered system.** Software shall be Open network video compliant with APIs and SDKs available in public domain without any additional charge.

24. The NVMS system shall be based on the latest in software programming technology. The software should be compatible with Windows Operating Systems (Windows Server 2016 or later versions) and should be user friendly. The system shall allow operation with PC

Keyboard, Mouse, CCTV Keyboard (Joystick)

25. The NVMS shall be able to support all cameras at and up to 25 frames per seconds and HD/Megapixel (upto 8MP) resolution while maintaining less than 70% load on the Server.

26. The NVMS should be provided with **Failover Directory** software to avoid the single point of failure. Recording and client PC should not have the complete dependency on the directory for running operation. In the event of failure of directory as well as failover directory at least limited functions of recording and display should be continued. The NVMS should also be provided with **Failover Recording** feature.

27. All IP cameras shall conform to Open Network Video Interface (ONVIF) standards to ensure interoperability with network components in system-wide solutions. The cameras shall be designed to support open system communications among IP-based security devices with Storage Area Network (SAN) and Video Management System (VMS).

28. All IP camera shall be a combination of world-class imaging and IP networking technology. It shall support tri-streams video and multiple compression formats with frame rates minimum 30 fps for NTSC and 25 fps for PAL system. The digital compression parameters for the two video streams are independently configurable.

29. It must be possible to remove one of the redundant systems for maintenance without interrupting operation, and upon its reinstatement, automatically re-synchronize the databases, again without interruption to system operation

30. The Bidder has to provide complete solution involving all aspects of required components, including but not limiting to, provide IP based CCTV Megapixel cameras, Digital Network Video Management System, Servers, Network attached storage system, workstations, video wall/ display systems, layer 2 and layer 3 network switches, UTP, other network components and cabling along with comprehensive responsibility of design, installation, Operationalization and Maintenance for the supplied equipment at BRBNMPL, Mysuru.

31. All the critical systems should provide for high availability and fault tolerance

32. The proposed solution should be able to generate various standard/ customized reports for event analysis / reporting purposes.

33. The IP CCTV system should be compatible to work in LAN/WAN environment for inter/intra office networking of IP CCTV system.

34. The Successful bidder shall ensure that the system / components / materials are as per relevant standards.

35. Latest revision of all applicable IE rules and other regulations shall be followed and comply with all the Safety statutory requirements while executing this work.

36. The bidder should have registered office in India.

III. Detailed Scope of work

1. Scope of work for CCTV Surveillance system with IP cameras shall include but shall not restrict to the following:

a) Design, Supply, Installation, Testing & commissioning of IP Cameras for surveillance at all notified areas of the Main Press, township and boundary wall with all required accessories as per BOQ, replacing the existing analog CCTV Cameras and also installation of new IP cameras at designated locations for video analytics & FRS purpose and interfacing with the existing OFC network / new network.

b) Design, Supply, Installation, Testing & commissioning of Camera Server, Back-up server and storage system with latest higher end version to replace the existing DVRs, IBM Back-up server and storage system with the required capacity for minimum 600 cameras.

c) The camera servers should be the front end recording of the cameras for 07 days Raid 10 back up with n+1 hot stand by configuration. If any one of the camera server fails, the stand by server must take over automatically without any delay.

d) The video streaming should be recorded parallel in both Camera servers and SAN storage without interruption or delay. In case of loss of video to SAN storage due to any failure, there should be provision to sync and update the data from camera server for the failure duration.

e) Integration of PTZ control cameras and fixed Megapixel cameras at outdoor multiple locations with the OFC Network so as to bring the video stream for video analytics, live monitoring and storage at Control room over the LAN using the latest technology such as Tri- Stream technology enabling high quality video recording over network at the SAN storage and lower resolution transmission to networked PCs at the rates that won't cause bandwidth issues.

f) The recording resolution, motion detection and frame rate for each camera shall be user programmable at camera through VMS

g) Housing of cameras meant for indoor use shall be of IP 55 rating whereas outdoor camera housing shall be of IP 66 or better rating. These must be integrated by the camera manufacturer. The Camera Housing & Fixtures should be of Camera OEM.

2. Scope of work for creating OFC Backbone Network , Network Switch installations & CAT 6 cabling for Communication

a) Establishing of redundant & robust OFC network for data / voice / video communication. L3 switch is the central point of the OFC network, located at the control room. All indoor/outdoor Edge switches and L2 switches with combo SFP port shall be installed with suitable enclosure at designated locations. 12 cores OFC is to be used for creating the network. All the switches will be connected in a ring /star formation to enhance network reliability and no single point failure to keep network latency at a minimum. The network must be designed to have sufficient band width (Minimum 10G) for simultaneous viewing as well as recording for 600 cameras minimum.

b) Existing L3 Switch which is hosting existing OFC rings shall be upgraded if required in order to get configured with new L3 switch to provide 1+1 hot redundant and also to provide fail-safe service for all the connected cameras by hosting all OFC rings including new ring/s.

c) The OFC network should be tested and commissioned to the required IS standard with OTDR and test report to be submitted.

d) The laying of OFC cable through HDPE pipe as well at underground as per the respective IS standards.

3. **Scope of work for Installation of Server & Storage shall include but shall not restrict to the following:**

a) The VMS/ Database Servers must be configured in a hot backup configuration where at any point of time, one is the acting Primary and the other is acting as the Hot Backup. The backup Database Server shall be continuously synchronized with the master Database Server to ensure that it is always up-to-date and ready for a fail- over, when required. The failover for Database Server should be seamless and should not affect recording of cameras

b) Storage system shall be Storage Area Network (SAN). The Network video storage shall be capable of storing full HD camera videos for the specified period based on the following details:

i.	**Resolution**	Minimum 2 MP for each camera for total of 600 cameras Minimum
ii.	**Frame Rate**	25 FPS
iii.	**Activity Level**	**100**%
iv.	**Duration of recording**	24 / 7 continuous recording of 600 cameras for 90 days Raid 6 configuration

c) The bidder shall provide the storage capacity as per the above requirement for the various types of cameras and their recording duration. The bidder shall also furnish the calculations to establish that the offered storage capacity is adequate to meet the above requirement. If the offered storage capacity is found to be insufficient at any point of time, the bidder shall provide additional storage without any additional cost.

d) All storage redundancy and mirroring capabilities shall be done using hardware solution and shall not rely on the Operating System and Server CPU to perform these functions. The Storage should support IP based replication in future. The bidder should provide details for the offered configuration: Drive type, Drive speed, Drive size, RAID group used to configure usable capacity (Data + parity + spares) along with total disks supported by the storage and balance disk space.

e) DATA migration from the existing CCTV system to new CCTV system needs to be carried out on completion of the installation.

f) The Entire System shall operate on 230V+/-10%, 50 Hz single -phase online UPS power supply available with us (2x15 KVA). If any equipment operates on any voltage other than the supply voltage and supply frequency, necessary conversion/correction device for supply shall be made by the contractor.

4. **Scope of work for Video Analytics, Facial Recognition, ANPR & UVS System implementation shall include but shall not restrict to the following Technical details for:**

   A. Server based Video Analytics:

   a) Supply, installation, testing and commissioning of required server based video Analytics software with license for 100 cameras.

   b) Implementing Server based Video Analytics Features for Cameras at watch towers covering the inner perimeter of plant, plant main entrance and at other notified places according to the requirement.

   c) The Server based Video Analytics features as mentioned at 9.17 of section VII (page no.46) will be introduced for 100 cameras and there should be a provision to extend the same to other notified cameras in use as and when required. The License required is for 100 No. of cameras.

   d) The Video Analytics features should be capable of alarming the events at Control Room to alert the Security personnel.

   e) Video Analytics should be deployed on any of the cameras dynamically and should not be tagged to the MAC address of the camera. If any one of the cameras is replaced for maintenance, the replaced camera should automatically use the VA configuration without modifying any license.

   f) Provision to include any additional video analytics features other than the specified, if required, to be incorporated and integrated on additional requirement basis.

   g) Supply and installation of necessary servers for video analytics system and integrate with supplied Camera server and SAN Storage

   B. Facial Recognition System

   a) The Facial Recognition features as mentioned at 9.18 of section VII (page no.48) will be introduced initially at 04 locations and there should be provision for extending to other notified locations whenever required.

   b) The Face recognition software algorithm should have participated in the latest NIST (National Institute of Standards and Technology) Face Recognition Vendor Test & must be in NIST five evaluation. The vendor shall submit the latest NIST evaluation report for the algorithm.

   c) The Face recognition software offered should be running on minimum 04 CCTV cameras or more in any surveillance project from OEM or bidder.

   d) The system shall allow generation of reports based on detection and identification alarms with relevant filters like date and time / category etc. The system shall permit reports to be exported in PDF / XLS formats for storage and review

   e) The core FRS algorithm components should be upgraded without any additional cost to employ best in class Technology available at any given point of time.

f) The system should be flexible to be able to perform Face Recognition on any existing surveillance cameras without any change-over of licenses (based on the number of camera limit specified by the installed license).

g) The system should have client server architecture with support for multiple clients who can be simultaneously logged either locally or remotely. The server components should be implemented as Services so as to be able to run in an uninterrupted manner even in absence of the GUI

h) FRS software should have False Negative Identification Rate(FNIR) less than 0.8 in identification.

C. Automatic Number Plate Recognition System:

a) Supply, installation, testing and commissioning ANPR system with required Software, Cameras and Servers with licenses

b) The ANPR system client will be implemented at our entry gates (03 Nos) and server at our Main gate (01 No.) with license for 4 locations (ANPR)

c) The ANPR system should be IP based with central server at main location and local client/servers at all ANPR installed locations to view and control locally and centrally with data updation at all locations.

d) The ANPR system should be provided with higher end Day Night Cameras with IP 67 compliant and required White light illuminator.

e) The ANPR should recognize and read the license plate from both front and back side of all type of vehicles entering and exiting the gates and recognize all type of number plate formats.

f) The ANPR should capture driver image and read the Licence plate and shall be compared with user defined positive and negative lists, opening and closing of gate and generate alarm based on the detected Licence plate information.

g) Alert / warning the Security person about the un- authorized entry of the vehicles locally at client PC as well as at server end.

h) The live scanning image shall display in the viewing monitor along with the licence plate of the vehicle and driver photo.

i) System should be capable of Generating report of all vehicles that have entered/Exited during a specified time slot.

j) The System should be robust and highly accurate.

k) Installation including required mounting poles, cabling and other required accessories to be considered and included.

D. Under Vehicle Scanning System

a) Supply, installation, testing and commissioning of UVS system with required Software, Cameras and Servers with licenses.

b) The UVS system will be initially implemented at our Main gate with license for 01 location.

c) The Under vehicle inspection/scan system shall provide the solution to scan, inspect and digitally record the underside of the vehicles, that enter BRBNMPL plant area.The recording should be in the dedicated UVS server and shall store in SAN storage as well.

d) The UVS should assists our security personnel to perform high quality and highly efficient inspection.

e) The UVS system should be weather proof IP-67 certified underground enclosures and Air cleaner mechanism for all weather operation.

5. Scope of work for Comprehensive AMC:

The contractor has to maintain the entire system under Comprehensive AMC for Five years, after successful completion of Two years warranty period. The scope of AMC will be:

a) To check and attend the Daily maintenance/periodical maintenance.

b) Attending to breakdown calls, as and when received.

c) Comprehensive AMC should be included for the Total IPCCTV system, Video analytics, Facial recognition system, ANPR, UVSS including all cameras, servers, monitors, network switches, storage devices, cables of all types and all hardware and software etc. and also the existing OFC Back-bone network, IP Cameras and related equipments /items.

d) It will be the responsibility of successful bidder to replace the defective components during warranty as well as AMC period to make the system serviceable.

e) The tenderer shall quote his rates in Rupees per annum for all inclusive Comprehensive Maintenance Contract, cost of spares, transport, insurance, handling, etc. applicable for a period of 5 years after expiry of 2 years warranty period. These rates shall remain firm for the Five years of CAMC during the entire warranty & AMC period. The bidder will have to provide at no additional cost to the BRBNMPL all software updates, releases, Version upgrades, New Versions and renewal of licenses etc. within 30 days of their availability. The existing IP Cameras, OFC network and network components like switches, LIU etc. to be included in the AMC quote. These existing systems should be maintained during the warranty period also for normal day to day maintenance as a single system.

f) The successful bidder is required to <u>depute at least Three qualified Resident Engineers (full time round the clock 24/7 on site support) at BRBNMPL, Mysuru</u> to take care of the day-to-day maintenance requirement of the system during the warranty period and during Annual Maintenance Contract. The minimum professional qualification for the Resident Engineers shall be 3 years' diploma in Electronics / IT from recognized / approved Polytechnic / Engineering college with 1 year post qualification experience in the IP based CCTV field.

g) The Contractor should maintain the system 100% uptime. If the contractor fails to liquidate the complaints, failure of the system within a required time frame, a compensation for delay at 0.5% of monthly contract value per week for each occasion will be deducted. However, total deduction in this regard is limited to10% of the total contract value. Further such action shall be adversely remarked while evaluating performance for further renewal of the Contract.

h) The bidder should have AMC back to back with OEM during AMC period and proof for the same shall be submitted

6. National / International Standards for material :

a) FCC
b) UL
c) CE
d) BIS
e) IEC
f) EN
g) ROHS

7. Other Requirements :

a) **Installation and commissioning:** Installation, commissioning and proving of performance to be carried out by the supplier at BRBNMPL Mysore site within stipulated period as early as possible, to the satisfaction of BRBNMPL.

b) **Spares and Service Support:** Bill of material and cost of components need to be submitted along with the offer. Supplier shall attend periodical and breakdown maintenance of the system during the warranty period without any additional cost. Also, the bidder shall ensure service and spare support for minimum of Seven years and should maintain required spares at site during warranty and AMC period. Non availability of spares/standby units/components will not be accepted as a reason for waiving of penalty towards delay in rendering prompt service. For ensuring prompt service, at least minimum required spares/standby units shall be maintained at site. After use of any such spare unit/cards etc, the same shall be replenished at the earliest.

c) All the bought out items used should be of reputed make and easily available in the Indian market and should have back to back support from the OEMs.

d) Detailed Electrical and Mechanical drawings, technical manuals and software user licenses for all software used should be provided by the supplier including those purchased from OEMs.

e) All the structural functional parameters should be matched one to one with existing system. However, internal construction is the discretion of supplier and it is his sole responsibility to ensure the intended performance of the proposed system up-gradation.

f) **Documentation:** All relevant product information such as 3 sets of user manual, technical specification sheet etc. should be submitted. Also, as built diagrams & sketch, operational & Maintenance Manual (Parts catalogue, spare list, Electrical Diagram, Electrical/Electronic components details, OEM manuals etc.). Installation guides, datasheets, all software (OS, Application software etc.), installation CD's with license copies to be handed over to BRBNMPL, after commissioning.

g) **Software License**: All Software Licenses for life time should be in the name of BRBNMPL,Mysuru and shall be upgraded at free of cost as & when new versions are released.

h) **Training to user:** Supplier shall impart proper training to the users and Technical team for trouble free operation and maintenance of the machine. The documents generated for this project is/will be sole property of BRBNMPL and should not be used/divulged for any other purpose.

i) **Tools and Tackles:** All tools & tackles, equipments and other required facilities for un-loading, shifting of equipment to the workplace and erection & commissioning of the system shall be arranged by the contractor.

j) The contractor shall supply the miscellaneous materials like Cables, junction box, anchor fasteners, screws, bolts and nuts, clamps, suitable angles, cable ties etc. for cable laying and carry out associated minor works for successful completion of work. Contractor shall do any other related jobs that are not mentioned above, but found necessary at the time of execution to complete the job in all respect.

k) The bidder must provide a valid certificate of authorization for providing after sales service for all the Third Party Equipments / Systems supplied from the OEM. The certificate should be in the letter head of OEM issued on the name of bidder and currently valid.

l) **Modifications:** Supplier shall agree for any minor modifications in system up-gradation (without having any additional financial implications) to match with specific requirement of BRBNMPL.

m) **Final Acceptance Test (FAT) and Final Acceptance Certificate (FAC)**:

The Upgraded system shall be tested for 15 days in real working environment and Final Acceptance Certificate will be issued based on the satisfactory performance during the FAT.

