REQUEST FOR PROPOSAL FOR SELECTION OF SYSTEM INTEGRATOR

RFP NO: 10/2014-15/Elect./OPHWC

IMPLEMENTATION OF CCTV BASED CITY SURVEILLANCE AND DIAL 100 SYSTEM IN PURI FOR NABAKALEBARA

RFP VOLUME – I
TECHNO-FUNCTIONAL DOCUMENT

The Odisha State Police Housing and Welfare Corporation Ltd

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1. INTRODUCTION

A. Project Objective

The Government of Odisha Intends to deploy a City Surveillance System to assist the Police of PURI in protecting Citizens and Public Property.

- The purpose of City Surveillance is to assist in maintaining Law & Order.
- It will assist the police in monitoring unwanted incidences or unacceptable activities within the coverage area of the City.
- Information obtained through video monitoring will be used exclusively for security, disciplinary and Public policy enforcement and/or law enforcement purposes.
- Access to video monitoring footage and other data is limited only to defined staffs of Police.
- Video monitoring of the City will be conducted in consistence with all existing policies.
- The system will help the public contact the police in times of need.

B. About The Location

Known for its Historic antiquities, Religious sanctuaries, Architectural Grandeur, Seascape beauty, moderate climate and spiritual significance, Puri is popular among travel enthusiast due to the existence of many Tourist attractions including the Jagannath Temple.

Recognition of the Rath Yatra at a global level and acceptance of Odissi as a classical dance form has fetched Puri the status of an internationally known city. It has an estimated population of approx. 1 lakh scattered over an area of 50 sq km. The population can swell 50 times on special days like Rath Yatra.

Puri's growth has been primarily due to the hotels development of spots for tourists around the City. It has grown in size by assimilating several peripheral villages which have developed for its real estate value and demand for modern settlement. There has also been a steady influx of rural and semi-urban migrants who lack basic awareness on traffic movement.

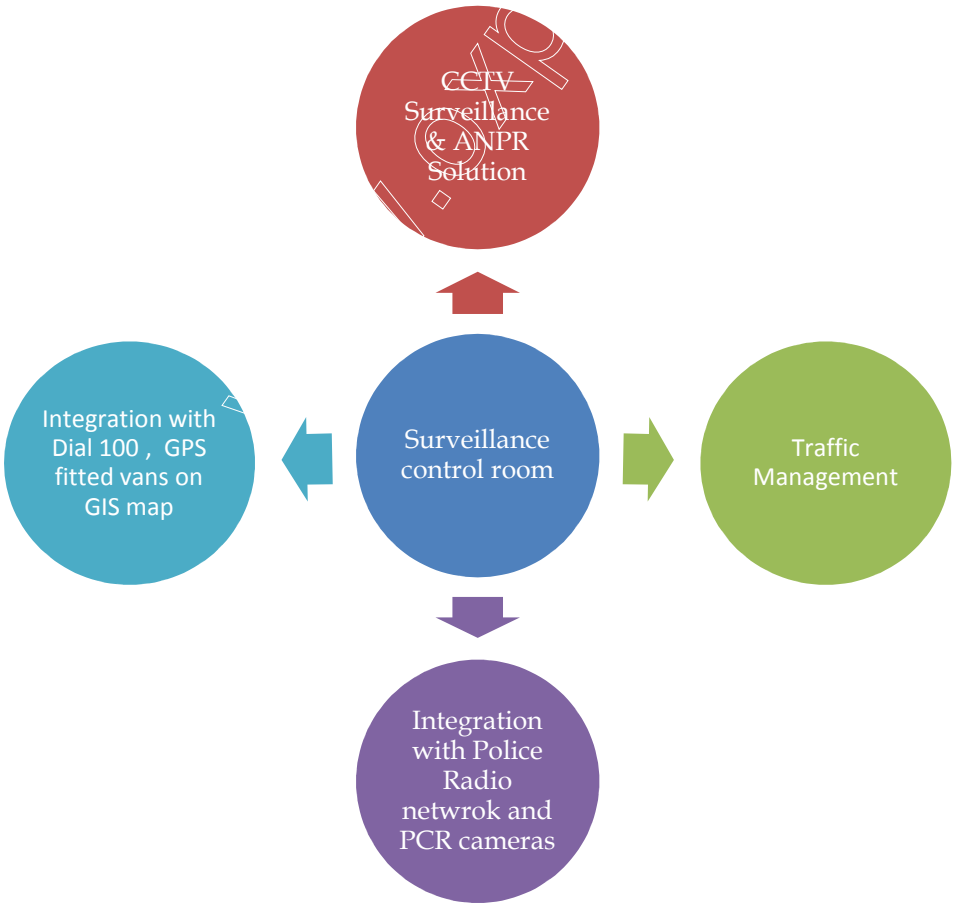
The city has also experienced an economic boom due to the expansive tourism activities in the State. Many more visitors are expected to visit the city during the Nabakalebar in 2015. All this unprecedented development has led to rise in crime and traffic related problems.

Project scope includes city wide surveillance through CCTV & ANPR cameras, setting up of Command & Control system for creation of common operating picture, integration of video surveillance and ANPR system with Command & Control system. This will allow timely information to be available to the Control Room for providing on time, accurate and effective emergency response by police. Proposed Command & Control system should have provision to integrate emergency response system and traffic management system on a need basis.

2. Summary of Scope of Work

The City surveillance solution will involve setting up of IP based outdoor CCTV surveillance cameras across selected locations in the city. The video surveillance data from various cameras deployed will be stored and monitored at **the** Command & Control center. Salient aspects in the scope of work are as follows:

- Cameras to be deployed. (Approx. 150 cameras)
- ANPR cameras to be deployed at Select crossing
- Dial 100 system to be integrated in the system
- Police Radio network to be integrated in the system.
- PCR vans fitted with cameras to be integrated in the system.
- GIS Map of Puri with GPS system in PCR vans to be integrated
- Establishment of Command & Control Center at Town Police Station at Puri with Data Centre and a secondary control room at the traffic control centre at Kumbharpada. Both will have video wall based viewing facility.
- Provision for ten operators at each of the two Command & Control Centers with workstations and office setup. If required number of operators can also be increased.
- Storage of feeds : 30 days
- Operations & Maintenance Support : For 5 years from the Go Live date



3. City Surveillance Solution

a. Scope of Work

The solution will involve establishment and commissioning of command and control center, setting up IP based outdoor security cameras across various locations in the city of Puri.

The project demands latest state of art cameras fit for the purpose of outdoor installation (with housing) to cater the video capture requirement for a critical infrastructure project viz. City Wide Video Surveillance System. These IP cameras should have the capability to work under low light scenarios even at night times. The proposed cameras should have capability of edge storage via memory card.

In all about 150 fixed and movable cameras are required for the project. Each camera is for live viewing and storage. In case of motion detection scenario, when there is no movement in the scene frame rate per second (fps) shall get reduced considerably for storage.

As per the situation multiple cameras would be dedicated for the purpose of Video analytics and Vehicle License Plate capture.

b. Command and Control Center

Puri Police has decided to have a dedicated Control room within the Town Police Station premises , which can be supervised by the senior officials. A satellite command centre will be set up at the Traffic Control room at Kumbharapara.

The Command and Control system shall provide situational awareness of the security situation across the city and inside the Jagannath temple. This shall enable the operators to take coordinated and planned response actions. The Command and Control shall be able to integrate with various security systems and sensors and enable the operators to carry out the coordinated response plans effectively. The Command & Control solution should allow the Control Room operator to monitor the cameras, collect inputs, dissect information and make actionable recommendations. The system should provide configurable rules with tailored alerts, dashboard visualizations, intelligent role based work flow, response tools and situation collaboration.

Command & Control system should be able to integrate with following security systems:

1. CCTV Surveillance system
2. Dial 100 system
3. ANPR System
4. Access to Police radio network through the system.
5. GIS MAP of Puri showing movement of vehicles using GPS.