FAT shall include but shall not restrict to the following tests :

I) Testing of redundancy of Layer 3 Switch
II) Testing of redundancy of uplinks between Edge, L2 and L 3 Switch
III) Testing of redundancy of Management Servers
IV) Testing of redundancy of Recording Servers
V) Testing of hard disc failure in Raid6 Configuration of storage
VI) Testing of Usable capacity of Storage both in camera server & SAN
VII) Testing of video analytics, Facial recognition, ANPR, UVSS
VIII) Checking of PTZ controls of PTZ camera
IX) Checking of recording, playback & other various features randomly
X) Checking of recording , replay video quality, Frame rate etc. to ensure smooth & continuous video without any jerks.
XI) Checking of all software server & client has been installed correctly & running without any bug/error,Testing of the functionality of the VMS features including Recording, retrieval of footages etc..
XII) Testing of parallel recording both at camera servers and SAN storage
XIII) Testing of Camera edge recording during failure of Network/camera servers etc.
XIV) Testing of OFC Network with standard testing procedure and submission of report.
XV) Any other test necessary / relevant for full functioning of the system

n) **The bidder shall visit the site for inspection and understanding the requirements before quoting.**

o) **The bidder must submit a "Proof of Concept" along with the Technical Bid and give a live demo on the "Proof of Concept" during the Technical Evaluation in order to prove efficiency of the system and to comply all the Tender requirements.**

p) Supplier shall fill the compliance formats and submit along with technical bid without fail. The reply to points shall be specific and they should not write like "Refer catalogue", etc.,

q) **For all BOQ items, from the list of approved makes, the bidders should quote any one make and model only for each item.**

8. BOQ

Name of work: Design, Supply, Installation, Testing and Commissioning of IP CCTV Surveillance System and implementation of Video analytics at BRBNMPL, Mysuru.

Sl.No.	Item	UOM	Qty
	CCTV UPGRADATION		
1.	IP Bullet Out door Cameras 2 MP (Fixed IR) with Varifocal Lens including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc (outdoor)	Nos.	45
2.	IP Bullet Indoor Cameras 2 MP (Fixed IR) with Varifocal Lens including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc (Indoor)	Nos.	290
3.	IP Cameras 2 MP with PTZ with IR including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc (Outdoor)	Nos.	80
4.	Camera Server for recording the video of IP cameras with **07 days back-up** (50 cameras per server, 10+1 standby) including required accessories.	Nos.	11
5.	VMS Software with 600 Camera licenses for Life time	lot	1
6.	Video Wall with 40" LED monitors (Min. 12 Nos.) Industrial grade and required 12 nos. of Client PCs with multi monitoring feature for live viewing and Video Analytics monitoring (Including Powder coated Frame work and accessories)	lot	1
7.	L3 switch – Minimum 2Line cards of 24 x 10/100/1000 Mbps RJ45 ports , Minimum 2Line cards of 4*10G SFP + ports 4 dedicated I/O slots - Fully Loaded with accessories including LIU, SFU Modules, Patch cords, Pig tails etc	Nos.	1
8.	L2 Switch-Commercial Grade **Modular distribution switch** with 24 x 10/100/1000 **slots** Base-T RJ45 PoE supported Ports–Should have min 4 x 10G SFP supported ports & 10x 01 G SFP Ports - Fully Loaded with accessories including LIU, SFU Modules, Patch cords, Pig tails etc.	Nos.	10
9.	Edge Switch - **Commercial Grade-** Should have atleast **16 x 10/100/1000 Mbps** RJ45 PoE supported Ports. Should have min min 2 x 1G SFP supported ports Fully Loaded with accessories including LIU, SFU Modules, Patch cords, Pig tails etc	Nos.	56
10.	Edge Switch - Industrial Grade- Should have atleast **8 x 10/100/1000 Mbps** RJ45 PoE supported Ports. Should have min 4 x 1G SFP supported ports Fully Loaded with	Nos.	07

	accessories including LIU, SFU Modules, Patch cords, Pig tails etc		
11.	10G SFU Modules	Nos.	60
12.	1G SFU Modules	Nos.	364
13.	POE Injectors	Nos.	20
14.	OFC Cable (12 Core) with required accessories	Mtrs	3000
15.	Power Cable 2.5Sq MM 3 Core, PVC Armoured	Mtrs	1800
16.	Cat 6a Cable	Mtrs	25500
17.	Cat 6a Cable Armoured	Mtrs	2600
18.	OFC Cabling charges with conduit/Cable tray	Mtrs	3000
19.	Power Cabling charges	Mtrs	1800
20.	Cat 6a Cabling charges with conduit/Cable tray	Mtrs.	25500
21.	40 mm HDPE PIPE	Mtrs.	2600
22.	Road Cutting , refilling and laying of cable	Mtrs	100
23.	Excavation , Refilling and laying of cable and pipe	Mtrs	2000
24.	Camera Mounting Pole (15 feet Minimum above Ground level) with required accessories and junction boxes	Nos.	50
25.	Earth pits as per IE Standards	No.	50
	BACKUP SERVER & SAN STORAGE	No.	
26.	VMS/Backup Application Server for Camera Recording including back-up application software with required license.	No.	2
27.	Back-up SAN Storage for Camera Recording for 90 days back-up. Minimum 1400 TB usable capacity expandable upto 2000 TB	No.	1
28.	Equipment Rack (42U, closed network rack) with accessories.	No.	2
29.	Equipment Rack Wall Mount (19U, network rack) with accessories.	No.	10
30.	Equipment Rack Wall Mount (12U, network rack) with accessories.	No.	56
	VIDEO ANALYTICS	No.	
31.	Video Analytics Software with License for 100 Cameras	No.	1
32.	Video Analytics Processing/Application Server	No.	2
33.	IP NW 8 Megapixel Fixed Camera (Outdoor) for Face Recognition System	No.	4
34.	Facial Recognition Server, one client work station with Software and 4 channel License	No.	1

35.	Video Analytics client monitoring & configuration Station	Nos.	1
36.	ANPR Server and Monitor with License (ANPR- 4 nos license) and required 3 nos. of Client PCs	Set	1
37.	IP NW 4 Megapixel Fixed Camera (Outdoor), including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc. for video analytics	Nos.	24
38.	IP NW ANPR Camera and driver Image capture camera (Total 8 cameras-2Nos. at each location)	No. of locations	4
39.	UVS System with required Server, Software & Cameras (01Main camera ,04 Auxiliary camera & 01 Number plate scanning camera)	Set	1
40.	Transient Surge Protection for cameras - 8/20 µs (IEC Standard)	Nos.	90
41.	Applicable Licenses if any	Lot	1
42.	Any other Items like all type of civil works (plumbing, welding , drilling, construction of foundations etc.) / Equipment / Instruments / software etc required if any which are not mentioned above and required for the project (Pl. mention)	Lot	1
43.	Installation Charges	Lot	1

Note: The above BOQ is tentative & given minimum quantity required. Bidder should understand the requirement and design the system. Accordingly, they should include any additional BOQ required & higher end specification system requirement and quote their offer accordingly. They should also prove the Proof of Concept (POC) of the design and offer the same and quote.

9) Detailed Technical specifications:

All the vendors must attach the point by point compliance for below specifications in their technical bid.

9.1) IP Based OUTDOOR VARIFOCAL IR BULLET CAMERAS

SL No.	Parameter	Description	Compliance Yes/No
1	Image sensor & Minimum Effective Pixels (Resolution) or better	1/3" or better CMOS or Equivalent & Minimum (2 MP) FULL HD (1920*1080)	
2	Electronic Shutter	1/10 to 1 / 10000 s or better	
3	Min illumination/ light sensitivity	0 Lux on IR on	
5	Wide Dynamic Range	True WDR min 120 dB	
6	BLC and HLC	ON/OFF	
8	Focus	Automatic Back Focus	
9	Automatic Gain Control	Auto / Manual	
10	Sharpness, Brightness, Contrast	Required	
11	IR Range	Minimum 40 Meter with Adaptive IR technology	

12	Frame Rate	30 FPS @1920 x 1080 at H.265/264 Compression	
13	Lens	8-50 mm verifocal lens or better	
14	Video		
	Day and Night functionality	Automatic, Color, Mono	
	Video Resolution	> 2 MP (1920x1086)	
	Video Streams	Individually configurable 03 video streams H.265/H264	
	Intelligent Video	Motion detection, Tampering Alert, Automatic configuration of Image parameter such as shutter speed, WDR, HLC etc. by camera processor based on scene.	
15	Compression	Dynamic I frame and intelligent compression on H265/H264 to reduce bandwidth.	
16	Audio		
	Audio support	Required	
	Audio Compression	Minimum G.711 or better	
	Two-way audio	Required, duplex	
	Input / Output	01 IN & 01 OUT	
17	Network & Interface		
	Interface	RJ-45 for 10/100 base-T Ethernet	
	Network Protocols support	IPv4, IPv6, TCP/IP, HTTP, , DHCP, UDP, DNS, SMTP, RTP, RTSP, SNMP, UPnP, NTP, ICMP, IGMP,	
	Alarm Event	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.	
	Alarm I/O	1In & 1 Out terminal	
	Compliance	ONVIF Profile S and G	
18	Security		
	Basic	Password protection, HTTPS encryption, 802.1x	
	Advance	FIPS -140-2 Level 1 compliant device, 3rd party certificate for Secure data communication on network.	
19	General		
	Operational temperature °C	0°C to 50 °C	
	Humidity	0 to 80% RH non-condensing	
	Outdoor Housing	IP66, IK10, Should be of same make	
	Power Camera	PoE (Up to 15.4 Watt) OR eAC24V/ DC12V, 100- 230VAC	
	Certifications	CE, FCC, UL	
20	Local Storage		
	SD card	128 GB.	

9.2) IP Based IR Indoor HD Bullet Cameras

Sl. NOS.	Parameter	Description	Compliance Yes/No
1	Image sensor & Minimum Effective Pixels (Resolution) or better	1/3" or better CMOS or Equivalent & Minimum (2 MP) FULL HD (1920*1080)	
2	Electronic Shutter	1/10 to 1 / 10000 s or better	
3	Min illumination/ light sensitivity	0 Lux on IR on	
5	Wide Dynamic Range	True WDR min 120 dB	
6	BLC and HLC	ON/OFF	
7	IR Range	Minimum 40 Meter with Adaptive IR technology	
8	Focus	Automatic Back Focus	
9	Automatic Gain Control	Auto / Manual	
10	Sharpness, Brightness, Contrast	Required	
11	Frame Rate	30 FPS @1920 x 1080 at H.265/264 Compression	
12	Lens	3mm-9mm verifocal lens or better	
13	Video		
	Day and Night functionality	Automatic, Color, Mono	
	Video Resolution	Minimum 2 MP (1920x1080)	
	Video Streams	Individually configurable 03 video streams H.265/H264	
	Intelligent Video	Motion detection, Tampering Alert, Automatic configuration of Image parameter such as shutter speed, WDR, HLC etc. by camera processor based on scene.	
14	Compression	Dynamic I frame and intelligent compression on H265/H264 to reduce bandwidth.	
	Quad H.265/H264 (Recording & Viewing)	Required, Live stream 1080p should support min. 60 FPS and recording at lower resolution and frame rate or vice versa as may be configured.	
15	Audio		
	Audio support	Required	
	Audio Compression	Minimum G.711 or better	
	Two-way audio	Required, duplex	
	Input / Output	01 IN & 01 OUT	
16	Network & Interface		
	Interface	RJ-45 for 10/100 base-T Ethernet	
	Upgrade	Through web browser , online, firmware upgrade	
	Network Protocols support	IPv4, IPv6, TCP/IP, HTTP, , DHCP, UDP, DNS, SMTP, RTP, RTSP, SNMP, UpnP, NTP, ICMP, IGMP,	
	Alarm Event	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.	
	Alarm I/O	1 In & 1 Out terminal	

	Compliance	ONVIF Profile S and G	
17	Security		
	Basic	Password protection, HTTPS encryption, 802.1x	
	Advance	FIPS -140-2 Level 1 compliant device, 3rd party certificate for Secure data communication on network.	
18	General		
	Operational temperature °C	0°C to 60 °C	
	Humidity	0 to 80% RH non-condensing	
	IP rating	IP55, IK10, Clear sight coating	
	Power	PoE (Up to 15.4 Watt) OR eAC24V/ DC12V, 100- 230VAC	
	Certifications	CE, FCC, UL	
19	Local Storage		
20	SD card	128 GB support	

9.3)   IP Network Megapixel PTZ Full HD Camera for Indoor/Outdoor application

S.No.	Parameters	Technical Specifications	Compliance (YES/NO)
1.	Image Sensor	1/3" Progressive CMOS,MOS	
2.	Resolution	1920x1080, 1080p (>2 MP)	
3.	Minimum Illumination	0 lux IR on	
4.	Lens	4.5 mm to 129 mm Varifocal motorized lens or better	
5.	Angle of view	Minimum range 2.4 - 60 (H), 1.8 - 36(V)	
6.	Optical Zoom	30x	
7.	Digital Zoom	12x	
8.	Back Light Compensation	BLC/ HLC/ WDR	
9.	Motion Detection	On/ Off	
10.	Wide Dynamic Range	True WDR; Min 120 dB	
11.	Day/ Night	Auto/ Color/ BW, True Day/Night with ICR,	
12.	Shutter Speed	1/1 to 1/10000 Sec	
13.	Noise Reduction	3D Noise Reduction (3DNR)	
14.	Electronic Image Stabilizer	On/ Off	
15.	IR Illumination	Built-in IR LEDs with Min. 150 m illumination	
16.	Pan Travel	360 degree endless	
17.	Tilt Travel	-10 to 90 degree, Auto Flip 180 degree	
18.	Preset	250	
19.	Preset Accuracy	0.225 degree	
20.	Video Compression	H.264/H.265	
21.	Video Streams	Minimum 3 streams (2 Configurable Primary Streams & 1 Service stream) Primary Streams: 1080p/ 720p/ D1 @ 25/30 fps	