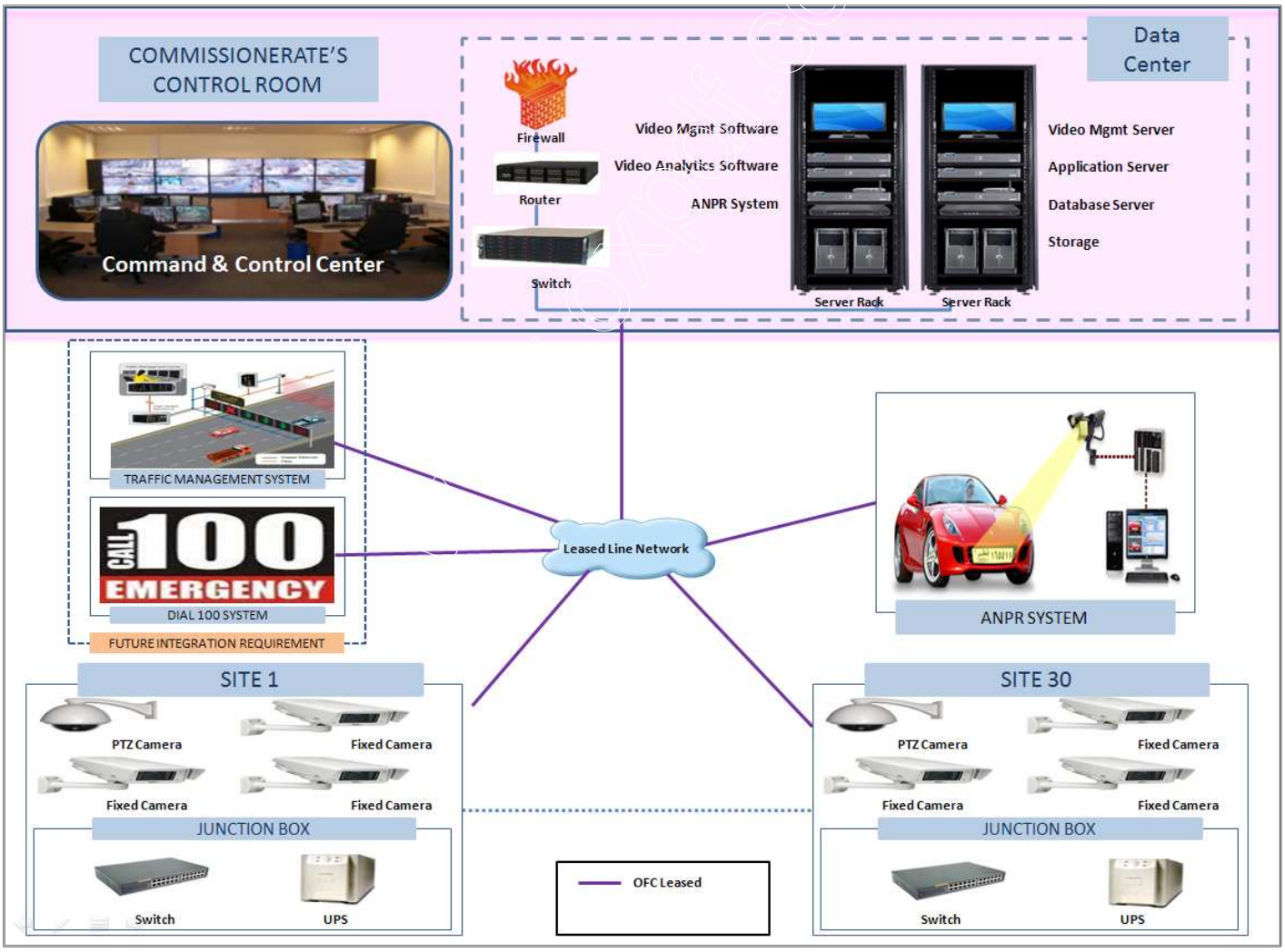
6. CCTV camera fitted GPS installed PCR vans which can record and transmit directly to the control room via wireless network or download periodically to the Control room from fixed stations.

7. Traffic Management System (May be envisaged in subsequent phase)

8. Monitoring of the inside of the temple.

Each Command and control room will have ten dedicated operators who will monitor video feeds from CCTV cameras across the city. Video feeds will be displayed on Video wall and operator will also be able to see CCTV feed on the workstations. The control will be based on alerts from analytics used in the cameras. It will also be able to get voice communication with the police radio network from the control room through the system.

Typical Architecture:



Note: The connectivity could be on the basis of leased line network or own radio network.

Work-flow

The command and control solution is expected to work on following flow:

- Control room operator will receive the alert from security system sensor. It would also be possible to configure the system to receive critical alerts on the Smartphone (if available)
- Operator will be presented with the Alert on the geospatially enabled maps in the form of visual & audio indication to get attention of the operator
- Alert Manager will display the following basic information of the alert once the operator clicks on 'alert indication':
    - Provision to locate the sensor on GIS map
    - Color indication to show the criticality of the alert
    - Time the alert was created
    - Description of the alert
    - Sensor which created the alert
    - Provision to acknowledge the alert
    - Provision to close the alert
- It should be possible for Operator to acknowledge the alert and open the 'Detail View' to perceive more information beyond the textual description of the alert
- The 'Detail View' shall provide the following information to operator in a single window,
    - Alert description
    - Live & Recorded video of the camera/associated camera
    - Map section by displaying the sensors and resources
    - Standard Operating Procedure (SOP)
- It should be possible to understand on-field situation by viewing the appropriate camera live and recorded video
- It should be possible for Operator to execute the procedures which are defined and displayed in the SOP section
- It should be possible for Operator to specify the custom comments in the appropriate field
- It should be possible for Operator to carry out all the tasks specified in the SOP
- In case the SOP specifies Email / SMS, it should be possible to send Email / SMS to concerned people
- In case the SOP specifies the task to dispatch the field responders, operator shall be provisioned with nearest response team details along with visualization of shortest

path in between the response vehicle and the event/sensor location on geospatial maps.

- It should be possible for operator to select the event and start the dispatching process for field responders.
- The operator should be automatically presented with the appropriate field responders to manage this based on the resource & response plan as defined in the system
- Once the operator sends the dispatch, corresponding field responders should receive the event notification
- Field responder should be able to view the detailed information about the event and be able to set the status (On Route / Arrived / Finished). An automatic notification of field responders status should get notified to control room operator
- Field responder should be able to send the message/notes/images to control room operator through mobile medium
- Once the event is addressed, field responder should be able to send the feedback and notification to control room operator that 'event is finished'
- Based on the field responder info, operator should be able to close the event and mention the reasons for closure for reporting and investigation purpose

c. CCTV Surveillance System

CCTV surveillance system is envisioned to receive all the video feeds across the city at Command and Control Center for monitoring and analysis. For successful implementation of the system the Command & Control Center will have workstations, servers and storage.

The system shall be used for high security zone, periphery security zone and Entry/Exit points of important premises.

CCTV System shall have following key features:

- CCTV System shall have centralized architecture.
- Video management workstations can be placed anywhere in the network.
- All cameras shall be IP based high definition megapixel type
- Fixed cameras shall provide high-quality images for the particular area to see the people, vehicle traffic movements and provide alerts as programmed.
- PTZ dome cameras shall give an overview of the specific area as well as possible identification of people and vehicles.
- The PTZ shall provide powerful zoom function to provide detailed images. These camera placements shall be aimed to cover large areas.
- Multiple streaming shall be possible on cameras allowing it to send separate quality of streams for recording, monitoring and disaster centre back-up recording (in future if required).
- The cameras shall be installed at a suitable height to avoid vandalism.

- The Video Management System (VMS) server proposed for the CCTV Surveillance system should be integrated with the Command centre application server so that the required CCTV feeds can be seen from the operator desk.
- All the CCTV Camera locations should be mapped on to the geospatial map of the Puri city as a separate GIS layer under the Command and Control client. Operator shall be able to see the video feed from specific camera/s by clicking on the camera icon on the geospatial map of Command and Control client interface.
- The solution shall be able to provide different types built in analytics for fixed cameras including but not limited to Parking, Face detection, object left over, object removal.
- Solution shall be scalable and expandable in future.
- All outdoor installations must have suitable protection arrangements against birds and monkeys.

i. Automatic Number Plate Recognition (ANPR) Solution

The ANPR System shall be deployed at selected Crossing and should be able to monitor vehicle movement at crossing. The system shall support real-time detection of vehicles passing thru the deployed locations, processing the camera feed, recording each four wheeler, reading its number plate, database look up from central server and triggering of alarms/alerts based on the vehicle status and category as specified by the database.