		Service Stream: 720p/D1/CIF @ 15/25/30 fps	
22.	Network Protocols	IPv4/IPv6, HTTP, HTTPS, TCP/IP, UDP, UPnP, ICMP, IGMP, RTSP, RTP, SMTP, NTP, DHCP, DNS, PPPoE, DDNS, FTP, QoS, SNMP v2c/v3, RTCP,	
23.	Security	User account and password protection , SSL/TLS Communication with CA Certificate, IEEE 802.1x	
24.	Supported open Protocol	ONVIF Profile S & G	
25.	Onboard Storage	upto 128 GB Micro SD Card	
26.	Onboard Recording Type	Event trigger recording Continuous and scheduled recording Automatic recording when network fails	
27.	Event	Motion Detection, Video Tamper, Network Disconnection	
28.	Event Notification	Record in SD Card/ FTP, Relay Output, Snapshot	
29.	Alarm Input/ Output	1 Inputs, 1 Output	
30.	Audio Input/ Output	1 Input, 1 Output	
31.	Audio Compression	G.711/ G.711Mu	
32.	Audio Stream	Full Duplex, Simplex	
33.	Power Source	24VAC ±25% 50Hz, High PoE (Class 5)	
34.	Operating Temperature	-10℃ to 55℃ or better	
35.	Operating Humidity	< 90% RH (non-condensing)	
36.	Vandal Protection	IK-10	
37.	Ingress Protection	IP66 (Rugged Outdoor Housing)	
38.	Regulatory	UL, EN, FCC	
39.	Housing & Fixture	Required Housing & Fixture to be supplied. Camera, Housing & Fixture should be of same make	

9.4) Video Recording Server/Camera Server Specification

Sl. No	Parameter	Specification	Compliance Yes/No
1	Processor	**2 X Intel Xeon E5-2630 v4 or higher**	
2	RAM	Min 32 GB and extendable upto 128GB	
3	Internal storage	2 x 600GB SAS (15k RPM) configured as RAID1 for OS & Application	
		14 X 1.8 TB SAS (10k RPM) on RAID 10 SAS Drives for Live 7 days Video Storage recording	
4	Network Interface	4 Nos 1 Gbps Gigabit Ethernet ports	
5	HBA interface	Dual Port PCI-e FC HBA	
6	Operating System	Microsoft Windows Server 2016 (64 bit): Standard Edition. License Copy would be in the name of BRBNMPL	
7	Power Supply	Dual Redundant Power Supply	
8	Optical Drive	DVD +/-RW	
9	Keyboards and Mouse	USB type	
10	USB port	YES	
11	Form Factor	Rack type	

9.5) Video Management Software

Sl. No	Parameter	Description	Compliance Yes/No
1	**Enterprise and Scalable Management Platform**	The VMS shall be an enterprise solution and scalable to support unlimited number of cameras. VMS should support latest Windows Server operating system on Server machine. It should support latest Windows OS on Client machine, independent of what operating system is there in the servers. VMS should support SQL/ MySQL/ Oracle DBMS.	
2	**Distributed Architecture and Openness**	The VMS shall support distributed video architecture which seamlessly integrates the video operations of numerous systems onto one virtual platform, allowing security operators to view and control all cameras, whether across a single facility or across the multiple locations. The VMS shall support seamless integration with other security and safety equipment / systems like Fire Alarm System, Access Control system, Perimeter Protection System etc so as to monitor on the GUI, alert and automatically focus the nearby CCTV camera towards the area of alarm/incident. The VMS shall support ONVIF S profile and integrate all cameras supporting ONVIF S profile.	
3	**Standards for Software**	The VMS shall be designed and developed to the approved National and International standards	
4	**Server-Client Architecture**	The VMS shall Manage and support Enterprise Database servers, Recording Servers, Analytics Server, Storage and Operator workstations. The VMS shall support minimum 2500 cameras managed per Enterprise Database Server.Systems shall be scalable by adding additional Servers. The VMS shall support Analytics Servers dedicated to analyze video streams. The Analytics Servers shall process the live video using preconfigured rules and Intelligent Video Analytics algorithms to determine events of interest.	

5	**Fault Tolerant Architecture and Redundancy**	The database server shall provide a central fault tolerant repository for all configurations and run time information for the complete system. The VMS must be capable of running a pair of similarly configured Database Servers in a hot backup configuration where at any point in time, one is the acting Primary and the other is acting as the Hot Backup. The backup Database Server shall be continuously synchronized with the master Database Server to ensure that it is always up-to-date and ready for a fail- over, when required. The failover for Database Server should be seamless and should not affect recording of cameras.	
		It must be possible to remove one of the redundant systems for maintenance without interrupting operation, and upon its reinstatement, automatically re- synchronize the databases, again without interruption to system operation.	
		The VMS shall support Primary and Backup Recording Servers allowing N:1 to N:N Redundancy. The failover and roll back mechanism between Preferred and Backup Camera Servers shall be configurable and support both automatic and manual operation. The failover process for Recording Server should not take more than 10 sec for Hot standby server. The VMS should include multicast and multi streaming supported. The system shall automatically switch to unicast, if client fails to connect to the multicast system.	
6	**Concurrent Web Clients and Console Stations**	The VMS shall provide Internet Explorer, Chrome & Mozilla Clients for users other than Operators in Command & Control Room. These clients will be used for viewing of cameras by Security Officers and other authorized users other than in Command & Control Room. The VMS shall provide a professional level Surveillance Console interface for control room operators. Its primary role shall be to meet the operational requirements related to surveillance	
7	**Operational Features of VMS**	The VMS console shall have a Navigation Pane that include separate tabs to display available cameras, Views, groups and locations available to the operator based on their security settings. It shall include a Multi-level camera tree with built-in filter search capability. It shall support user defined logical groups. The VMS shall have flexible workspace with simultaneous display of Live and Recorded video from the same or different cameras.	

		Information describing the camera and associated video shall be shown in the tile including camera name, camera number, camera health status and whether the camera is currently recording, replaying video, paused or playing live video.The VMS shall have Wild-Card search feature for cameras in Camera Tree and Groups. The VMS console shall have a timeline control to display and play back recorded video for one or more cameras. Playback shall be possible on 1 or more cameras simultaneously for all cameras currently displayed in the Video Workspace The Timeline toolbar shall include Play, Pause, Snapshot, Fast Rewind (upto 16x), Frame Rewind, Fast Forward (upto 16x), Frame Forward, Jump Back, Motion Search and Calendar Control as standardfeatures. The timeline will also have zooming and scrubbing feature for easy analysis of recorded videos.	
8	**Edge Recording and Backfill**	The VMS shall support edge recording of video on SD card inside the camera in case of network connectivity between camera and VMS is down. The VMS shall support restoration of edge recorded video in the VMS storage once the network connectivity between camera and VMS is up.	
9	**Digitally Signed Export of Camera Videos**	The VMS shall support export of video for evidentiary purposes. It shall be possible to select the portion of video required and export only that portion in Windows Media Format and Native Format. The VMS must support all exported recordings and exported audit logs to be digitally signed to prove authentication (origin of the recording and audit log) and integrity (exported recording and audit log have not been altered or tampered with). The VMS system shall provide a default digital certificate for signing the exported recordings and audit logs. Customization shall also be provided to allow for the user to supply his/her own digital certificate	
10	**Camera Temper Detection Feature**	The VMS shall support temper detection of alarm for the connected cameras/ Analytics Server. Temper detection shall include changed field view, camera blurred and camera blinded	
11	**PTZ Camera Control**	The VMS shall support Area configuration to allow users to view specified cameras only.	

		The VMS shall support Control Level determining if a user is allowed to operate the PTZ Controls for a camera. The VMS shall support Control Reservation Period allowing if a particular user has controlled the camera no other user can control the camera until this reservation period has expired. Users with a higher security level shall be able to take control of the camera at any time	
12	**Recording and Archiving of Camera Videos**	The VMS should support multiple streaming and parallel recording of cameras. The bidder has to provide sufficient storage inside the recording servers to record all cameras for 7 day s at 1080p, 25 fps, H.264, H.265 compression. Parallelly the video recordings shall be stored in the SAN storage also for 90 days back up. In case of loss of video to SAN storage due any failure, there should be provision to copy/move data automatically or Manually from camera server to SAN box for the failure duration. User can manually extend the retention period for important video recording by overriding normal video retention. The VMS shall provide the ability to automatically archive all recordings. It shall be possible to automatically archive any type of recording at a preconfigured period after the recording has completed. It shall be possible to modify the automatic archive setting for each recording individually, as required The VMS shall support continuous background recording, scheduled recording, event activated recording and user activated recording for all connected cameras.	
13	**Search and Playback of recorded Videos**	The VMS shall provide a simple search for all video recorded. The user selects the time indicator which shows a calendar and time line. The user selects the required search period. Once the time criterion is entered, the ―search is selected. Video recorded duringthe selected period will be returned by the search. The VMS shall provide an advanced search of recorded video. The search shall be based on recording time, camera and recording details. It should be possible in VMS to merge recorded video sequences from different or overlapping time intervals form different cameras to one and same the export. It will provide a consolidated video evidence for a complete overview of incidents	
14	**Digital Zoom and Video**	The VMS shall support the ability to digitally zoom	

	Recording on live video client	into an area of the image as well as provide the ability to enhance the image viewed by adjusting the levels of brightness, contrast, noise levels and sharpness through camera Web page fro live video. VMS client should support Hardware Acceleration eature by using the GPU for video decoding to bring down the CPU utilisation and support more number of cameras on any given workstation. Client software should be able to overlay the following information on every video panel: 1. FPS 2. Codec info 3. Resolution 4. Multi-cast status 5. Hardware Acceleration Status 6. Lost Frames 7. Motion Detected 8. Camera nomenclature (Camera name, Location etc.)	
15	**Alarm Module**	The VMS shall have integrated Alarm Module for videosystem and analytics alarms.The Alarm module shall have Alarm and Event summary with Video Clip attached.The Alarm module shall provide Audio Alert in different audio tones for Low, High and Urgent priorit y alarms The VMS shall have the feature to pop-up video from the camera on a dedicated alarm monitor in case of an alarm is generated in that camera. The cameras will be queued in sequence in case of multiple alarms till they are acknowledged by theoperator.The alarm support shall allow for continuous monitoring of the operational status and event triggered alarms from servers, cameras and other devices. VMS should be capable to raise alarm in the following cases: 1. Storage Disconnection / Unavailability 2. Camera video loss 3. Recording Server Unavailability A bookmarking feature shall be included in the Video Management System, allowing the client viewer users to mark incidents on live and/or playback video streams	
16	**Diagnostic Module**	The VMS shall provide diagnostic modules to assist with system health assessments and collection of diagnostic information. The Diagnostics applications shall provide a unified user interface for running tests,	

		recording system activity, collecting diagnostic information and viewing system log files. It shall be possible to collect diagnostic information on all components of the VMS application including Database Servers, Recording Servers, Clients and network activities	
17	**Report Management System**	The VMS shall have an integrated Alarms, Alarm Management and Reporting module which can create any desired reports at any incidence	
18	**Map Function**	Built-in map function in the client viewer shall provide an intuitive overview of the system and shall offer integrated access to all system components. VMS should support GIS Map, CAD online Maps (Google Maps, Bing and Open street Maps). Map function shall be able use standard graphical file formats including jpg, gif, png, tif etc. It shall be possible to use any number of layered maps, and it shall be possible to easily drag-and-drop and point-and-click definition of cameras, servers, microphones, speakers, I/O devices, hot-zones, and PTZ camera presets. Hot zones shall be allowed for intuitive navigation between different map levels. Map function shall support central overview of the surveillance system via an alarm list containing alarm indicators of high, medium or low prioritized alarms. Furthermore the alarms shall be categorized by the following states; new, in progress, on hold, or closed. Alarms must be possible to acknowledge by right clicking elements on maps	
19	**System Monitor & Configuration Report**	The system monitoring feature shall make it possible to view system information and create reports on: 1. Management servers (show CPU and memory usage) 2. Recording server (show CPU and memory usage and usage data for disks, storage, networks and cameras) 3. Failover servers (show CPU and memory usage) 4. Additional servers (show CPU and memory usage on log servers, events servers, and so on. 5. Cameras (such as camera status, if the individual camera is recording, the recording server the camera is connected to and more)The VMS solution shall support a functionality to generate a PDF that shall document all parts of	

		the system configuration, including preview of video	
20	**Intelligent Video Analytics**	The VMS shall Support an integrated Intelligent Video Analytics system from same or other OEM.Events from the Intelligent Video Analytics systemshall be passed back to the VMS to start a recordingand generate an alarm of configurable priority.	

9.6) Video Wall /Industrial grade with 40" LED Monitors

Sl.No	Particulars	Specification	Compliance Yes/No
1.	Video wall Structure	Industrial grade powder coated metal frame structure. Designed to suit the location.	
2.	No. of Display units	12 x 40" LED monitors	
	Display unit Specifications		
3.	Screen Size:	40″ LED (Minimum)	
4.	Bezel to Bezel	Maximum 5mm	
5.	Resolution:	Minimum 1920 x 1080 pixels.	
6.	Aspect Ratio:	16:9	
7.	Dynamic Contrast Ratio:	5,000:1	
8.	3D Colour Management:	Yes	
9.	Comb Filter:	3D Y/C (PAL & NTSC)	
10.	Intelligent Backllight Control:	Yes	
11.	Media Playback :	To support all formats	
12.	Mpeg Noise Reduction	Yes	
13.	Real Digital Picture	Yes	
14.	Auto Signal Booster	Yes	
15.	Inputs / output Ports	Composite Video + Component + RCA , HDMI , USB VGA for PC Input	
16.	Network	RJ 45 Ethernet port for LAN connectivity	
17.	Power Supply	220V AC 50 Hz	

9.7)   CCTV Client Station

Sr No	Parameter	Specs	Compliance Yes/No
1	Processor	Intel Core i7-4960X processor or higher	
2	RAM	32 GB	
3	Internal storage	500GB SATA 3.0Gb/s	
4	Network Interface	2x10/100/1000	
5	Optical Drive	Single drive: DVD +/-RW+CD-RO	

6	Graphics	2 GB Graphic Card NVIDEA	
7	Display	21" LED screen Full HD	
8	Keyboard & Mouse	USB based	
9	Port	Minimum 4 Nos USB ports, VGA ports- As per Video wall design	
10	Operating System	Microsoft Windows 10 or Latest	
11	Cabinet	Tower	