The system design shall have scope for scalability and integration with Command and

Control system.

ANPR System Overview

- System shall be able to analyze in real time , a video stream from camera or media storage
- System shall support the common media format and live video stream from various type of cameras
- System shall recognize two / four wheeler license plate and shall be able to store in the data base and shall be able to retrieve using user defined criteria
- System shall monitor the vehicle flow at designated locations
- System shall support triggering of alarms / alerts based on the vehicle status and category
- System shall be able to capture and convert them into alphanumeric text
- System shall be able to capture license plate in day and night operation
- System shall recognize the license plate from the front and rear of the vehicle depending on local site topology
- System shall be able to achieve vehicle plate detection accuracy of more than 99% and vehicle number plate recognition at least 90% in ideal operating conditions.
- System shall be able to read and detect number on the license plate written in English but having unusual characteristics which are as follows:
    - Different sized characters
    - Different style font
    - Different colours
    - Varying contrast
    - Dirty / disfigured license plate
    - License plate with special character
    - License plate with additional characters / texts
    - Double row license plate

3.d TECHNICAL SPECIFICATION FOR DIAL 100 SYSTEM

1. ***Main purpose of Police Control Room and Dial 100 Services:***

• **Time Critical Systems** - Operate in real time providing locational and attribute information on resources i.e. GPS to locate vehicles and transmit locality back to Control room, Central control of resources through mapping location and availability status, Provision such real time spatial information is a relatively new technology

• **To report a crime in progress** – To inform Police at Police Control Room or Police Station, to seek Police Assistance

• **To save a life** – Request for Ambulance services, advance information to nearest Trauma Centre / Hospital

• **To assist report a fire** - at different fire Brigade office

2. **Project is envisaged to enables the police to provide a better service to the public:**

• Its high performance and intuitive user interface ensure a faster response to emergency calls

• Improved presentation of information means that operators can provide a more informed response to callers

• Its ability to communicate with other organizations provides a more coherent service- wide response than has previously been possible.

• To create Dial 100 City Control Room .

• Immediate incident detection and effective management of police response.

• Support and integration with the existing systems.

• System should be scalable, be able to integrate to CCTV / Surveillance / Wireless Radio systems and provide enhanced functionality and services as required in future (Scalability and Expandability)

• Remotely monitor the operations of the City Control Room functions and ability to access the complete Action Taken Report including the playback of the Voice Files (containing the communication of the Caller with the Call Taker), Image , Audi & Videos from anywhere using a secure Web Access.

• An ability to create various GIS Analysis Reports. It should be possible to select the data on the basis of Cities Control Rooms, Police Zones, Police Stations, Events, Event Sub-type, Priority & date and time. It should be possible to view all the GIS Reports through a secure Web Access.

2. Scope of Work

2.1 1. Provisioning for GIS and GPS based Computer Aided Dispatch Dial 100 System for Puri City, related Software, Networking and IT infrastructure

2. Implementation Services

3. Maintenance and support for at least 5 years including recurring charges towards bandwidth, GPS / GPRS SIM charges for transmission of data, updation, etc. Connectivity is the responsibility of the bidder. Bidders are advised to include all recurring charges for the connectivity.

2.2 The entire project cover Provisioning for GIS and GPS based Computer Aided Dispatch Dial 100 System, in Puri City, related Software, Networking and IT infrastructure and upon its successful implementation and acceptance.

2.3 The scope of work envisages a complete turnkey solution which may inter-alia include procurement, installation and maintenance of hardware, system software, application software, third party software and Customization, parameterization and implementation of the application software and system integration for 3 years with training to the designated personnel.

Odisha Police intends to implement State-of-the-art technology solutions that would support all the current and future automation needs of the Police Control Room Modernisation including GIS and GPS based Computer Aided Dispatch Dial 100 System, as described below:

1. Provide GIS Based CAD application software for Police Control Room Modernisation Project including GIS and GPS based Computer Aided Dispatch System.
2. Customize the solution as per Department of Police requirements.
3. Procure the necessary system software and other third party software required for implementation of the solution.
4. Design and implement a fail-free hardware and storage architecture for Database, application server, etc.
5. Procurement/Supply, installation, integration, implementation and maintenance of necessary hardware, operating system and application software.
6. Implement and maintain (including provision of Updates and upgrades) the application software, System Software and hardware for 5 years.
7. Development of minor New Modules for the application software as and when required up to 15%.

The vendor shall be required to take care of the following:

a) Undertake requirement / GAP Analysis, customization and installation of existing / customized integrated product as per the needs of the Police Department.

b) Suggesting necessary re-engineering of the processes so as to enable adoption of the product / solution proposed

c) Supply of Installation Manual, Administration Manual and User Reference/Training Manual.

d) Define overall training requirements and preparation of the training plan

e) Conduct project specific training for users in the customized software.

2.4 Supply / Installation

- The Selected bidder shall procure, supply and install all IT infrastructures.
- Procuring and providing necessary IT infrastructure consisting of hardware equipments (Server, System software, Database Server,), Firewalls, Security Systems, Anti- virus software, operating systems for application deployment and implementation.
- Supply of Satellite Image & Vector maps for Puri City Area should be in 1:1000 scale.
- System Software such as Database, Operating System, Middleware, etc required for successfully running the solution should be latest & should be Perpetual in nature.
- Application Software as per required specifications

- Installation shall mean to install and configure & integrate every component and subsystem component, required for functioning of the solution, integration with IT infrastructure consisting of Computer, Printers, etc. for end users of the system
- Configuration, installation and integration on LAN in the control room

Functional Requirement of Police Control Room

Police requires a modern Police Control Room, which includes a computer-assisted Call Center with an inbuilt databank of telephone numbers and addresses, the dispatching of mobile units and GIS data integration. General requirements of Police include:

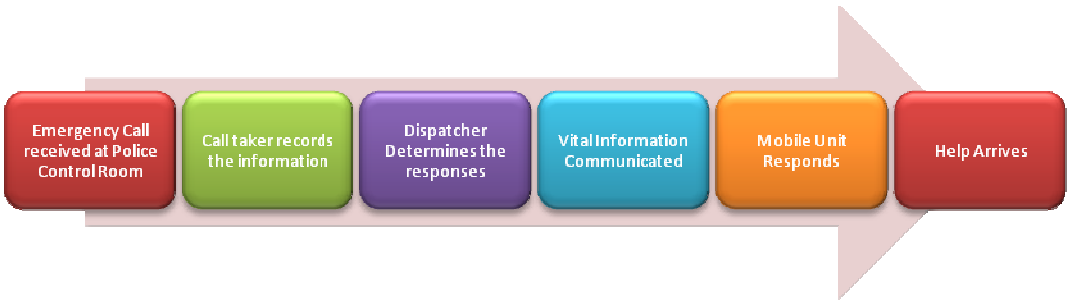
- Quick response to emergency situation
- Dispatch vehicles rapidly to required location
- Automation of Call-taking & Dispatching

The CAD Software Platform Integrates Various Modules – CAD framework, Call Reception Systems, Call Recording and Logging, GIS (Geographical Information System), AVLS (Automatic Vehicle Location System), Responder Systems (Mobile Data Terminals), Incident Reporting System, Video Interface (CCTV Video Integration to GIS) and Converged Communication Platforms (PSTN, Wireless (Cell Phone), SMS, e-mail)

The Integrated Software Platform supports all features required for efficiently handling all stages of an emergency call.

- Receiving Distress Calls
- Gathering Caller's Details
- Finding the geographical position of caller
- Identifying the proximate vehicle
- Sending instructions to the vehicle
- Logging voice/data communication
- Access Video from CCTV
- Generating reports based on queries

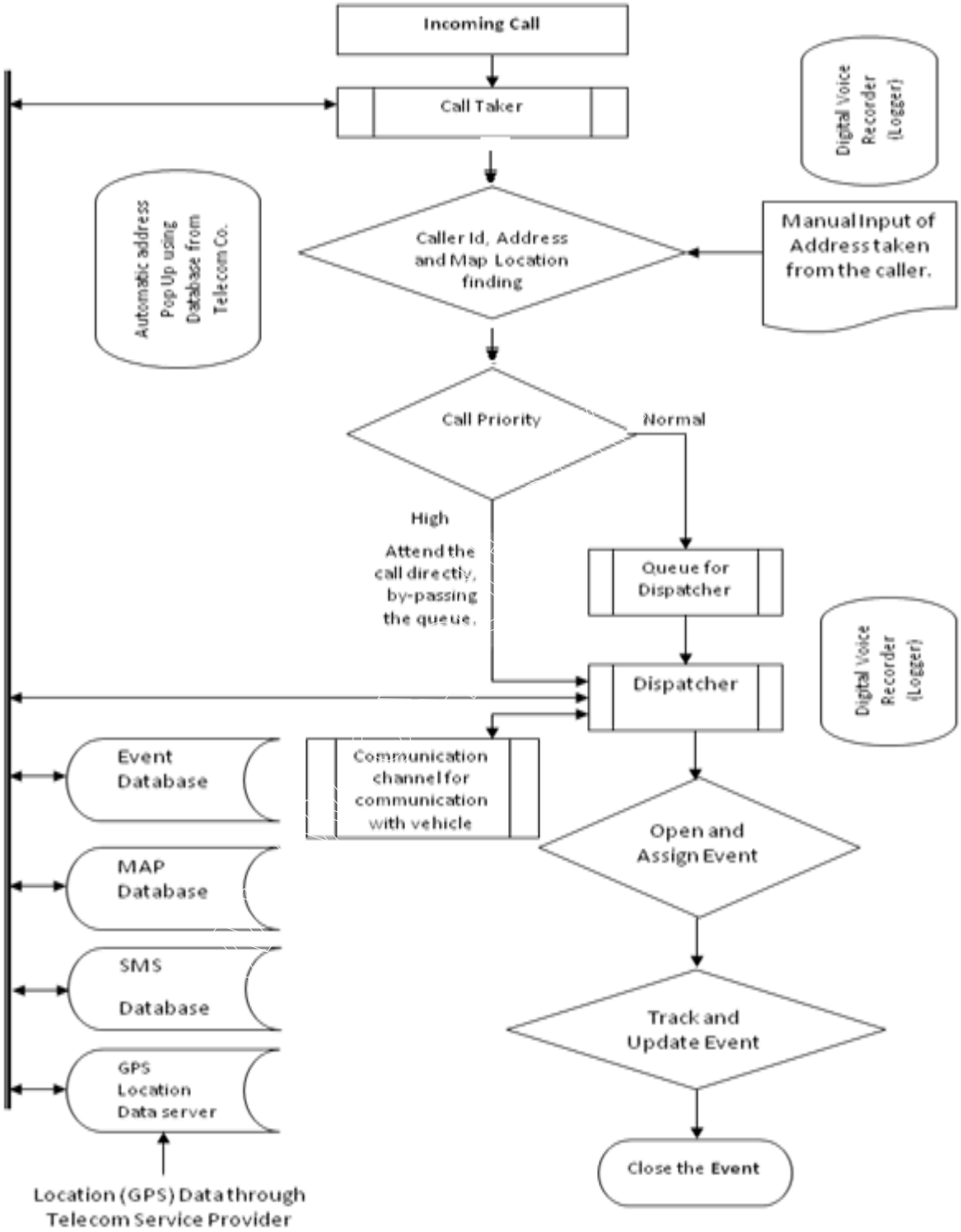
Work Flow



The flow of operation of the system:

- The responding Units are fitted with Mobile Data Terminals and are GPS enabled for tracking.
- The Call taker and Dispatcher workstations display a digital map of the city.
- The responding Units continuously update the Base Station with their location information, which in turn is displayed at the workstations with the help of the GIS server.
- In case of distress, the informer dials “100” for assistance.
- This call is processed to by a standard Call Processing Platform (IP EPABX) available at the Police Control Room
- The call is routed to a free Call taker.
- Caller’s location is spotted on the display of the Call taker.
- The Call taker screens the call and captures information.
- The Call taker forwards the actionable call to a free Dispatcher. In case of high severity events, the Call taker forwards the call to Dispatcher even before all the information has been captured.
- The Operator at the Dispatcher station attends the call.
- The Dispatcher then identifies the nearby free Patrolling vehicles and assigns one or more of it to the event.
- The Dispatcher sends details of the location, priority and any other information of interest to the MDT of the assigned Patrolling vehicles
- If required, a voice call can also be set up with the Patrolling vehicle.
- Vehicles move to the distress spot. Dispatcher can watch and guide it. It addition a local navigation System in the MDT can help provide Navigation support.
- On completing the mission, the patrolling vehicle sends a predefined status message, indicating the end of the mission.
- All activities at each station are logged.
- Reports can be generated in various formats based on various criteria.
- The Supervisor has at all times access to all the data.

Diagram – Workflow



Approach and Methodology proposed for Solution Deployment

The proposed Computer Aided Dispatch System – CAD for Dial 100 Solution will be deployed in Puri City Control Rooms.

City Control Room

It is proposed to establish a Dial 100 Control Room in Puri City. All the critical infrastructure covering the Data Center , Dial 100 Calls Aggregation and Processing and Records Management infrastructure will be housed at the City Control Room.

The Puri City Control Room will control and monitor all the Dispatch related activities and work with all stake holders – citizen, Police Stations, Responding Units to carry out the mission and provide a speedy response for all Dial 100 Calls.

Responding Units

It is proposed to integrate the existing Responding Units deployed at the respective Cities to the CAD Application for Dispatch Management. To improve the capabilities of the current system and provide an online system it is proposed that Puri Police use advanced technologies in Mobile Workforce management systems. This can be seamlessly integrated to the CAD application.

Remote User

It is proposed that a Web Remote Supervisory Terminal function be available for higher authorities to get a complete view of the operations of the CAD System at their respective office . The data can be restricted to view based on user jurisdiction and rights.

Analytics

It is proposed that a Web Based Analytics software be made available that will help the Police to do detailed analysis and analytics so that the response can be made proactive and also the effectiveness of the service improved.

IP Radio Gateway Server

Radio Base Station Server provides an intelligent, reliable, hardened radio agnostic interface gateway for connectivity to all major UHF/VHF and digital radio base stations. The communication with the radio server and network interface equipment is based on IP/SIP over the VOIP network.

The EPABX is connected to the RADIO Server which provides the communication path between the Operator Console and existing wireless radio equipments. All the wireless radio equipments present in police mobile vehicle are wirelessly connected to the RADIO Server (Connectivity between RADIO Server and VHF/UHF base station will depends on Make and Model of VHF/UHF Radio Handsets. The Integration with existing Radio System will be carried out together with the current vendor solution).

Computer Aided Dispatch (CAD) Software

The Computer Aided Call Taking & Dispatch system must be configured for three different types of users:

Call Taker: Responds to the incoming calls, determines if the call requires action, captures the details and forwards it to dispatcher to launch a mission.

Dispatcher: Launches a mission, assigns resources for it and tracks the mission till completion.

Supervisor: The duty officer who oversees the operation of the Control room. He has access to the functioning of all Call takers and Dispatchers.

Call Taker

The Call Taker system must be built around a Personal Computer (2 Monitors) with necessary accessories like microphone-headset. The User Interface must contain a Digital Vector map of the city with different layers and multiple level zoom facility and separate panes for displaying the Call Register, Caller Details, Distress Information, scratch pad, hot numbers and other services, which helps the user to address the distress calls efficiently.