9.8)   Core Switch: Gigabit Layer 3 Chassis Switch

Sr. No	Parameter	Description	Compliance (Yes / No)
1	Ports Density	12 Slot Chassis	
		Loaded with 2 Controller cards of Switching Fabric 800Gbps each running in Active Active Mode	
		Minimum 2 line cards of 24*10/100/1000- Base-T ports	
		Minimum 2 Line cards of 4*10G SFP+ ports.	
		10G SFP+ ports should be loaded with 10Gbps SFP+ Single Mode Modules based on design requirement	
		Should be equipped with dual internal redundant power supplies for higher availability	
2	Performance	Switching Capacity: Non-Blocking,	
		Forwarding Rate: Wire Speed Non- Blocking	
		Multicast: Wire Speed Non-Blocking	
		Energy efficient Ethernet IEEE 802.3az	
3	Resiliency	Should have the technology capability of Active-Active Clustering VSS/equivalent high availability technology for higher availability and resiliency.	
		The Active - Active Virtual chassis cluster should support technology functionality locally or over geographically diversified locations	
		The proposed VSS or equivalent technology should support high availability for both Layer 2 and Layer 3 (RIP, OSPF) Including for IP Multicasting (PIM-SM, PIM-DM),for video applications to ensure hitless failover	
		In case of any kind of failure in the VSS cluster the migration to secondary Active core should be seamless ensuring no real time traffic disruption	
		Should support sub 50ms ring resiliency as per REP/ ERPS / IEEE 802.17/RRPP or equivalent to ensure no impact on video traffic during any failure across the network	
4	Layer2/ Layer 3 Features	Static Routing	
		Should support RIP v2, RIPng,OSPFv2,OSPFv3, PIM-SM, PIM-DM,PIMv6-SM	

		IEEE 802.1ad, IEEE 802.1Q, IEEE 802.1v,IEEE 802.3ac,	
		Voice VLAN, LLDP-MED,	
		IEEE 802.1D MAC bridges, IEEE 802.1s (MSTP), IEEE 802.1w (RSTP),	
		VRRP v3	
5	Multicast Features	Multicast Support: IGMP query solicitation, IGMP snooping v1, v2 and v3, MLDv1 and v2	
		Source-specific multicast for IP,	
		IGMP query solicitation	
6	IPv6 Features	IPv4 and IPv6 dual stack	
		Device management over IPv6 networks	
		with SNMPv6, Telnetv6 and SSHv6	
		ICMPv6, NTPv6, DNSv6, DHCPv6 relay,	
		6to4 tunnelling	
7	Security	SSH remote login, SSLv2 and SSLv3,	
		TACACS+	
		IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)	
		IEEE 802.1x, MAC-based and Web-based can be enabled simultaneously on the same port.	
		IEEE 802.1X port-based network access control	
		RADIUS, RADIUS accounting, Secure Shell (SSHv2),	
		ACL, Dynamic VLAN assignment	
		DHCP (snooping, client, Server and relay)	
		Switch should provide the ability to monitor events and take corrective action proactively	
		Control plane denial-of-service (DoS) protection	
8	Management	Switch should able to support management via CLI,	
		Web interface SNMP v1,v2,v3 support,	
		RMON (groups 1,2,3 and 9), SNMP traps, sflow,	
		Optical digital diagnostic monitoring as per SFF– 8472 or equivalent standards for 1G SFP and 10G SFP+ ports	
		Switch should be manageable through both IPv4 & IPv6	
		An External memory card / USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches	
9	Power input	Should be equipped with dual internal redundant AC power supplies for higher availability	
10	Certifications	UL-UL60950-1, EN 55024, CE, ROHS	
11	Operating Temperature	0-40C in continuous operation of 365 days 24 hrs	
12	Interoperability	For ease of integration all active components (switches, SFP's) should be of same OEM	
13	Features	The switch should be configured with existing L3 switch to provide hot redundancy.	

9.9) L2 Switch: Commercial grade

Sr. No	Parameter	Description	Compliance (Yes / No)
1	Ports Density	24*100/1000- Base-X SFP ports	
		2*10G SFP+ ports	
		The 1 G SFP ports should be loaded with 1Gbps Single Mode module based on design requirements	
		10G SFP+ ports should be loaded with 10Gbps SFP+ Single Mode Modules based on design requirement	
2	Performance	Switching Capacity: Non-Blocking,	
		Forwarding Rate: Wire Speed Non- Blocking	
		Multicast: Wire Speed Non-Blocking	
		Energy efficient Ethernet IEEE 802.3az	
3	Resiliency	Should have the technology capability of Active-Active Clustering VSS/equivalent high availability technology for higher availability and resiliency.	
		The Active - Active Virtual chassis cluster should support technology functionality locally or over geographically diversified locations	
		The proposed VSS or equivalent technology should support high availability for both Layer 2 and Layer 3 (RIP, OSPF) Including for IP Multicasting (PIM-SM, PIM-DM),for video applications to ensure hitless failover	
		In case of any kind of failure in the VSS cluster the migration to secondary Active core should be seamless ensuring no real-time traffic disruption	
		Should support sub 50ms ring resiliency as per REP/ ERPS / IEEE 802.17/RRPP or equivalent to ensure no impact on video traffic during any failure across the network	
4	Layer2/ Layer 3 Features	Static Routing	
		Should support RIP v2, RIPng, OSPFv2,OSPFv3, PIM-SM, PIM-DM,PIMv6-SM	
		IEEE 802.1ad, IEEE 802.1Q, IEEE 802.1v,IEEE 802.3ac,	
		Voice VLAN, LLDP-MED,	

		IEEE 802.1D MAC bridges, IEEE 802.1s (MSTP), IEEE 802.1w (RSTP),	
		VRRP v3	
5	Multicast Features	Multicast Support: IGMP query solicitation, IGMP snooping v1, v2 and v3, MLDv1 and v2	
		Source-specific multicast for IP,	
		IGMP query solicitation	
6	IPv6 Features	IPv4 and IPv6 dual stack	
		Device management over IPv6 networks	
		with SNMPv6, Telnetv6 and SSHv6	
		ICMPv6, NTPv6, DNSv6, DHCPv6 relay,	
		6to4 tunneling	
7	Security	SSH remote login, SSLv2 and SSLv3,	
		TACACS+	
		IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)	
		IEEE 802.1x, MAC-based and Web-based can be enabled simultaneously on the same port.	
		IEEE 802.1X port-based network access control	
		RADIUS, RADIUS accounting, Secure Shell (SSHv2),	
		ACL, Dynamic VLAN assignment	
		DHCP (snooping, client, Server and relay)	
		Switch should provide the ability to monitor events and take corrective action proactively	
		Control plane denial-of-service (DoS) protection	
8	Management	Switch should able to support management via CLI,	
		Web interface SNMP v1,v2,v3 support,	
		RMON (groups 1,2,3 and 9), SNMP traps, sflow,	
		Optical digital diagnostic monitoring as per SFF–8472 or equivalent standards for 1G SFP and 10G SFP+ ports	
		Switch should be manageable through both IPv4 & IPv6	
		An External memory card / USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches	
9	Power input	Should be equipped with dual internal redundant AC power supplies for higher availability	
10	Certifications	UL-UL60950-1, EN 55024, CE, ROHS	
11	Operating Temperature	0-40C in continuous operation of 365 days 24 hrs	
12	Interoperability	For ease of integration all active components (switches, SFP's) should be of same OEM	

9.10) Edge Switch (Indoor) – Commercial Grade

Sr. No	Parameter	Description	Compliance (Yes / No)
1	Ports Density	16*10/100/1000- Base-T PoE+ ports	
		2*1G SFP ports	
		The 1 G SFP ports should be loaded with 1Gbps Single Mode module based on design requirements	
2	PoE Budget	Minimum PoE Budget of 240Watts or higher	
3	Performance	Switching Capacity: Non-Blocking,	
		Forwarding Rate: Wire Speed Non- Blocking	
		Multicast: Wire Speed Non-Blocking	
		Energy efficient Ethernet IEEE 802.3az	
4	Resiliency	Should support sub 50ms ring resiliency as per REP/ ERPS / IEEE 802.17/RRPP or equivalent to ensure no impact on video traffic during any failure across the network	
		Loop Detection and Loop protection, RSTP & MSTP	
		Shall support high-speed ring recovery; fibre access and uplink ports and should seamlessly integrate with the core / Aggregation chassis proposed	
5	Layer2/ Layer 3 Features	Static Routing	
		RIPv1 & v2	
		IEEE 802.1ad, IEEE 802.1Q, IEEE 802.1v,IEEE 802.3ac,	
		Voice VLAN, LLDP-MED,	
		IEEE 802.1D MAC bridges, IEEE 802.1s (MSTP), IEEE 802.1w (RSTP),	
6	Multicast Features	Multicast Support: IGMP query solicitation, IGMP snooping v1, v2 and v3, MLDv1 and v2	
		Source-specific multicast for IP,	
		IGMP query solicitation	
7	IPv6 Features	IPv4 and IPv6 dual stack	
		Device management over IPv6 networks	
		with SNMPv6, Telnetv6 and SSHv6	

Sr. No	Parameter	Description	Compliance (Yes / No)
		ICMPv6, NTPv6, DNSv6, DHCPv6 relay, 6to4 tunneling	
8	Security	SSH remote login, SSLv2 and SSLv3,	
		TACACS+	
		IEEE 802.1X authentication protocols (TLS, TTLS, PEAP and MD5)	
		IEEE 802.1x, MAC-based and Web-based can be enabled simultaneously on the same port.	
		IEEE 802.1X port-based network access control	
		RADIUS, RADIUS accounting, Secure Shell (SSHv2),	
		ACL, Dynamic VLAN assignment	
		DHCP (snooping, client, Server and relay)	
		Switch should provide the ability to monitor events and take corrective action proactively	
		Control plane denial-of-service (DoS) protection	
7	Management	Switch should able to support management via CLI,	
		Web interface SNMP v1,v2,v3 support,	
		RMON (groups 1,2,3 and 9), SNMP traps, sflow,	
		Optical digital diagnostic monitoring as per SFF– 8472 or equivalent standards for 1G SFP and 10G SFP+ ports	
		Switch should be manageable through both IPv4 & IPv6	
		An External memory card / USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches	
8	Power input	Should be equipped with dual internal redundant AC power supplies for higher availability	
9	Certifications	UL-UL60950-1, EN 55024, CE, ROHS	
10	Operating Temperature	0-40C in continuous operation of 365 days 24 hrs	
11	Interoperability	For ease of integration all active components (switches, SFP's) should be of same OEM	

9.11) Edge Switch (Outdoor-Industrial Grade)

Sr. No	Parameter	Description	Compliance (Yes / No)
1	Type	Industrial grade layer 2 Ethernet switch	
2	Operation	Store & forward, wire speed switching, non-blocking	
3	Modes	Full or half duplex operation with flow control supported on all ports	
4	MAC address	2000	
5	Memory bandwidth	3.2 Gbps	
6	RJ45 ports		
a.	Ports	Minimum 8 nos. 10/100/1000- Base-T PoE+ ports	

b.	Speed & direction	Ethernet, fully IEEE 802.3at compliant	
c.	MDI/MDIX	Auto-MDI/MDIX crossover.	
d.	Polarity	Auto-polarity for crossed TxD&RxD pairs	
7	Fiber optic Ports		
a.	Ports	2 nos. 1000 Mbps fibre optic ports for distances up to 10km. Single mode links	
b.	Single mode	Upto 10km typical	
8	Networking features		
a.	Device support	All IEEE 802.3 compliant devices	
		All IEEE 803.2	
		Management Features : SNMPv1, v2c and v3, IEEE 802.1AB Link Layer Discovery Protocol (LLDP), Web GUI,	
		sFlow: a method for monitoring traffic in switched and Routed networks	
		Multicast Support: IGMP query solicitation, IGMP snooping v1, v2 and v3, MLDv1 and v2	
b.	Protocols & features	VLAN: GVRP, VLAN creation based on protocol, Port and Subnet based, IEEE802.1Q Virtual LAN (VLAN) bridges, IEEE802.3ac VLAN tagging.	
		Quality of service: IEEE 802.1p, DSCP Prioritization, Strict priority, weighted round robin or mixed scheduling	
		IPv6 Features: Path MTU discovery for IPv6, IPv6 specification, Transmission of IPv6 packets over Ethernet networks, Default address selection for IPv6, IPv6 addressing architecture	
c.	Resiliency protocol support	Should support sub 50ms ring resiliency as per REP/ ERPS / IEEE 802.17/RRPP or equivalent to ensure no impact on video traffic during any failure across the network	
		Loop Detection and Loop protection, RSTP & MSTP , Shall support high-speed ring recovery; fibre access and uplink ports and should seamlessly integrate with the core / Aggregation chassis proposed	
d.	Standards compliance	IEEE802.3	
		IEEE 802.3u	
		IEEE 802.3x	
		IEEE 802.1p	
9	Power input	Dual redundant power input	
10	Input voltage range	VTS	
11	Surge & spike protection	Should support EN 61000-4-5 std for surge.	
12	Diagnostics	Self Test and alarm output	
13	Operating temperature	0 to 70°C (0 to 155°F)	
15	Electrical safety	UL/IEC/EN 60950-1	

		EN55022:2010, EN55024:2010	
16	EMC	EN61000-6-4	
		EN61000-4-2 (ESD)	
		EN61000-4-3 (RS)	
		EN61000-4-4 (EFT)	
		EN61000-4-5 Class 3 for DC power, Class 2 for I/O	
17	Ingress protection	IP30 protection minimum	
18	Mounting	DIN rail or direct panel	
19	Interoperability	For ease of integration all active components (switches, SFP's) should be of same OEM	

9.12) VMS/Backup Application Server

Sr No	Parameter	Specs	Compliance Yes/No
1	Processor	2 X Intel Xeon E5-2630 v4 or higher	
2	RAM	Min 32 GB and extendable upto 128 GB	
3	Internal storage	2 x 600GB SAS (15k RPM) configured as RAID1 for OS & Application	
		4X 600GB SAS (15k RPM) on RAID 10 SQL DB and Transaction Logs	
4	Network Interface	4 Nos 1 Gbps Gigabit Ethernet ports	
5	HBA interface	Dual Port PCI-e FC HBA	
6	Operating System	Microsoft Windows Server 2016 (64 bit) Standard Edition. License Copy would be in the name of BRBNMPL	
7	Licensed Software	Microsoft SQL 2016 standard edition License Copy would be in the name of BRBNMPL	
8	Power Supply	Dual Redundant Power Supply	
9	Optical Drive	DVD +/-RW	
10	Keyboards and Mouse	USB type	
11	USB port	YES	
12	Form Factor	Rack/Tower type	

9.13) SAN Storage

Sl.No.	Feature	Required Product Specifications	Compliance (Yes/No)
	High Availability and Storage Processors	▪ The Proposed Solution should be a Hybrid Storage System with concurrent support for SAN, iSCSI and Fiber Channel protocols configured with dual redundant Active-Active Controllers ▪ Each Controller must have **Intel E5-2600 minimum 8 Core Processors per controller or equivalent and 64GB Memory**. ▪ The Proposed Solution should be based on real time optimized operating system. (It should not be a general purpose OS). ▪ Must provide five 9s availability (99.999%)	
	Memory and HDD Support	▪ The controllers should have **128GB** memory spread across dual controllers.	

		▪ The Proposed Solution should be scalable to more than **490** Drives in the same Storage Array without upgrading the controllers. ▪ The Storage System should support the latest SSD, SAS and NLSAS Drives	
	Host Connectivity and Storage Backend Disk Connectivity	▪ The offered Storage System shall be supplied with at least **8nos of 10Ge Optical Ports** or 4nos x **16Gbps FC ports** across dual Controllers for Host Connectivity. ▪ The array proposed should have a minimum of **4nos x 12Gbps 2.0 SAS** backend architecture.	
	Total Aggregate Storage Bandwidth	The Proposed Storage System should ensure a minimum total aggregate bandwidth of 5000Mbps on a 90% Write & 10% Read Video Management Application Workload**.**	
	RAID Support	Storage System to be configured with RAID 6 protection and Global Hot Spares.	
	VMS Validation on the Storage System	The Proposed Storage System should be tested and validated jointly by the VMS Application OEM & Storage OEM. The Validation white paper for the same to be submitted as a part for the Storage System Compliance documentation.	
	Storage Capacity Requirements	The Proposed Storage System should be configured with Minimum **1400TB** Usable Capacity using minimum **4TB NL-SAS Drives**. The usable capacity is defined as the Net storage capacity available for the application stack, after deducting the penalties imposed by storage infrastructure requirements, disk and array formatting, RAID penalties, host OS and file system formatting including overheads or any other penalties which eat away usable disk space. Drives offered for the above capacity can be of the Highest Capacity offered by the Vendor.	
	Statement of Compliance	This Information Technology Equipment is compliant with the electromagnetic compatibility (EMC) and product safety regulations/standards required by the countries in which the product is sold. EMC compliance is based on FCC part 15, CISPR22/CISPR24 and EN55022/EN55024 standards, including applicable international variations. EMC compliant Class A products are marketed for use in business, industrial, and commercial environments. Product Safety compliance is based on IEC 60950-1 and EN60950-1 standards, including applicable national deviations.	
	Storage Software Licenses	All the standard Storage Software Licenses like Unified Storage Management software for File, Block & vVOLs, Snapshots, Remote Replication, Performance Optimization, Thin provisioning, QOS, Proactive Remote Support to be included.	

	Server Operating System Support	Windows Server 2008, Windows Server 2008 R2+, Windows Server 2012, Windows Server 2016 R2, Microsoft Hyper-V, Novell Suse Enterprise, Oracle, RedHat Enterprise, & x86 VMware® vSphere	
	IDC/Gartner/IHS Top 5 Listed	The Storage System OEM should be listed in the Top5 of IDC/Gartner/IHS latest Report.	
	Storage Validation Test report	Storage OEM should have a test & validation document supporting the bandwidth mentioned with the VMS application supplied by the bidder	

9.14) EQUIPMENT RACK-42 U

Sl. No.	Features	Description	Compliance (Yes/No)
1	Frame structure	• Deep Powder coated Steel Frame Rack 800Wide x 2000Height • x 1000D, 2 mm thick angle. • Top and bottom cover with suitable no. of cutouts for cable entry. 1.5 mm thick sheet • All cutouts blanked with Plastic caps. • 2 pairs, 42 U height 19" L type angle, Front & rear, on • Vertical Cable Trough (LH & RH) 2 Pair	
2	Doors	Perforated Doors with minimum 75% perforation	
3	Side Panels	2000 mm Height x 1000mm Deep, with foamed-on seal , Screw fixed type.	
4	Handle and Lock	Ergoform Handle with Lock Insert Key Lock Type	
5	Cooling Fans	230 Volt AC, 90 cfm, 4 Nos. on top/side cover	
6	Base Plinth	8000W x 1000Dx 100H with anti-vibration pads	
7	Cable route	Vertical cable trough 300 mm Wide x 1700 mm Height to manage cables	
8	Power supply	2 sets of 5/15 A, 230 V socket strip having 10 sockets/switch with 2.5 meter power chord with 16 Amp Top	
9	Accessories	Metal shunting Ring to manage the network cables. All other hardware and accessories required for housing the equipment and dressing of the cables	
10	Approvals	UL, Underwriters Laboratories /USA	

9.15) 19U Rack for Wall Mounted L2 Switch/LIU

Sl. No.	Features	Description	Compliance (Yes/No)
1	Frame structure	• Wall /floor Mounted enclosure with front sheet steel glass door, • Top and bottom cover with suitable no. of cutouts for cable entry. Integrated side walls 1 pair of 19" angles with wall mounting provision • All cutouts blanked with Plastic caps.	
2	Lock	Insert Key type Lock	
3	Cooling Fans	230 Volt AC, 90 cfm fan with Inlet and Outlet Filter, 2 Nos. on top/side cover	

			Compliance (Yes/No)
4	Power supply	19 " Mountable 1 set of 5A, 230 V Universal socket strip having 6 sockets/switch with 2 meter power chord with 5 Amp Top, Cable Manager	
5	Accessories	All other hardware and accessories required for housing the switch, Air Filter for Inlet and outlet	
6	Approvals	UL, Underwriters Laboratories /USA	

9.16) 12U Rack for Wall Mounted Edge Switch

Sl. No.	Features	Description	Compliance (Yes/No)
1	Frame structure	• Wall Mounted enclosure with front sheet steel glass door, • Top and bottom cover with suitable no. of cutouts for cable entry. Integrated side walls 1 pair of 19" angles with wall mounting provision • All cutouts blanked with Plastic caps.	
2	Lock	Insert Key type Lock	
3	Cooling Fans	230 Volt AC, 90 cfm fan with Inlet and Outlet Filter, 2 Nos. on top/side cover	
4	Power supply	19 " Mountable 1 set of 5A, 230 V Universal socket strip having 6 sockets/switch with 2 meter power chord with 5 Amp Top, Cable Manager	
5	Accessories	All other hardware and accessories required for housing the switch, Air Filter for Inlet and outlet	
6	Approvals	UL, Underwriters Laboratories /USA	

9.17) Video Analytics Features required:

Sl. No.	Parameters	Technical Specifications	Compliance (Yes/No)
1.	Video Motion Detection	It should detect & generate alarm when motion is occurred on a continuous basis or scheduled for particular times, dates, days, months etc.. Action to be perform when motion is Detected: . Detects and track objects within the camera coverage area. . Learn scene . Pre-Record duration . Post-Record duration . Archive & Delete motion detection activated recordings after specified period.	
2.	Perimeter Intrusion	It should detects & generate alarm when people, vehicles, and other objects approaching or entering into secured area. Action to be performed when Perimeter Intrusion is Detected: . Detects and track objects within the camera coverage area. . Learn scene	

Sl. No.	Parameters	Technical Specifications	Compliance (Yes/No)
		. Pre-Record duration . Post-Record duration . Archive & Delete motion detection activated recordings after specified period.	
3.	Auto Tracking / People Tracking	Continuous tracking of particular /non- identified people Alert the security person at control room Continuous Recording	
4.	Unattended Object Detection	It should detect & generate alarm when objects that are left unattended for a specified period of time.	
5.	Object Removal	It should detect & generate alarm when the removal of stationary objects.	
6.	Camera Tampering	It should automatically identify & generate alarm when a specific camera field view is altered, blurred image, Camera blinded or covered.	
7.	Image Stabilization	It should obtain sharp, blur-free images associated with the motion of a camera during exposure.	
8.	No. of cameras on which Video Analytics to be implemented.	All video analytics features for 100 IP Network cameras	

9.18) Face Recognition System Features required:

Sl. No.	Parameters	Technical Specifications	Compliance (Yes/No)
1	Facial Recognition / People Identification	a. Face Recognition System shall work on real time and offline mode. b. The system shall capture face images from live CCTV video feed and generate alerts, if blacklist match is found. FRS alerts should be pushed to the VMS / NVR client (seamlessly integrated with VMS/NVR client c. The system shall have the best suited technology employed for 1:1 (one to one) and 1: N (one to many) matching application, when they enter the field of view of CCTC cameras. d. The system shall have the provision to take multiple samples of same face belonging to same person e. The system shall work on partial occlusion of face, glasses, scarfs, changes of facial expression etc. f. The system shall be able work on moderate face rotation either horizontal or vertical g. The system shall be able for matching suspect faces from pre-recorded video feeds obtained for CCTV deployed various identified locations. h. The system shall be able to add photographs obtained from law enforcement agencies to the criminals' repositories tagged for sex, age, scars, tattoos etc. for future searches. i. The system shall support diverse graphic & video formats as well as live cameras.	

Sl.No	Particulars	Specification	Compliance Yes/No
		j. The system administration / user shall have option to customize the GUI for different user.	
		k. The identification of faces should be contactless, at a distance and on the move and in the crowded area.	
		l. The system shall have any tool for enhancement of quality of image before enrolment. The tool may be either a part of this software or may be provided as an add-on.	
		m. The system shall be able to utilize any of the file formats like JPEG, PNG, BMP,TIFF etc. format for enrolment.	
		n. The system shall be able to check if new enrolled face is already enrolled in the data base before registering the new enrolled face in the system.	
		o. The system shall have option to automatically enroll face images from CCTV cameras.	
		p. The system shall have capacity to create different categories of people with option to customize the matching threshold for different categories.	
		q. The system shall be able to work on full HD or Ultra HD Cameras.	
		r. The system shall be able to be implemented on IT hardware like Server or Workstation.	
		s. The system shall be able to use CPU and GPU based processing for multiple camera streams in a single Server/Workstation.	
		t. The system shall support minimum 4 nos. of camera streams on Servers intended for Face Recognition Software with NVIDIA GPU Card of Tesla/Quadro series or better.	
		u. The system shall be able to work on windows / Linux operating system.	
		v. The system shall employ database system like MS SQL or Oracle or Postgre SQL or any other data base system.	
		w. The system shall have the capability to have face image data base of 50000 or more for 1 : N matching. The system should be scalable to upgrade for higher data size as and when required with additional license for data base.	
		x. The system shall be able to work on ONVIF – profile 'S' compliant cameras.	
		y. The face recognition software algorithm should have participated in the latest NIST (National Institute of Standards and Technology) Face Recognition Vendor Test. The vendor shall submit the latest NIST evaluation report for the algorithm.	

9.19) Video Analytics Processing/Application Server

Sl.No	Particulars	Specification	Compliance Yes/No

1.	Model	specifications: Intel Xeon E5-2695v4 or higher, 2.3 GHz, 14 core, 35 Mb cache Memory bus speed 1333 MHz or better	
2.	Server Type	Rack mounted server	
3.	RAM	Min 64 GB RAM and extendable upto 128GB, Windows Server/7/10 OS with separate Graphics card of Intel/NEVEDA 1 GB for Video Analytics.	
4.	Ports	3-USB 3.0 & RJ-45	
5.	Monitor	24" LED , Make :Dell/HP with IPS panel	
6.	Keyboard	12 function Keyboard	
7.	Mouse	3 Button optical scroll mouse with Pad.	
8.	Disk	600 GB x 4 Nos. with Mirroring and stripping	
9.	Licensed Software	Windows Operating System, Microsoft SQL Server software, Microsoft SQL Server database files, MS Office, VMS Transaction Log	
10.	Network Interface Card	4 *1GBPS Onboard NIC	
11.	Network Redundancy	Team application or equivalent should be used for Network redundancy	
12.	Operating system	Licensed Windows Server 2016 (64bit) (Standard Edition)	
13.	Additional Software	IIS Components, MS Office compatible to OS, DirectX 9	
14.	Browser	Internet Explorer latest version	
15.	Antivirus Software	McAfee Virus Scan (Latest Version)	
16.	DVD-RW Drive	Yes	

9.20) Video Analytics Camera

Sl.No.	Particulars	Specification	Compliance Yes/No
1.	Image sensor	1/3'' progressive scan CMOS, MOS (3 megapixel or Higher)	
2.	Lens	Lens f=5.0 - 50 mm, F1.8 - 2.1, autofocus, automatic day/night Horizontal angle of view: 48.1° - 5.1°	
3.	Minimum illumination	0.1 lux color/0.07 lux BW @ 50 IRE, F1.2 or Better ,	
4.	IR Range	Min. 50 mtr.	
5.	Shutter time:	Shutter time: 1/10000 s to 1/2 s	
6.	Zoom:	8x digital Zoom or higher	
7.	Video compression:	H.264/ H.265 (MPEG-4 Part 10/AVC) Motion JPEG	
8.	Resolutions	HD 2048 x 1536 or higher Standard NTSC/PAL for installation	
9.	Frame rate	30/25 fps in all resolutions	
10.	Video streaming	Multiple, individually configurable streams in H.264 / H.265 and Motion JPEG Controllable frame rate and band width VBR/CBR H.264	
11.	Image settings	Compression, brightness, sharpness, white balance, exposure control, backlight compensation, rotation -	

Sl.No.	Particulars	Specification	Compliance Yes/No
		including Corridor Format™, mirroring of images, text and image overlay, privacy mask	
12.	Security	Password protection, IP address filtering, HTTPS encryption*,IEEE 802.1X network access control*, digest authentication, user access log	
13.	Supported protocols	IPv4/IPv6, HTTP, HTTPS, TCP/IP, UDP, UPnP, ICMP, IGMP, RTSP, RTP, SMTP, NTP, DHCP, DNS, PPPoE, DDNS, FTP, QoS, SNMP v2c/v3, RTCP,	
14.	Application Programming Interface.	Open API for software integration.	
15.	Intelligent video:	Video motion detection, active tampering alarm	
16.	Alarm triggers	Video motion detection, active tampering alarm, audio detection, temperature, external input	
17.	ONVIF complaint model	Required for Offered Make/Model	
18.	Input Power Supply: .	230 V AC / 24V AC /12V DC Power adaptor / POE if required to be supplied along with camera.	
19.	Operating conditions	Operating: -10°C to 55°C with Housing Storage: -10°C to 60°C humidity 15 - 100% RH (condensing)	
20.	Built-in fan/heater/sun shield for temperature changes.	Built-in fan/heater/sun shield for temperature changes of -40°C to +55°C with housing	
21.	Included accessories	Mounting and connector kits, Installation Guide, CD with installation tools, recording software and User's Manual, Windows decoder 1-user license. wall mount bracket, sunshield, cable glands, Suitable IP66 rated dust & water resistant Camera mounting fixtures.	
22.	Housing & Fixture	Required Housing & Fixture to be supplied. Camera, Housing & Fixture should be of same make	

9.21) Video Analytics Monitoring Work Station:

Sl.No.	Particulars	Specification	Compliance Yes/No
1.	Processor	Intel 6th Generation I5 3.0 GHz or better, 1 MB Cache and 1333 Mhz FSB min. or higher	
2.	RAM	4GB 1333 MHz	
3.	Operating System	Windows 64 bit Operating System	
4.	Hard disk.	1TB SATA Hard disk	
5.	DVD-RW Drive	16X DVD writer	
6.	Monitor	21" LED Color Monitor Full HD.	
7.	Keyboard	12 function Keyboard	
8.	Mouse	3 Button optical scroll mouse with Pad.	
9.	Other Features	On board sound, and External Speakers , VGA.	
10.		Integrated Gigabit Ethernet Controller	
11.		Energy Star Rated (not less than 3star)	
12.		Onboard dedicated dual video support Graphic card	