When a call lands to the Call Taker, the user needs to be alerted by both visual and audible indications. The caller's phone number, name and address must be displayed on the Caller Information pane of the system. If the location information of the caller is available from the information made available from the telecom service provider , that is also plotted on the map of the city. Now the Call Taker gathers information from the caller and the application provides facilities to enter the data with minimum key strokes. Tool must be provided to gather additional information, if needed, from the caller.

Now the Call Taker forwards all the information collected to the respective dispatcher. The data gathered as well as the conversation between the caller and call taker are stored digitally into the system with unique id, which helps easy retrieval of the data at any time. The system also provides utilities like directory and other services to address the enquiry/information seeking calls. The Call Taker System has the following features:

- Call back facility to distress caller
- Forwarding emergency calls directly to dispatcher
- Forwarding emergency call to dispatcher with voice mail
- Real time indication of caller location
- Digital voice recording of the calls

Dispatcher

Like the Call Taker, the dispatcher system must be built around a Personal Computer (2 Monitors) with microphone-headset. The Dispatcher Workstation must support both Text and Voice communication. The dispatcher functions are accessed using user friendly GUI, facilitating easy operation. The GUI must provide separate panes to display the following:

- List of Patrol Vehicles
- Call Register
- Caller Information
- Distress Information
- Vector Map of the city with tools to
    - Zoom in/out facility
    - Selecting different layers of the map
    - Search a place
    - Location of a patrol vehicle
    - Track the movement of a selected vehicle
- Tool bar with following tools
    - Phone Directory
    - Messages
    - Finder

- Voice Logger
- Reports
- Call List

The dispatcher is alerted by visual as well as audio indication when he receives the information forwarded by the call taker. The dispatcher can add/modify the data received and generate the text message regarding the event, which can be forwarded to the patrol vehicle for action. Dispatcher module provides the facility of on-line monitoring of the patrol vehicles. This helps the user to easily identify the proximate vehicle to the incident location.

Dispatcher can monitor the patrol vehicles, distress events and control the operations of all patrolling vehicles. The visual information will be made to easily assimilate, so that the "control room operators" can make their decisions in routine and emergency situations quickly, accurately, and with confidence knowing that they have the best information available. Other functionalities like Call Taking functions (Emergency Calls), Dispatch functions, monitoring and handling of multiple Events, map display, message communication etc. are also possible through Dispatcher System. The Dispatcher maintains a queue of pending events.

Supervisor

Status of all Call Takers and Dispatchers are updated in real time on the supervisor's screen. Also, the status of each call and the assignment of resources are updated on the view of supervisor. Using these inputs, the Supervisor can effectively monitor the operation of the control room and take vital decisions to control the operations.

Voice Logger

Voice Logging modules must be attached with Call Takers and Dispatchers. This system must digitally logs all voice conversion made between the control room agents and external agents. The voice recording must be attached with tags identifying the calling party, called party and time.

Reports

The system must provide a host of valuable MIS reports which would help in continually improving the performance of the operation. This can be further customized based on the exact requirements.

- Daily Consolidated Event handling Performance Report
- Event Report
- Daily Report of Call Takers

3.e **Network**

The objective of the system is to create a robust network infrastructure as backbone with essential focus on video surveillance, voice communication and online data transaction.

The network connectivity shall be dedicated, secure, managed network and must have sufficient bandwidth at all times to transmit real time images from all cameras to the

Command & Control Center. It will include bandwidth from own radio network as well as Telecom Service Operators.

3.f Training

Capacity Building is a critical activity of the project. Training will play a vital role in the successful implementation of the project. After doing the need assessment following key training categories has been identified:

1. User Application training
2. Instructor led training
3. On the job training
4. Administrator training

Bidder is required to propose the training approach for the project which will be assessed in detail at the time of technical presentation. Training is envisioned for at least 30 police personnel at the Command and control centre.

4. Project Implementation Plan

Bidder is expected to follow the schedule as mentioned below. The submission of deliverable will be deemed complete after the submission of the hard / soft copy of the deliverable by the bidder. The "Date of Submission from T" as mentioned in the table below is the period by which the deliverable shall be submitted to the Odisha Police. The Bidder shall ensure that the deliverable is accepted by the Odisha Police as per schedule mentioned in the table below post review.

T: Date of signing of Contract with successful bidder

Sr. No.	Item	Date of Submission from 'T'
1	Team mobilization of the bidder, Site Survey, Project Planning & submission of Project Plan Preparation of Solution Design and its acceptance	T + 2 weeks
2	Delivery of necessary hardware for four Camera Locations (locations to be decided User at the time of placing the work order), Setting of Command & Control Center, PCR vans and Data Center	T + 6 weeks

Sr. No.	Item	Date of Submission from 'T'
3	Commissioning of Command & Control Center, Data Center, Dial 100 set up	T + 10 weeks
4	Installation and system integration of the total hardware and 100 percent of all locations including temple	T+ 13 weeks
5	Acceptance of System in serial no 4 above	T + 15 weeks
7	User Acceptance Testing (UAT)	T + 17 weeks
8	Acceptance of System	T + 24 weeks
9	Operation & Maintenance Support (Post Implementation Phase)	Start after T +24 weeks for 5* years followed by AMC for 2 years

All approvals for execution of the work will be under the scope of the System Integrator and the user will only facilitate the process by writing to the different authorities. The civil and Electrical work at the Control room will be done by the user. The details of the plan will be circulated to the bidders.

5. Annexure

This RFP is enclosed with seven annexure:

1. Annexure 1 - Functional Requirement Specification
2. Annexure 2 – Non – Functional Requirement Specification
3. Annexure 3 – Technical Specification & BOM
4. Annexure 4 – Specification of Data center Infrastructure
5. Annexure 5 - Specification for Dial 100 system
6. Annexure 6 - Specification for Camera equipped PCR vans

6. Annexure 1 - Functional Requirement Specification (Technical Specifications)

a. Software / Solution Specification

Software/Solution specifications of the City Surveillance Solution are as follows:

i. Specification of the Command and Control Solution

The role of the Command and Control centre is mentioned in section 3.2 of this document.

The Command and Control software deployed at the operator workstation in the control room shall have following features:-

Alarm Management

Functionality	**Compliance (Y/N)**
Alarm management function should connect with Core of Command & Control Server which processes the alerts centrally and consumes the alerts processed and displays at operator console. Alarm Management function should include following functions.	
• Targeting – Option to locate the sensor in GIS display which has detected the security risk.	
• Alarm Description – Provides the basic text description of alarm.	
• Device – Name of the sensor.	
• Acknowledge – Provision for operator to acknowledge the alert.	
• Dismiss – Provision for operator to close the alert once the required actions are completed.	
• Detail view – Provide the necessary information to understand the situation clearly using correlation from the Video feed. The alarm management system must closely and tightly be integrated with Video management application and the database integration should be the basis. Similarly any incident visually identified from the VMS system should be correlated to a GIS screen by clicking on the client station. This feature should be demonstrated during POC evaluation.	
• SOP – Provide the list of activities which needs to be carried out by operator for the category of alert and sensor location.	
• Filters – Provision to filter the alerts.	
• Search – Provision to search particular alert from the complete list of alerts.	
• Allow smartphone users to report suspicious activity with the press of a button, leveraging	

"crowd sourcing" to help handle situations.	
• Collection of multiple data sources including photos, descriptions and locations.	
• Incident reports can be submitted at any time and from anywhere, even discreetly or anonymously	

Alarm Detail View

Functionality	**Compliance (Y/N)**
Alarm detailed view should provide 360 degree visibility for the situation around the alert thus equipping the operator to carry out the response without any ambiguity. Detail view, which is invoked from Alert Manager, should comprise of following sections:	
• Description: Description of the alert.	
• Video: Video section displays the live and recorded video of the camera/associated camera immediately.	

SOP:

Functionality	**Compliance (Y/N)**
SOP section should display list of activities which need to be carried out by operator for the selected alert. It should be in the form of a drop down menu for ease of operation.	
The following escalation methods should be supported:	
• Email	
• SMS	
• Phone call	
• Police Radio	

Geospatial Display

Functionality	Compliance (Y/N)
Command & Control operator console should consume the map data published over WMS (Web Map Service) standard or equivalent which is a global standard and committed to being integrated by the Command and Control software provider. Operator console should provide the map navigation controls (Panning, Zooming) using dedicated control button and mouse operation.	
Command & Control Operator console shall also preferably have 2D interactive geo-spatial GIS display that provides situational awareness and real-time location of all sensors and alarms.	