9.22) IP NW Megapixel Fixed Camera for Facial Recognition System

Sr. No.	Features	Parameters	Compliance
1	Image Sensor	1/1.7" or better type CCD/CMOS/MOS Sensor	
2	Image Resolution	3,840 x 2,160 at 30/25 fps	
3	Scanning System	Progressive scan	
4	WDR	Min 80 dB-True WDR	
5	Lens	4.2 mm - 25.2 mm {5/32 inches – 1 inch}	
6	Day & Night	True Day & Night with IR Cut Filter	
7	Min. Illumination	Day –1.4 lux	
		Night-0.3 lux	
8	White Balance	Automatic/ Manual	
9	Image setting	Brightness, Contrast, Saturation, Sharpness, Anti-flicker, Exposure, BLC, 3D NR	
10	AGC	ON/OFF	
11	Signal-to-Noise Ratio	More than 50dB	
12	Motion Detection	4-zone video motion detection	
13	Television System	PAL	
14	Frame Rate	25 Fps or better	
15	ONVIF S profile compliance	Required	
16	Bit Rate	64kbps – 14 Mbps continuously adjustment; CBR/VBR	
17	On-board storage Support	64 GB SDXC/SDHC/SD Memory recording	
18	Alarm Terminals	Minimum 1 input, 1 output	
20	Alarm Events	Alarm image transmission, FTP Periodic transmission	
21	Video Compression	H.264 and MJPEG	
22	Video profile	min 3 streams	
23	Ethernet	10Base-T / 100Base-TX, RJ45 connector	
24	Streaming	Simultaneously multi-profile streaming; Controllable frame rate and bandwidth; Constant and variable bit rate	
25	Support Protocols	Compatible with TCP/IP, HTTP, ICMP, UDP, DNS, SMTP, RTP, RTSP, SNMP, IGMP,NTP,HTTPS, NTP protocols	
26	Users	Min 10 users	

27	Weather & Vandal protection	IP 66 & IK10 Rated	
28	View Material	Polycarbonate/Vandal-resistant	
29	Operating Temperature	–45 °C to +50 °C	
30	Operating Humidity	Less than 90% RH	
31	Power supply	VTS	
32	Power Consumption	VTS	
33	Mounting	Shall be pole with stand/wall mounted/ceiling mounted with suitable brackets including sun-shroud/canopy	
34	Regulatory	FCC, UL, CE	
35	Security	Authentication, IP Filter, User access log	

9.23) Facial Recognition System Server

Sr No	Parameter	Specs	Compliance Yes/No
1	Processor	2 X Intel Xeon E5-2630 v4 or higher	
2	RAM	Min 24 GB and extendable upto 128 GB	
3	Internal storage	2 x 600GB SAS (15k RPM) configured as RAID1 for OS & Application	
		4 X 1.8 TB SAS (10k RPM) on RAID 10 SQL DB and Face data Transaction Logs	
4	Network Interface	4 Nos 1 Gbps Gigabit Ethernet ports	
5	Graphics card	NVIDIA Tesla P40 or equivalent	
6	HBA interface	Dual Port PCI-e FC HBA	
7	Operating System	Microsoft Windows Server 2016 (64 bit) Standard Edition. License Copy would be in the name of BRBNMPL	
8	Licensed Software	Microsoft SQL 2016 standard edition License Copy would be in the name of BRBNMPL	
9	Power Supply	Dual Redundant Power Supply	
10	Optical Drive	DVD +/-RW	
11	Keyboards and Mouse	USB type	
12	USB port	YES	
13	Form Factor	Rack/Tower type	

9.24) Facial Recognition System client workstation

Sr No	Parameter	Specs	Compliance Yes/No
1	Processor	Intel Core i7-4960X processor or higher	
2	RAM	32 GB	
3	Internal storage	500GB SATA 3.0Gb/s	
4	Network Interface	2x10/100/1000	
5	Optical Drive	Single drive: DVD +/-RW+CD-RO	

6	Graphics	2 GB Graphic Card NVIDEA	
7	Display	21" LED screen Full HD	
8	Keyboard & Mouse	USB based	
9	Port	Minimum 4 Nos USB ports	
10	Operating System	Microsoft Windows 10 or Latest	
11	Cabinet	Tower	

9.25) Vehicle Entry-Exit Monitoring at Gates using Automatic Number Plate Recognition (ANPR).

The vehicle entry and exit are to be monitored at the gates to realizes the following functionality

A) ANPR Functionality features

Sl.No	Description	Compliance Yes/No
1.	Accurate image capture and record in real time; irrespective of the speed of the vehicles that enters / exits the premises	
2.	System should be suitable for both day and night operation with custom designed IR / White light illuminators.	
3.	System should be capable of working in both standalone and network mode.	
4.	System should support (Scalable, adaptable) for multiple license plate formats.	
5.	System should support image archiving and associated details of number plate, overview image and driver photo locally or centrally.	
6.	System should automatically validate the authorized vehicle that enter into secured premises through vehicle access control list.	
7.	System should generate alerts for the vehicle detected in the alert list.	
8.	Generating report of all vehicles that have entered/Exited during a specified time slot	
9.	List of all vehicles that are within premises (i.e. Entered but not exited yet	
10.	List of all vehicles that are within the premises for more than a user specified time limit	
11.	Incidence list of any particular vehicle showing how many times and when that vehicle has entered/exited the premises.	
12.	Search of vehicle log by Number and Part of Number, Blacklist or Whitelist	
13.	Provision to generate an Alert (locally at client PC & at server as well) if a vehicle that is marked a "Not permitted" appears at the Entry/exit gate	
14.	System should have provision of manually verifying captured image plates and retrieve the same whenever required. The user should be able to enter whether the interpretation is correct or not while viewing the image. The system must keep record of user inputs.	
15.	The ANPR system should feature a robust OCR engine technology that employs more than one distinct recognition approaches so that if the primary recognition approach fails, a secondary approach can be used to get the OCR result.	

9.26) ANPR Processing and Viewing Server Specification

Sr No	Parameter	Specs	Compliance Yes/No
1	Processor	Intel Xeon E5-2695v3 or better	
2	RAM	Min 32 GB and extendable upto 128 GB	
3	Internal storage	2 x 600GB SAS (15k RPM) configured as RAID1 for OS & Application	
		4 X 1.8 TB SAS (10k RPM) on RAID 10 SQL DB and ANPRs Image Data Transaction Logs	
4	Network Interface	4 Nos 1 Gbps Gigabit Ethernet ports	
5	Graphics Card	2 GB NVIDIA /AMD	
6	HBA interface	Dual Port PCI-e FC HBA	
7	Operating System	Microsoft Windows Server 2016 (64 bit) Standard Edition. License Copy would be in the name of BRBNMPL / LINUX	
8	Power Supply	Dual Redundant Power Supply	
9	Optical Drive	DVD +/-RW	
10	Keyboards and Mouse	USB type	
11	USB port	YES	
12	Display	24" LED display	
13	Form Factor	Tower type	

9.27) ANPR Client PC:

Sl.No	Particulars	Specification	Compliance Yes/No
1.	Model & PC Type	Suitable Tower type PC, with Windows OS	
2.	Processor	Intel i7, 2.3 GHz, or better	
3.	RAM	8 GB RAM, with Graphics card of Intel/NEVEDA	
4.	Ports	3-USB 3.0 & RJ-45	
5.	Monitor	21" LED , Make :Dell/HP with IPS panel	
6.	Keyboard	12 function Keyboard	
7.	Mouse	3 Button optical scroll mouse with Pad.	
8.	Disk	2 TB HDD,	

9.	Licensed Software	Windows Operating System, Microsoft SQL Server software, Microsoft SQL Server database files, MS Office, VMS Transaction Log	
10.	Network Interface Card	1GBPS Onboard NIC	
11.	Network Redundancy	Team application or equivalent should be used for Network redundancy	
12.	Operating system	Licensed Windows 7/8.1 or higher (64bit) (Standard Edition)	
13.	Browser	Internet Explorer latest version	
14.	Antivirus Software	McAfee Virus Scan (Latest Version)	
15.	DVD-RW Drive	Internal DVD-RW optical Drive	

9.28) IP Network ANPR and Driver image capture Camera

Sl. No.	Parameter	Specification	Compliance Yes/No
1	Pickup Device	1/3" or better type CCD/CMOS/MOS Sensor	
2	Effective Pixels	1920*1080(2MP)	
3	Scanning System	Progressive Scan	
4	Resolution	1080p Full HD images up to 25 fps	
5	Min Illumination	0 lux IR on	
6	White Balance	Automatic/ Manual	
7	Backlight Compensation	ON/OFF	
8	Colour, Brightness, Contrast	Functionality Required	
9	High Light Compensation	Required	
10	Electronic Shutter	1/10000 s or better	
11	Automatic Gain Control	Auto / Manual	
12	Day and Night functionality	Automatic, Color, Mono	
13	Signal-to-Noise Ratio	More than 50dB	
14	IRIS Control	DC or Automatic	
15	Focus	Automatic / Manual	
16	Varifocal Lens	5-50mm IR Corrected or better	
17	IR illumination	50 meters range	
18	Wide Dynamic Range	Min 120 dB	
19	Digital IOs & Alarm input	Available	
20	Codec Support	H.264 or better	
21	ONVIF S profile compliance & RTSP Support	Required for Offered Make/Model	
22	Power Consumption	As per POE Standard	
23	Mounting	Shall be on pole with stand/wall mounted/ceiling mounted with suitable brackets.	
24	Security	Password Protection, HTTPS encryption	

9.29) UVS System Functionality features

Sl.No	Description	Compliance Yes/No
1.	The UVSS should be able to capture very high resolution & complete composite **COLOR** under body image of any vehicle passing over it using a single high resolution digital progressive Area-scan GigE IP camera, without the vehicle being required to be stopped.	
2.	The UVSS should be able to handle vehicles moving at different speeds ranging from 0 to 20 Km/hr, while the composite image so captured by the system should be automatically and dynamically adjusted according to the speed of the vehicle using multiple loop based sensors.	
3.	The Composite imaging camera should be a high quality, **COLOR AREA SCAN**, GigE type, with minimum XGA resolution of (1024 x 768) or above. The minimum specification of this Area-scan camera to be :-	
4.	Camera Type- Gigabit Ethernet progressive Area-scan **color** camera	
5.	The UVSS should be capable of producing a clear and undistorted image of the vehicle underside, even when a vehicle has completely stopped / halted over the UVSS unit, i.e it must still be able to create a seamless and perfect composite image of the underside irrespective of stoppage or non-uniform motion of the vehicle over the scanner.	
6.	The UVSS should not use either a digital Line-Scan camera based technology or any type of analog cameras to form composite image.	
7.	The UVSS must have feature to magnify (zoom) the composite images (current and past), up to 4x, in order to facilitate a closer view of any part of the composite image	
8.	The underside illumination must be adequate and obtained through any state-of-the-art, long life, LED lighting modules. Halogen or CFL type lighting elements for illumination of the underside will not be accepted.	
9.	There should be 4 or more additional view cameras for capturing motion video images of the deeper/ hard-viewing areas of the underside, e.g. areas around suspensions, below the engine areas, side wall of fuel tanks & exhaust pipes etc. & 01 camera for number plate scanning.	
10.	The UVSS should give real time output of all the data simultaneously i.e. the composite image, additional videos of hard-viewing cameras, driver photos, vehicle's frontal image and its number display – all should be displayed on the monitor almost instantaneously after the vehicle cross the unit. Also, the system should have a facility to view the composite image and video images, off-line also, for all vehicles.	
11.	The UVSS applications & operating software should preferably be based on open architecture on Linux platform. It must have an user friendly	

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	Graphical User Interface (GUI) with provision for multiple users logging of events and search facility, and with an option to choose and operate the system in Hindi or any other Indian local language GUI, in addition to English.	
12.	The UVSS system must have a facility to take back-up of all the transactions to any usual backup / storage media and also should be able to print out reports.	
13.	The UVSS should have an option to control all local UVSS operations from the secondary/supervisory central console on high speed LAN, without any distance constraint between the UVSS unit and the location of the control room where the secondary/supervisory console would be placed.	
14.	The UVSS should have option for open protocol for integration with other security systems	
15.	The overall UVSS should be CE Certified. A certificate to this effect, after duly tested, issued by a competent certifying agency, must be attached with the tender.	
16.	The underground cameras of UVSS should be enclosed in a suitable all-weather-proof housing of IP 67 equivalent or higher standard. A certificate to this effect, after duly tested, issued by a competent certifying agency, must be attached with the tender.	

9.30) UVS Main Camera (Gigabit Ethernet progressive Area-scan color camera)

Sl.No.	Particulars	Specification	Compliance Yes/No
1.	Sensor	CMOS/CCD XGA resolution (2048*1536) or better with AOI (Area of interest) Settings	
2.	Field of View	> 135	
3.	Format	GiGE Vision compliant specifications	
4.	Composite Image resolution of the underside	3 megapixel or higher	
5.	Camera casing ingress protection rating	IP 67 or better, duly certified by NABL accredited laboratory.	
6.	Frame rate	30 fps at full resolution, more than 100+ fps in AOI mode	
7.	Min Illumination	Day – 0.1lux	
8.	White Balance	Automatic/ Manual	
9.	Backlight Compensation	ON/OFF	
10.	Colour, Brightness, Contrast	Functionality Required	
11.	Electronic Shutter	1/10000 s or better	
12.	Automatic Gain Control	Auto / Manual	
13.	Day and Night functionality	Automatic, Color, Mono	
14.	Signal-to-Noise Ratio	More than 50dB	

15.	IRIS Control	DC or Automatic	
16.	Focus	Automatic / Manual	
17.	Varifocal Lens	5-50mm	
18.	LED Illumination (for UVS)	Visible LED lights	
19.	Wide Dynamic Range	Min 120 dB	
20.	Digital IOs & Alarm input	Should be Available	
21.	ONVIF S profile compliance	Required for Offered Make/Model	
22.	Power Consumption	As per POE Standard	
23.	Mounting	Shall be on pole with stand/wall mounted/ceiling mounted with suitable brackets.	
24.	Surge/Lightening Protection	Required (Internal/External) Industrial grade	
25.	Certifications	CE, FCC, UL	
26.	Housing & Fixture	Required Housing & Fixture (IP66) to be supplied. Camera, Housing & Fixture should be of same make	

9.31) UVS Auxillary Camera (Gigabit Ethernet progressive Area-scan color camera)

Sl.No.	Particulars	Specification	Compliance Yes/No
1.	Sensor	CMOS/CCD XGA resolution (1280*1024) or better with AOI (Area of interest) Settings	
2.	Effective Range	15Cm to 60Cm	
3.	Format	GiGE Vision compliant specifications	
4.	Camera resolution	25fps @ 1280*1024/ 30fps @ 752*480 or Higher	
5.	Camera casing ingress protection rating	IP 67 or better, duly certified by NABL accredited laboratory.	
6.	Camera gain and shutter Adjustable	1/100 to 1/10000 sec	
7.	Min Illumination	Day – 0.1lux	
8.	White Balance	Automatic/ Manual	
9.	Backlight Compensation	ON/OFF	
10.	Colour, Brightness, Contrast	Functionality Required	
11.	Automatic Gain Control	Auto / Manual	
12.	Day and Night functionality	Automatic, Color, Mono	

13.	Signal-to-Noise Ratio	More than 50dB	
14.	IRIS Control	DC or Automatic	
15.	Focus	Automatic / Manual	
16.	Varifocal Lens	5-50mm	
17.	LED Illumination (for UVS)	Visible LED lights	
18.	Wide Dynamic Range	Min 120 dB	
19.	Digital IOs & Alarm input	Should be Available	
20.	ONVIF S profile compliance	Required for Offered Make/Model	
21.	Power Consumption	12V DC	
22.	Mounting	Shall be on pole with stand/wall mounted/ceiling mounted with suitable brackets.	
23.	Surge/Lightening Protection	Required (Internal/External) Industrial grade	
24.	Operating Tempreture	0°C to +50°C	
25.	Certifications	CE, FCC, UL	
26.	Housing & Fixture	Required Housing & Fixture (IP66) to be supplied.Camera, Housing & Fixture should be of same make	

9.32) UVS Server:

Sl.No	Particulars	Specification	Compliance Yes/No
1.	Model & PC Type	Tower type server with Windows Server OS/Linux	
2.	Processor	Intel i3 or better with latest architecture	
3.	RAM	Min 32 GB RAM and extendable upto 128 GB, with Graphics card of Intel/NEVEDA	
4.	Ports	4-USB 3.0 & RJ-45	
5.	Monitor	24" LED , Make :Dell/HP with IPS panel	
6.	Keyboard	12 function Keyboard	
7.	Mouse	3 Button optical scroll mouse with Pad.	
8.	Disk	1 TB x 4 Nos HDD, with Mirroring and stripping	
9.	Licensed Software	Windows Operating System/Linux, Microsoft SQL Server software, Microsoft SQL Server database files, MS Office, VMS Transaction Log	
10.	Network Interface Card	4 *1GBPS Onboard NIC	
11.	Graphic card	NVIDIA QUADRO K620 2-GB Graphic card or better	
12.	Network Redundancy	Team application or equivalent should be used for Network redundancy	
13.	Operating system	Licensed Windows Server 2016 (64bit) (Standard Edition) / LINUX	

14.	Additional Software	IIS Components, MS Office compatible to OS, DirectX 9	
15.	Browser	Internet Explorer latest version	
16.	Antivirus Software	McAfee Virus Scan (Latest Version)	
17.	DVD-RW Drive	Internal DVD-RW optical Drive	

9.33) Armoured Shielded Twisted Pair (STP) CAT 6a Cable

Sl. No.	Item	Specifications	Compliance (Yes/No)
1.	Construction	Four twisted pair, inner jacket, shield, ripcord and overall armoured jacket. The cable shall have marking of length at each meter	
2.	Conductors	23 AWG x8 solid copper conductors with HDPE insulation	
3.	Inner Jacket	PVC Aluminum foil Shield (100% coverage)	
4.	Outer Jacket	Armoured, Low smoke zero halogen FR PVC	
5.	Operating Temperature	0-50 Degree C	
6.	General Specification	Cable should give 1 gbps end-to-end solution (up to 100 mtr)	
		Should be UL/ETL tested and verified for 1 G component performance.	
		Should support applications like Gigabit Ethernet 1000 Base-T, Fast Ethernet 100 base-T, Ethernet 10 base-T, Token ring, ATM 155 Mbps, ISDN, analog (broadband, baseband) and digital Video and analog and digital voice (VOIP).	

9.34) Armoured Power Cable

Sl. No.	Specifications	Compliance (Yes/No)
1	KV grade, 3 core, 2.5 sq mm copper conductor, PVC insulated, armoured, cable conforming to IS:1554 (Part-I) with FRLS PVC outer sheath . The cable shall have marking of length at each meter. The cables shall have identification tags of connections at each end and such details shall be submitted along with documentation.	

9.35) Armoured Single Mode Fiber Optic Cable
The 12 core cable shall be 9/125micron core/cladding, single mode, Armoured Fiber Optic Cable. The cables shall have identification tags of connections at each end and such details shall be submitted along with documentation.

Sl. No.	Item	Specifications	Compliance (Yes/No)
1	**Optical Fiber Cable Structure**		

a	Number of core	12 cores	
b	Core material:	Germanium doped Silica glass (12 core)	
c	Cladding material:	Silica glass	
d	Mold field diameter:	$9\pm0.4\mu m$	
e	Cladding diameter:	$125\pm0.7\mu m$	
f	Coating material:	UV curable material	
g	Coating diameter:	$250\pm10\mu m$	
2	**Optical Characteristic**		
a	Attenuation at 1310nm:	≤1.0dB/km	
b	at 1550nm:	≤1.0dB/km	
c	Temperature and Humidity	The cable shall retain the optical properties, detailed in the present specification over the following condition: Working/Storage Temp.: -30oC -+70o C Humidity: 0--100%	

9.36) Laying of Power, CAT and Fiber Optic cable:

The cable shall be laid on wall/ceiling or above false ceiling etc. The rate quoted for cable shall be for supply and fixing of GI saddles & spacers etc. & cable trays at required areas on wall/ceiling or above false ceiling and providing other accessories as required. Rate shall also include for making required holes, if any, in brick/RCC walls, RCC Ceiling etc. and making good the same complete in all respect as required to complete the job. The cables shall be properly dressed in a neat manner. The cable shall have marking of length at each meter. The Power cable shall be terminated with copper lugs, glands etc. In case of CAT Cable and Fiber optic Cables, the termination shall be done by providing suitable end connectors.

9.37) Surge Suppressor for cameras and associated hardware / Earth Pit

To protect the system from Lightning, it is the responsibility of the bidder to install required class of surge suppressor for signal, video and power cable and to provide suitable earth pits along with lightening arrestor at the watch towers and camera mounting pole for all the cameras and associated hardware like switches etc. In case of any failure of component due to lightening, it will be the responsibility of successful bidder to replace the defective components during warranty as well as AMC period to make the system serviceable.

10. List of Approved makes

Sl.No.	Equipment	Approved makes
1.	Video Management Software	Milestone, Pelco, Honeywell, Bosch, IBM, Gentec, Videonetics, CISCO , Godrej, Siemens
2.	Video Analytics	Milestone, Bosch, Pelco, Honeywell , Allgovision , Videonetics, Godrej
3.	Facial Recognition System	NEC, Cognitec , Neurotechnology
4.	ANPR & UVS System	NEC, Bosch, Pelco, Kritikal, Secuscan, Honeywell, Polixel
5.	Servers	HP, Dell, IBM, Cisco, Lenovo
6.	Storage	HP, Dell, IBM, EMC, Netapp
7.	Layer -2 Network Switches	Allied Telesis, Cisco, HP, Juniper , Dlink
8.	Layer -3Network Switches	Allied Telesis, Cisco, HP, Juniper, Dlink
9.	Edge switches	Allied Telesis, Cisco, HP, Juniper, Dlink
10.	IP CCTV Cameras	Pelco, Bosch, Panasonic, Mobotix, Sony, Honeywell, Axis, American Dynamics
11.	Camera Lens	Pelco, Bosch, Panasonic, Mobotix, Sony, Honeywell, Axis, American Dynamics
12.	LED Panels	Sony , Panasonic , Samsung, LG
13.	Work stations	HP, Dell, IBM, Cisco, Lenovo, HCL
14.	Armoured Cat 6 cable	Tyco/Crestron/Extron/DLink/Finolex
15.	Armoured Fiber Cable	Tyco/Crestron/Extron/DLink/Finolex
16.	Power Cable	Polycab, Finolex, Havells
17.	Equipment Racks	Rittal, Dell, IBM, Netapp, APW Schneider
18.	Modular switch and sockets and I/O boxes	Anchor, Roma, Legrand
19.	Rigid PVC conduit	Any brand with ISI mark

Important point: For all BOQ items ,the bidders are advised to consider and submit the quote for any one make & model only from the above list of approved makes which are robust, reliable and equivalent in all respects to meet our requirement for operation of system on 24/7 basis.

Date: -   **Seal and Signature of Bidder**
Place:-

11.List of offered makes & Road Map of the offered makes and models
In the price bid the bidder shall quote for the make and model offered in this List only.

S.No.	Equipment	Offered Make	Offered model	End of Sale	End of Support
1.	IP Bullet Camera 2 MP Fixed Camera with IR, Varifocal lens (Indoor)				
2.	IP Bullet Camera 2 MP Fixed Camera with IR, Varifocal lens (Outdoor)				
3.	IP PTZ Camera 2 MP with IR (Outdoor)				
4.	IP Bullet Camera 4 MP Fixed Camera with IR, Varifocal lens(Outdoor)				
5.	IP Network ANPR Camera				
6.	UVS Camera				
7.	Video Management Software				
8.	Video Analytics Software				
9.	Video Analytics Server				
10.	Video Analytic Client PC				
11.	Facial Recognition System				
12.	Facial Recognition System Camera				
13.	ANPR System				
14.	UVS System				
15.	VMS Servers				
16.	VMS Client PCs				
17.	Video Analytics server				
18.	Camera Server				
19.	ANPR Server				
20.	ANPR Client PCs				
21.	Facial Recognition Server				
22.	SAN Storage				
23.	Layer-2 Network Switches				

24.	Layer -3Network Switches				
25.	Edge switches				
26.	Racks				
27.	Patch Chords				
28.	LED Panels (Video Wall)				
29.	Work stations				
30.	Cat 6a cable				
31.	Armoured Cat 6a cable				
32.	Armored Fiber optic Cable				

In the price bid the bidder shall quote for the make and model offered in this List only.

1. We hereby confirm that the offered Network Video Management software and other software, including operating system, and cameras network switches, servers, storage devices and all other hardware are as per the tender specifications and deliver the objective and requirement of the IPCCTV system stated in the tender.
2. We also confirm that all the cables, I/O outlets ,Pigtails and patch cords etc. are as per tender specifications and other accessories (boots) etc. are as per industry standards.
3. The offered make in the above list should be one of approved makes only or should be equivalent in all respects to ensure reliability, ruggedness for smooth operation of system on 24/7 without loss of any clarity or quality of picture.
4. The OEMs of the offered Camera, Network Switch, Servers and Storage should have their own office in India and be a legal entity registered/incorporated under its own name as per the prevalent / applicable laws of the land and be in operation as on 31/10/2017. The copy of incorporation / registration details should be submitted along with above details.
5. The OEMs of the offered Camera, Network Switch, Servers and Storage should have a functioning /operation Service Centre(s) including spare depots in India. The details of these service centers and spare depots should be given along with the above details.

Date: -   **Seal and Signature of Bidder**
Place:-

Note: - The dates as mentioned in the above road map should be confirmed by the respective OEMs on their letter head.

Section VIII: Quality Control Requirements

1. All Electrical items supplied under this contract shall be of reputed make with ISI mark.

2. The Electrical works shall be carried in accordance with applicable IE rules in force.

3. All Electric /Electronic Modules and gadgets should be of Standard make.

4. All OFC Network should be carried in accordance with applicable rules in force

5. All major items shall be supplied along with their technical data sheet and catalogues.

6. The complete supply and installation shall comply with statutory requirements as applicable.

7. FAT / FAC: On completion of the work, the system will be put under observation for period of 15 days for trouble free operation including Picture Quality, Frame rate, storage capacity, band width etc. If any deviation / deficiency must be addressed by upgrading / modification in the hardware and Software wherever required to meet the requirement. Having certified for the trouble free operation during this Final Acceptance Test (FAT) period by BRBNMPL Maintenance Division or Technical Committee, the Final Acceptance Certificate (FAC) will be issued.

Section IX: Qualification/ Eligibility Criteria

a)   **Financial Soundness:**

- Average Annual turnover of the bidder during last three years ending 31/03/2017 should be more than Rs.360.00 lakhs and it should be reflected in audited financial report for the said period and should be certified by Chartered Accountant.
- Bidders should not have suffered any financial loss for more than one year during last three years ending 31/03/2017.
- The net worth of the firm should not have eroded by more than 30% in the last three years ending 31/03/2017.

Important Note : Please submit above details as per the format given in below (with endorsed by the Chartered Accountant)

Financial Status:

Sl.No	Description	2014-15	2015-16	2016-17
1	Annual Turnover			
2	Net Profit			
3	Net worth of the firm			

(To be filled by tenderer. Please don't write like "attached" or "refer")

b) Experience:

Contractor shall have experience in successfully completed similar works during last seven years ending 31st December 2017 shall be either of the following,

- **Three similar completed works costing not less than the amount equal to Rs. 480/- lakhs.**

<div align="center">

Or

</div>

- **Two similar completed works costing not less than the amount equal to Rs. 600/- lakhs**

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Or

</div>

- **One similar completed work costing not less than the amount equal to Rs. 960/- lakhs.**

Note : The word "similar work" expresses the experience of "Design, supply and Installation of IP based CCTV System, Servers & SAN Storage, Server based Video Analytics ,FRS"

Experience.

Sl. No	Company Name	Work order No & Date	Details of work	Order Value	Date of completion
1					
2					
3					
4					
5					

I.   Copies of completion certificates/Statements/orders executed shall be submitted.

II.   copies of Financial statements like P/L Accounts , Balance Sheets certified by Chartered accountant shall be submitted

General:

- Bidder should give a declaration (Format as per Annexure-'A')that they have not been blacklisted / debarred by BRBNMPL/Government of India in the past 5 years ending 31.12.2017. Also they should not have been blacklisted at present.

- The tenderer shall enclose a **confidentiality statement** (Format as per Annexure-'A') duly signed and stamped.

- The tenderer shall enclose a Proforma of undertaking for back up Support confirmation by the OEM (Format as per Annexure-'B')

- The Tenderer should be registered in India under GST also to be registered under Central Excise Act (if applicable).

- We hereby confirm that we are competent and legally authorized to submit the tender and / or to enter into legally binding contract

Bidder to furnish stipulated documents in support of fulfilment of qualifying criteria. Non-submission or incomplete submission of documents may lead to rejection of offer.

Seal and Signature of Bidder

Section X: Tender Form

(To be submitted along with Price bid)

Date …………………………

To
The Director,
BRBNMPL,
Note Mudran Nagar,
Mysuru – 570 003

Ref: Your Tender document No. …………………. ……….dated ....

We, the undersigned have examined the above mentioned tender enquiry document, including amendment No. ------, dated _____ (if any), the receipt of which is hereby confirmed. We now offer to supply and deliver ……………….. (description of goods and services) in conformity with your above referred document for the sum (total tender amount in figures and words), as shown in the price schedule(s), attached herewith and made part of this tender.

If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause 6, read with modification, if any, in Section V — "Special Conditions of Contract", for due performance of the contract.

We agree to keep our tender valid for acceptance for a period upto as required in the GIT clause 19, read with modification, if any in Section-Ill — "Special Instructions to Tenderers" or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender upto the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

Dated this _____ day of ____
For & on behalf of

(Signature with date)

(Name and designation)
Duly authorized to sign tender for and on behalf of

……………………..