Video Interface

Functionality	Compliance (Y/N)
Video adds another dimension to the situational awareness as it makes the operator aware of the true ground situation and enables him to carry out necessary responses in a more educated manner At any point of time, operator can browse the current video and/or recorded video from video sensors, which can be traced geospatially or from the sensor hierarchy list The following functionalities should be available as a part of Video Integration	
• Video matrix: Provision by software to view multiple video streams in a single window	
• Camera List: List of cameras based on the geographies configured in the system	
• Live Video: Real time video of the cameras installed and configured	
• Recorded Video: Provision to browse the archived video for investigation purpose	
• PTZ controls: Enable the operator to task the cameras enabled with PTZ functions	

• Playback controls: Provision to control the playback of archived video	
Command & Control should be interfaced with video management systems and video analytics systems to bring the video feeds from the end cameras installed across the cityscape and events which are configured in video analytics server	

Standard Operating Procedures (SOP)

Functionality	**Compliance (Y/N)**
SOP is a standard operating procedure which provides the step-by-step instruction in the shape of drop down menu to Command and Control Center operator on how to handle a particular incident in an organized manner.	
SOP tasks should serve as an instructional resource that allows operator to act without asking for guidance.	
There shall be the provision to define various SOPs in Command and Control System such as alert category specific SOPs, Location Specific SOPs	
It shall have facility to define more than one SOP for the selected alert category or location	
There shall be a provision to define multiple tasks under single SOP	
The system shall select & present the appropriate SOP automatically based on pre-defined policies	
Actions taken as part of SOP should be logged in audit trail with date time stamp and operator comments	

SOP shall contain the lists of tasks to be performed by operator categorized under following headings	
• Task: Task to be performed by the operator in the sequential order.	
• Description: Task description.	
• Comments: Space for operator to enter the comments.	
• Action: Actions (like email, sms escalation) to be initiated by operator.	
• Done: Indication by operator that the task is completed.	
• User: User name of the operator for audit trail.	
• Date & Time: date time of the action.	

Zone Management

Functionality	**Compliance (Y/N)**
The system shall have provision to define various zones in the city. There shall be provision to map the sensors with the zones and vice versa, so that operator can locate the sensors very quickly.	
The system shall have capability to define various sites. The Site hierarchy preferably shall be displayed in Layer Manager as an additional Layer. This feature shall enable the operators to select the sensors from the hierarchical/organized view, so that he can locate the correct sensor without the need to remember the sensor name or id. Command & Control shall provide the following hierarchy:	

• Site	
• Zone	
• Area	
• Sensor Type	

User Management

Functionality	**Compliance (Y/N)**
User Management is an authentication feature that provides administrators with the ability to identify and control the users logged into the application. Administration console shall provide the following functionalities to accomplish the following tasks by administrator:	
• **User**	
o Add new user	
o Modify the existing user	
o Delete user	
o Disable existing user	
• **User authentication group**	
o Add new user authentication group	
o Modify the existing user authentication group	
o Delete user authentication group	
o Disable user authentication group	
o View users in authentication	

group	
o Add users in authentication group	
o Remove user in authentication group	
Every user created in the administration console shall be aligned to particular user authentication group. Administrator shall be provided an option to define the access definition (Operator profiles) for the sensors & system functionalities,	
• **User Profile**	
Following categories shall be selected based on the need of user profiles,	
o Sensor system	
o Hierarchy for access	
o System Functions	
For example, Super operator should have access to all the sensors, all the system functionalities. One operator who is responsible to monitor particular zone, shall be selected with particular zone in Hierarchy section and select the functions except administration activities like reporting, interface with Transport Authority database, Querying to CCTNS database, etc.	
Operator console should display the assigned sensors based on the selected hierarchy and system functions defined, so that operator can concentrate on the respective activities.	

Archiving & Audit

Functionality	**Compliance (Y/N)**

All the alarms, events shall be processed and operator activities shall be captured and recorded for analysis and reporting purpose.	
Audit trails are very important tool and shall help to learn and realign the process to manage the handling of security incidents.	
The following information shall be logged in Command & Control,	
• Event information showing event type, location, date time created, date and time action taken, closed date and time.	
• User Activities	
o Sign On/Off times	
o Activities carried out	
o Response time on events	

Reporting

Functionality	**Compliance (Y/N)**
Reporting function is part of command and control dashboard visualization tool. It shall provide information about current status of the command and control on managing the security incidents across the locations.	
Reporting function should enable operator to create reports in either graphical format or flat tabular format. Reports shall be created automatically or manually by operator whenever required. The reports should be generated and exported as a Microsoft word, excel format or an acrobat format by operator.	

Threat Level Indication

Functionality	**Compliance (Y/N)**
Command & Control should display the threat level based on the number of alerts and criticality of the alerts using	

color coded display. It should also follow a pre defined system to alert different users on different hierarchy on the basis of the criticality of alerts.	

Real Time Dashboard

Functionality	**Compliance (Y/N)**
Real time dashboard should provide the real time information about the security situation so called Situational Awareness for the Authorities and senior officials in a single go. Real time dashboard should provide following information	
• Number of alerts and its status	
• Operator Status	
• Performance of the Command Center	

Database Interface

Functionality	**Compliance (Y/N)**
Command & Control should provide the interface to query required info from the following system's database:	
• ANPR System – Query the particular number to get the previous positions of the vehicle travelled across the city based on the selected date frame.	
• Transport Database – Query the vehicle owner information and get relevant details.	
• CCTNS Database – Query to get the crime and criminal data from CCTNS database	

Fault Tolerance

Functionality	**Compliance (Y/N)**
Command & Control should provide fault tolerance across the sites. System should be able to find the fault at servers located in different buildings or data centers. Redundancy is required for recorder, master server database for VMS and	

Command and control server software.	

Command & Control - Key Features

Functionality	**Compliance (Y/N)**
• System should be able to integrate with disparate security systems like Crime & Criminal database, etc	
• System should be able to prioritize the alarm based on criticality and location (as well as location sensitive plans and procedures). The prioritization must be based on a user pre-defined order that should be open to updating by the user when necessary. The alerts based on such list should be software driven and automatic.	
• System should support on-ground experience by getting nearby video feeds for any alarm	
• System should support with GIS & Video controls to get on-field experience	
• System should support full-fledged video support (Camera List, Live Video, Recorded Video, PTZ controls, Playback, Video Matrix)	
• System should consume Web Map Service or any equivalent which is a Global standard to collect GIS data .	
• System should do health monitoring of sensors and systems	
• System should support various communication interfaces (SMS, E-Mail, PDA, CAD systems) for notification, escalation & dispatch of response forces	

• System should support Standard Operating Procedures (SOP) for step by step process guidance, ensuring complete compliance to security policies defined by the establishments	
• System should support Unified & Organized interface for monitoring, controlling and responding to events	
• System should support Mass Notification interface (Email, SMS & Social Media)	
• System should support tracking & archiving operator activities for investigation	
• System should support Instant exchange of intelligence info between authorities (XML standard)	
• System should support mobile interface to share the alert and related information to the field responder	

6.a.2. Video Management Software:-

Sl No	Functions	Specifications	Complied (Yes/No)
1	Concurrent Licenses	The VMS shall not charge for the number of Concurrent clients or camera channels	
2	VMS Hardware	The VMS system shall utilize commercial-off-the-shelf(COTS) computer workstations, servers, networking devices and storage equipment. VMS shall already support IP cameras from at least fifty (50)major vendors. Bidders shall clearly list in their proposal the brands and models already integrated into VMS.	
3	Unattended Recording	Recording of all video transmitted to the VMSs hall Be continuous, uninterrupted and unattended.	
4	Motion Detection	The VMS system shall offer the capability of video Motion detection recording, such that video is recorded when the NVRMS detects motion within a region of interest of the camera's view. Video prior to the detection of the motion shall also be stored with using the pre-alarm buffer feature of the camera.	
5	System Health Monitoring	The VMS system shall manage the video it has been Configured to monitor. Loss of video signal shall be configured to annunciate on VMS client by an on screen visual indication alerting operators of video loss	
6	Open Architecture	The VMS software shall have an open architecture supporting IP cameras and encoders from multiple manufacturers providing best-of-breed solutions ranging from low-cost, entry-level features to high- resolution, megapixel features. The VMS system shall be a scalable client–server architecture built using well known operating systems. The Video Management System software shall include multicast and multi-streaming support.	
7	Audio Support	The VMS client software shall be able to view live Video and audio, recorded video and audio, and be able to configure the complete system all from a single application. The Audio shall be broadcasted through loudspeakers from control room to the cameras connected to external speakers. Operator shall be able to select particular camera speaker to enable the public addressing.	
8	Uninterrupted Recording	The VMS shall continue to record video and audio at all times during the administration and configuration of any feature. The VMS shall allow for upto 120 cameras or other devices to be connected to each Recording Server and for an unlimited number of Recording Servers to be connected to a single master Recording Server across multiple sites. The system shall support any combination of master and slave servers to provide flexibility and scalability in the overall system configuration.	

9	Fully featured Remote Client	The VMS client software shall have the same functionality when connected remotely as it does when it is run locally on the same computer as the server software	
10	User Level based Feature access	The VMS client software shall add and remove Features based on the permissions of the user and the licensed functionality	
11	Operating System Support	All of the following should be supported- 1) MicrosoftWindowsServer2003/2008/2012 2) MicrosoftWindows7(all versions)	
12	Combination of OS supported by clients	The VMS software shall allow the user to have any Combination of VMS client applications running on any of the supported operating systems be able to connect to any of the VMS servers running on any Of the supported operating systems. For example, a VMS client running on MicrosoftWindows7 shall be able to simultaneously connect to four(4) different VMS servers all running on different operating systems,suchasWindowsServer2003, Windows XP and Vista.	
13	Monitor support per client	The VMS software shall have the capability to run multiple client applications simultaneously on one workstation with multiple monitors. Up to 4 monitors shall be configured on a single workstation with one (1) client application running on each monitor. Because decompressing video is CPU-intensive, the PC workstation shall have multiple core processors, with a recommendation of one core for each VMS client application	
14	Web Client Support	The VMS shall also allow an authorized user to view video through a web client interface. The web client interface shall allow authorized users to view live video, view recorded video, control pan-tilt-zoom (PTZ)cameras and activate triggers. The web client	
		Interface shall allow connections to multiple VMS Servers simultaneously. The web client interface shall operate without requiring installation of any software.	
15	Browser Support	All of the following should be supported– 1)Internet Explorer 7 and later versions 2)Firefox 2 and later 3)Safari2 and later 4)The web client interface shall also connect with non-Java Script browsers and shall be compliant with HTML4.0(www.w3.org).	
16	Recording Retrieval	The VMS server software shall record and retrieve video, audio and alarm data and provide it to the VMS clients upon request	

17	Mobile client	The VMS software shall provide at no additional Charge a purpose-built mobile application capable Of viewing multiple simultaneous live video streams and playing a recorded video stream. Application shall be provided for both IOS and Android operating systems (including Kindle Fire).	
18	Data safety	The VMS server shall not decode video for the Purpose of repacking it for transmission to clients	
19	Metadata Support	The VMS server software shall record video based On metadata generated by an edge network device. The edge network devices shall generate the metadata and transmit it with the video stream to the VMS server software	
20	Camera Licenses	The VMS shall license the total number of cameras on the system. This license shall be based on the Camera MAC ID and not Server network card Mac ID.	
21	VMS server service	The VMS server software shall run as a service. The VMS shall not require any application to be running in order to operate	
22	Map integration	The VMS shall allow the use of maps. The maps will be accessible to users with the appropriate permission levels and display video sources and their status.	
23	Wide screen support	The VMS shall provide an option to view16:9wide Video display panels	
24	Digital PTZ	The VMS software shall allow control of PTZ Cameras to authorized users and can be used to maneuver a PTZ camera. When used on a non-PTZ camera, it shall allow the user to digitally pan, tilt, and zoom on any video whether in live or recorded mode	
25	Camera Grouping	The VMS software shall have a feature for viewing Logical groups of cameras. This shall allow efficient viewing of cameras in a logical order.	
26	Preset Viewing	The VMS software shall have a feature to organize Your cameras into preset views. Views are preconfigured arrangements of the video panels so that they may be easily recalled later. A view can save the location of the video streams, audio streams, POS data, maps, and event views. These views shall be accessible in both live and recorded video modes	
27	Video Play Back	The VMS client software shall be used to search for And playback recorded video, audio and events from VMS servers. All recorded video shall be played back and displayed in a synchronized multi- camera layout. It shall be possible to playback simultaneously 64 cameras on the surveillance system, with a selection of advanced navigation tools, including an intuitive timeline browser.	

28	Searching parameters	The VMS software shall support searching through recorded video based on time, date, video source, image region and have the results displayed as both a clickable timeline and a series of thumbnail images.	
29	Audio play back	The VMS software shall allow search and playback Of audio in synchronization with video	
30	Export	The VMS software shall provide the option of Exporting the file in the following formats: 1)Stand alone Exe(*.exe)–includes an executable player with the video and audio data 2)AVI File (*.avi)–a multi media container format 3) MKV File(*.mkv)–a format to play HD video files.	
31	Integrated Video Analytics	VMS shall have the possibility to integrate external Video Analytics systems.	
32	Recording Triggers	The VMS software shall have the ability to configure Each video inputs recording time on an hourly basis.	
		This shall allow the user to schedule when to record On motion, when to record an event and when to not record.	
33	Email Trigger	The VMS software shall be able to send a Predefined email based on an event trigger. The VMS software shall also support SSL and TLS connections for transmissions of the mail	
34	Map Function	The Video Management System shall incorporate Intuitive map functions allowing for multilayered map environment. The map functionality shall allow for the interactive control of the complete surveillance system, at-a-glance overview of system integrity, and seamless drag-and-drop integration with video wall module option. The activation of The VMD or Camera disconnected alarm shall display the alarm location with animated camera's icon shown in the location map, and the pre- defined alarm documents.	
35	Alarm Management	The VMS shall support a central alarm management And monitoring function, providing an alarm/event queue where all incoming events are on display. The alarm queue shall provide, but not limited to, the following information: 1. Alarm date and time 2. Alarm status 3. Current alarm condition 4. Detector/input name/address 5. Alarm location 6. Message priority 7. Operator who is working on the alarm/event when it was acknowledged.	

36	Integration	The VMS shall include support for seamless integration with Access control system and perimeter Intrusion system. The VMS shall provide a documented Software Development Kit(SDK)to allow integration with other application software.	
37	Redundancy	The Video Management System shall support high Availability of recording servers. A failover option would provide standby support for recording servers with automatic synchronization to ensure maximum uptime and minimum risk of lost data. MinimumrequiredisN:1 OR N:N Redundancy. In case of Network Failover, the video should be able to locally store on the Camera, once the network is re-established the stored video should be able to be synchronized with the central storage system.	

6.a.3. Integrated Video Analytics:-

Sl. No	Functions	Specifications	Complied (Yes/No)
1	Integrated Video Analytics	It should provide an integrated video analytics System that provides functionalities like behavioral analytics, face detection, motion detection, trip wire, object removal, abandoned objects. The real-alerts generated by this video analytics system should automatically be listed in the Command & Control Center application's list of events & incidents.	
2		Should be an open extensible framework for event based surveillance	
3		Should provide Centralized monitoring of real- time alerts across geographic locations	
4		Should be Scalable &reliable system that Seamlessly integrates with existing ONVIF compliant CCTV infrastructure	
5		Should provide Real-time event analysis engine that is capable of supporting a variety of video/image analysis technologies and should provide:	
6		Standard Plug-in Interfaces	
7		Extensible Meta-Data Interfaces	
8		Real-time Alert Interfaces	
9		Compound Alert Interfaces	
10		Real-time Actuation Interfaces	
11		Extensive forensic search enhancements to Support people search capabilities.	
12		Event detection and searching based on actual measurements such as object length, height, size and speed.	