Section XI: Price Schedule

PRICE BID FORMAT

(To be submitted in company's letterhead)

The General Manager.
BRBNMPL,
Mysuru -570 003

Sub: Price Bid for "Up-gradation of CCTV system and Servers with IP Cameras and implementation of Video Analytics Features"
Reference : Your Tender No. 104 /MYS/MAINT(U)/ 2017-18   Dated16-01-2018

A. Supply and Installation:

Sl.No.	Description	UOM	Qty	Rate (₹)	Amount (₹)	GST (₹)	Total Amount (₹)
1.	IP Bullet Out door Cameras 2 MP (Fixed IR) with Varifocal Lens including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc (outdoor)	Nos.	45				
2.	IP Bullet Indoor Cameras 2 MP (Fixed IR) with Varifocal Lens including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc (Indoor)	Nos.	290				
3.	IP Cameras 2 MP with PTZ with IR including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc (Outdoor)	Nos.	80				
4.	Camera Server for recording the video of IP cameras with **07 days back-up** (50 cameras per server, 10+1 standby) including required accessories.	Nos.	11				
5.	VMS Software with 600 Camera licenses for Life time	lot	1				
6.	Video Wall with 40" LED monitors (Min. 12 Nos.) Industrial grade and required 12 nos. of Client PCs with multi monitoring feature for live viewing and Video Analytics monitoring (Including Powder coated Frame work and accessories)	Nos.	1				
7.	L3 switch – Minimum 2Line cards of 24 x 10/100/1000 Mbps RJ45 ports , Minimum 2Line cards of 4*10G SFP + ports 4 dedicated I/O slots - Fully Loaded with accessories including LIU, Patch cords, Pig tails etc	Nos.	1				

8.	L2 Switch-Commercial Grade **Modular distribution switch** with 24 x 10/100/1000 **slots** Base-T RJ45 PoE supported Ports-Should have min 4 x 10G SFP supported ports & 10x 01 G SFP Ports - Fully Loaded with accessories including LIU, Patch cords, Pig tails,POE injectors etc	Nos.	10					
9.	Edge Switch - **Commercial Grade-** Should have atleast **16 x 10/100/1000 Mbps** RJ45 PoE supported Ports. Should have min min 2 x 1G SFP supported ports Fully Loaded with accessories including LIU, Patch cords, Pig tails etc	Nos.	56					
10.	Edge Switch - Industrial Grade- Should have atleast **8 x 10/100/1000 Mbps** RJ45 PoE supported Ports. Should have min 4 x 1G SFP supported ports Fully Loaded with accessories including LIU, Patch cords, Pig tails etc	Nos.	07					
11.	10G SFU Modules	Nos.	60					
12.	1G SFU Modules	Mtrs	364					
13.	POE Injectors	Mtrs	20					
14.	OFC Cable (12 Core) with required accessories	Mtrs	3000					
15.	Power Cable 2.5Sq MM 3 Core, PVC Armoured	Mtrs	1800					
16.	Cat 6a Cable	Mtrs	25500					
17.	Cat 6a Cable Armoured	Mtrs	2600					
18.	OFC Cabling charges with conduit/Cable tray	Mtrs	3000					
19.	Power Cabling charges	Mtrs	1800					
20.	Cat 6a Cabling charges with conduit/Cable tray	Nos.	25500					
21.	40 mm ID HDPE PIPE	Nos.	2600					
22.	Road Cuttling , refilling and laying of cable	Nos.	100					
23.	Excavation , Refilling and laying of cable and pipe	Nos.	2000					
24.	Camera Mounting Pole (15 feet Minimum above Ground level)	No.	50					

	with required accessories and junction boxes							
25.	Earth pits as per IE Standards	No.	50					
	SERVER UPGRADATION	No.						
26.	VMS/Backup Application Server for Camera Recording including back-up application software with required license.	No.	2					
27.	Back-up SAN Storage for Camera Recording for 90 days back-up. Minimum 1400 TB usable capacity expandable upto 2000 TB	No.	1					
28.	Equipment Rack (42U, closed network rack) with accessories.	No.	2					
29.	Equipment Rack Wall Mount (19U, network rack) with accessories.	No.	10					
30.	Equipment Rack Wall Mount (6U, network rack) with accessories.	No.	56					
	VIDEO ANALYTICS	Set						
31.	Video Analytics Software with License for 100 Cameras	Set	1					
32.	Video Analytics Processing/Application Server	Nos.	2					
33.	IP NW 8 Megapixel Fixed Camera (Outdoor) for Face Recognition System	No. of Locations	4					
34.	Facial Recognition Server, one client work station with Software and 4 channel License	Set	1					
35.	Video Analytics client monitoring & configuration Station	Nos.	1					
36.	ANPR Server and Monitor with License (ANPR- 4 nos license) & required 3 nos. of Client PCs	Lot	1					
37.	IP NW 4 Megapixel Fixed Camera (Outdoor), including 128GB of SD card, Housing, fixtures, Power supply, Patch cards etc for video analytics	Lot	24					
38.	IP NW ANPR Camera and driver Image capture camera(total 8 cameras)	Lot	4					
39.	UVS System with required Server, Software & Cameras (01Main camera & 04 Auxiliary camera)	Lot	1					

40.	Transient Surge Protection for cameras - 8/20 μs (IEC Standard)	LS	90				
41.	Applicable Licenses if any	LS	1				
42.	Any other Items like all type of civil works (plumbing, welding , drilling, construction of foundations etc.) / Equipment / Instruments / software etc required if any which are not mentioned above and required for the project (Pl. mention)	Lot	1				
43.	Installation Charges	Lot	1				
44.	TOTAL						

B. COMPREHENSIVE AMC CHARGES

SL No	Item Description	Unit	Rate / Annum	Amount for 5 years
1.	Comprehensive AMC Charges for the entire CCTV System, FRS, Video analytics, ANPR, UVS System including the existing OFC network for Five years from date of expiry of warranty.	Per year		
2.	GST @_____%			
3.	TOTAL			
In words, Rupees…………………………………………………………………………..only.				

C. BUYBACK OFFER FOR EXISTING CCTV AND SERVER SYSTEM (ALL ITEMS ARE WITHOUT STORAGE AND APPROXIMATE QUANTITY)

Sl.No.	Description	UOM	Qty	Rate (₹)	Amount (₹)	GST (₹)	Total Amount (₹)
1	**CCTV ANALOG CAMERA**	**EA**	**263**				
2	**CCTV ANALOG PTZ CAMERA**	**EA**	**41**				
3	**CCTV ANALOG CAMERA with IR UNIT**	**EA**	**20**				
4	**IBM SERVER X SERIES 346(WITHOUT HARD DISK DRIVE)**	**EA**	**2**				
5	**IBM TOTAL STORAGE TAPE LIBRARY MAIN FRAME-L52 AND EXPANSION FRAME – D52**	**EA**	**1+1**				

Tender document for "Upgradation of CCTV System and Servers with IP Cameras and Implementation of Video Analytic Features".

	(WITHOUT STORAGE CARTRIDGES)							
6	DIGITAL VIDEO RECORDER – LANNER (WITHOUT STORAGE)	EA	18					
7	DIGITAL VIDEO RECORDER - HONEYWELL FUSION (WITHOUT STORAGE)	EA	05					
8	Multiplexers-16 Channel(HDX1600)	EA	19					
9	DVR RACK (42 U)	EA	11					
10	COMPUTER DISPLAY MONITORS - 17 Inch	EA	23					
11	MONITOR CONSOLE FRAME HOLDING 23 MONITORS.	EA	1					
	• **The total amount including GST will be reduced from the quoted amount to arrive at the lowest quote.**							
	Total							
In words, Rupees…………………………………………………………………………..only.								

D. Total Cost:

Sl.No	Description	Amount
1	Supply and installation charges as per Table –A	
2	AMC Charges as per Table –B	
3	Total (1+2)	
4	Buyback offer for existing devices as per Table –C (-)	
5	Grand Total (3 - 4)	
(In words) Rupees --- only		

We confirm that we will abide by all the tender terms & conditions and we do not have any counter conditions.

Thanking you,
Yours faithfully,   **Seal**

(   )
Name & Signature with date.

Note :

1. Price with condition(s) shall be liable for rejection.

2. Price should be quoted exactly as per the format.
3. Price quoted should be all inclusive.
4. Conditional discount/ rebate etc. shall not be considered. In case, discount is offered that should be adjusted in the price and net price should be quoted.
5. The L1 bidder will be decided based on the Grand total cost (As per Table-D).
6. Bidders are instructed to indicate clearly applicable GST for each of the items in the relevant column including Software, licences and Installation, Testing and Commissioning charges.
7. In case the quantity varies from the above the same will be paid on pro rata basis from the above rate. The contractor has to arrange all the required material, equipment to complete the star / ring tropology network.

Note: **The indicated quantities for cabling, racks, etc are tentative / approximate and will be paid at actuals as per the site requirement and supplied quantities (after measurement**).

Section XII –QUESTIONAIRE
(To be submitted along with Technical Bid)

I.

Sl.no	Item	Details	Ref /page no of document attached
1.	Company profile, Address, Phone, FAX no, Contact Person, etc		
2.	Status of the firm		
3.	Proprietorship/ Partnership/Limited etc		
4.	GST No		
5.	Service Tax No		
6.	PAN / Income Tax Registration Number etc.		
7.	Bankers Name and address with branch code/Account no/Type of account/When opened etc.		
8.	NSIC or DGS&D register No. (If applicable)		
9.	Experience as per Section IX of tender document		
10.	Financial Standing as per Section IX of tender document. (Please attach certificate from charted accountant as per the format mentioned in Section XI-2(a)		
11.	Make, Model, Technical Catalogue of the major components offered		
12.	System architecture drawing of the above system for installation.		
13.	Approval/Standards of the above system.		
14.	Copy of agreement or any other legal document between the manufacturer and the bidder where the former has authorized the latter to sell and service its products. (Incomplete responses without the required documents are liable to be cancelled)		
15.	Year of commencement of business.		
16.	Number of key persons who have sufficient experience to develop such system.		
17.	Whether full fledge service set up will be available for the above work at nearby place / city from where after sale service can be provided and name of place.		

1. We confirm that we possesses the necessary technical competence and financial resources as mentioned in Section -IX of this tender document, to ensure supply of the tendered item, as per your specifications and delivery schedule. Necessary documents like copies of Work orders, P/L Accounts, Balance Sheets are enclosed herewith.

2. We confirm that we have quoted exactly for the tendered product as per your specifications given in Section VII.

3. We confirm that the Price bid is quoted exactly as per your format in Section-XI and is inclusive of material, Labour and all statutory levies, duties, laying, freight, handling, loading, unloading charges, delivery at your Press.

4. We confirm that there would not be any price escalation during the supply period.

5. We confirm that we will abide by all the tender terms & conditions and we do not have any counter conditions.

6. As required, we enclose herewith the complete set of copy of tender documents duly signed by us as a token of our acceptance.

7. We also confirm that the undersigned is duly authorized and have the competence to sign the contract for and on behalf of the firm.

8. We have attached the documentary evidence in support of above-mentioned information. We understand that if the details given in support of claims made above are found to be untenable, our bid may be rejected.

Thanking you,
Yours faithfully,   **Seal**

(   )
Name
Signature with date.

Note: Copies of applicable Documents are attached herewith.
        (Please enclose all Technical Documents related to the proposed modification.)

II CHECK LIST

(Please fill this check list and attach with technical bid)

Sl.No	Description	Enclosed	Remarks
1.	DD for Rs.500.00 as Tender fee	Yes/No	
2.	DD for Rs. 24,00,000/- as EMD	Yes/No	
3.	Tender Document duly sealed and signed	Yes/No	Please download the Section II & IV of tender document from www.brbnmpl.co.in and seal and sign it.
4.	Technical Bid –Section XII (Duly filled)	Yes/No	
5.	Purchase order /Work order copy or completion certificate as proof of experience	Yes/No	
6.	Delivery Schedule (90 days from date of Work order)	Accepted / Not Acceptable (Pl.Specify)	
7.	Charted Accountant certificate /PL statements certified by charted Account as proof for Financial Soundness (shall highlight Turnover, Net worth and Profit).	Yes/No	
8.	Certificate confirming 'Not blacklisted by Govt Departments /BRBNMPL	Yes/No	
9.	PAN Card copy	Yes/No	
10.	Copy of Tax (VAT/CST/SERVICE TAX/WCT) registration certificate	Yes/No	
11.	EMD & Tender Fee in one sealed cover	Yes/No	
12.	Technical Bid in one sealed cover	Yes/No	
13.	Price Bid in one sealed cover	Yes/No	
14.	All the three sealed covers (Sl No-11,12, &13) in one sealed cover	Yes/No	

Seal and Signature of bidder

(To be signed & stamped and submitted along with Techno-commercial Bid Part –I)

Section XIV: Manufacturer's Authorization Form
(PM/SBD/004)

To

…………….

……………

(Name and address of BRBNMPL)

Dear Sirs,

Ref. Your Tender document No .... dated ……………………..

We, ………………………………………… who are proven and reputable manufacturers of ………………… (name and description of the goods offered in the tender) having factories at …………………………. hereby authorise Messrs ---------------------------------------(name and address of the agent) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred tender enquiry documents for the above goods manufactured by us.

*We further confirm that no supplier or firm or individual other than Messrs. (name and address of the above agent) is authorized to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred tender enquiry documents for the above goods manufactured by us.

We also hereby extend our full warranty, as applicable as per clause 16 of the General Conditions of Contract read with modification, if any, in the Special Conditions of Contract for the goods and services offered for supply by the above firm against this tender document.

Yours faithfully,

………………………

………………………

[signature with date, name and designation]

for and on behalf of Messrs

(name & address of the manufacturers]

Note: This letter of authorisation should be on the letter head of the manufacturing firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer

***Please strike out whichever is not applicable**.

Annexure-A

Tender No. **104 /MYS/MAINT(U)/ 2017-18**   Dated   16-01-2018

Confidentiality Statement

"The information, which is contained in this document will not, in whole or in part be reproduced, transferred to other documents/electronic media or disclosed to others without written consent of BRBNMPL". We shall also undertake to maintenance secrecy, exclusivity and confidentiality of the high security currency printing environment of BRBNMPL.

Dated this _____ day of ____

For & on behalf of

(Seal & signature with date)

(Name and designation)
Duly authorized to sign tender for and on behalf of

(Name & Address of Bidder)

Tender No. **104 /MYS/MAINT(U)/ 2017-18**   Dated   16-01-2018
DECLARATION

To Whomsoever It May Concern

This is to confirm that we M/s._____ have not been blacklisted / debarred by BRBNMPL/Government of India in the past 5 years till date.

Dated this _____ day of ____

For & on behalf of

(Seal & signature with date)

(Name and designation)
Duly authorized to sign tender for and on behalf of

Annexure - B

Proforma of undertaking for back up Support confirmation by the OEM
(To be provided in the official letterhead of OEM)

DECLARATION

Tender No. **104 /MYS/MAINT(U)/ 2017-18**   Dated   16-01-2018

The General Manager,
BRBNMPL,
Mysuru.

Dear Sir,

Sub: Tender for "Up-gradation of CCTV System and Servers with IP Cameras and Implementation of Video Analytic Features" at BRBNMPL, Mysuru.

We hereby undertake to provide maintenance support for the following equipments / Devices / Systems / Software supplied by us for Up-gradation of CCTV System and Servers with IP Cameras and Implementation of Video Analytic Features at BRBNMPL, Mysuru, installed by our authorised dealer/ system integrator M/s_____ satisfactorily, for a period of not less than 7 years from the date of completion by way of providing the required spares, components, modules, patches, software upgrades etc..

List of items:

       a)
       b)
       c)
       d)
       e)
       f)

Yours faithfully,

For _____ (OEM)
Authorised signatory