13		Detect and search objects of interests with multiple colors(bigger selection and better colors).	
14		Should have improved detection rate and reduced false positive rate for abandoned packages(and other alert detection)in typical city and mass transportation environments.	
15		Should provide consistent seasonal analytics accuracy performance.	
16	Suggested Features of Video Analytics	People search: Should have the ability to do single attribute and combined attribute search on a person's features or clothing, such as baldness, hat, glasses, sunglasses, hair color, skin tone and texture, and upto three colors combination search on torso area with13-color palette.	
17		Should provide tricolor combinational search ccapability on upper and lower body areas with 13-color palette for clothing.	
18		Should provide enhancements to optimize Detection rate and reduce false positives for critical and specialized video analytics for city counter terrorism operations and crime investigation such as abandoned object detection, and face detection, which enhances face recognition integration.	
19		Should provide enhancements to optimize detection rate and reduce false positives for critical and specialized video analytic alerts for rail and subway security and safety, such as rail crossings in undesignated areas, people or animals entering a tunnel, objects or people on the tracks or close to the	
20		Should provide enhanced analytics capability to handle crowded scenes and challenging environmental conditions, such as lighting, shadows, reflections, and clouds.	
21		Should provide capability for event detection and searching based on actual world measurements(for example, object length, height, size, and speed).	
22		Should provide enhanced ability to detect and Search objects of interests(such as cars, buses, and trucks)with multiple colors (bigger selection and better colors).	
23		Should provide Improvements to analytic installation, configuration, and tuning in order to reduce deployment time while enhancing alert accuracy.	
24		Should provide ability to run multiple Frameworks on a single physical server for improved scalability.	
25	The Operator	Should be customizable to meet the specific needs and operational processes of a given user environment, and to support unique requirements specific to forensic search and alert response.	
26		Should provide integration with GlobalInformation System(GIS)functionality to allow for event displays on maps.	

27	UI to be flexible and should preferably have following features	Should enable new analytic functionality, such as people search and augmented color support.	
28		Should be able to deliver native federated Proxy capabilities where several Intelligent Video Analytics instances can be federated together into a seamless user experience.	
29		Should allow the system administrator to Enable all or a portion of the channels (cameras)for single sign-on, alert passing, forensic searching,and adjudication (alert dis- positioning)between instances to specific or all operators.	

6.a.4. Dial 100 features

Software Feature

	CAD System Specifications		
	Specification	**Description**	**Compliance (Yes / No)**
1	Design & Architecture	The system design should be able to support a fully functional CAD system for emergency response management comprising: call taking, dispatch and supervisory functions . The system shall be based on open architecture and be based on client-server technology.	
2	Scalability	The system should be modular and scalable for future upgradeability	
3	Reporting	The CAD software should be capable of generating reports from anywhere about the local Call Taking and City based Dispatch functions apart from the reports generated at the individual City Control Rooms. The reports should help the police system to analyze the pro and cause of incidents/ data been analyzed for. The reports should be customized as per the requirement and should be available on the system for access.	
4	Security	The system should be secure and feature an intelligent Log-in & Log-out facility. The same user should not be able to login simultaneously at different machines when operating on LAN.	
5	Interoperability	The CAD software should be capable of swapping between Call Takers, Dispatcher; Supervisor based on the User authentication, without the need to have separate licenses in each category.	
6	Communication Technologies	The entire system should be capable to work on GSM- GPRS communication technologies of commercial operators in the city.	
7	Support for Multiple Communication Medium	The CAD software should be able to handle any communication medium i.e - PSTN Call, Cellular Phone Call, SMS and e-mail. The system should be able to accept and make calls to PSTN Hotlines to various agencies.	

8	GIS Interface	The CAD software should have a fully integrated GIS map and be able to identify the location of the caller, vehicle location. It should have the capability and tools to view attribute details of any object through a mouse click. Mapping Tools to be provided to be able to group the multiple attribute layers and to control (ON and OFF) the same.	
9	AVLS Server Software Interface	The system should have a provision for the AVLS server software to facilitate data communication link with the vehicle mounted location devices (GPS). The AVLS Server should provide tools to manage all data message communication, including real-time vehicle positioning information, between the Dispatch Console and the vehicles. The software must have facility to poll a specific GPS receiver of a vehicle to transmit its current positional information. The software should have capability of detecting vehicles with speeding violations. In order to ensure the data security, the communication server software should be an integral part of the CAD software and not a 3rd party supply item.	
10	Remote Supervisory Interface	The CAD Software should support Remote Supervisory functions and provide CAD and GIS view . It should be possible for the Senior Officials In Bangalore and other Cities, Police Stations belonging to jurisdictions , etc to update the status of the Dial 100 . Comprehensive Dashboard, Logs should be available for Jurisdictions and other officials.	
11	Analysis	CAD software must support tools for response analysis, event analysis, hot spot analysis , Thematic Maps, It should be possible to select the data on the basis of the jurisdictions, date and time and other data fields. It should be possible to access the software remotely .	
12	Message Server Interface	The system should have message server software that shall function as a distribution centre, with availability to receive query / messages from AVLS / CAD client applications & distributing them to other AVLS / CAD client applications based on a User configurable set of rules. The message server software should support centralized logging of relevant Command Center AVLS / CAD related message communication.	
13	Video Interface	The system should have provision to integrate with Video feeds available from CCTV Camera through APIs with any Video Management Server , in Future.	
14	MDT Interface	The system should have provision to integrate with Mobile Data Terminal . The Mobile Data Terminal should be supplied with the necessary Mobile Application and License. The Software should be able to work on either Android or Windows based Operating Systems.	
15	Multi-monitor	The system should support Dual Monitor Displays , one for CAD Application and the other for GIS application and Map view.	
16	Multi-Agency	The software should have capability to support multiple agencies like Police, Fire, and Medical. The software should be able to integrate the calls for Service from this multi-agencies into the same system and prioritization and selective landing at a specialized consoles should be possible.	
17	Database Management	The system should support SQL based Database Management and should confirm to Open Standards / OEM RDBMS	
18	Messaging	The CAD software should be able to send message between operator using intranet.	

19	SMS	The CAD software should be able to send SMS to vehicles, SHO, Station PI and Sr officers using the SMS URL Gateway with end user authorisation.	
20	Help File	The Software should have a single comprehensive inbuilt Help file	
	Call Taking Software for Control Room		**Compliance (Yes / No)**
1	Caller Information (ANI) and Location (ALI)	a) The software should be able to display on Call Taker desktop, automatically caller name and number (ANI) and address (ALI). The caller Landline location should be zoomed in map, based on location information like Latitude / Longitude if provided by the Service Provider.	
		b) It should be possible for the Call Taker to create / search a general location of the caller on the Map where no location information is generated by the system.	
		c) It should be possible that the caller may not be calling from the point where the response is required. The software should support a complete manual address input Call Taking capability.	
		d) It is possible that PSTN Caller's address information is not the same provided by the telecom service provider. The caller's information, if the caller taker chooses, should be updated into the system database.	
		e) The software should have a provision to display the real time location of the mobile caller. The accuracy of mobile caller's location should be as per the information provided by service provider.	
2	Call Classification	The Call Taker should be able to classify the call into distress call, Enquiry call, and Departmental call (administrative or Crank call. All such Classifications must be logged in the system.	
3	Call Transfer	In addition to the Call Taking consoles for there could be specialized consoles like Public Information system for handling Enquiry calls. The Call Taker shall be able to transfer such calls to the Enquiry console.	
4	Duplicate Calls	a) An incident may attract more than one call but each call is important as it may give details about eye witnesses and other supportive evidence. The system should suggest the possibility of a duplicate call based on the location, time, classification etc. Duplicate calls should be cross referenced for easily retrievable through Grouping.	
		b) It should be possible to merge depending upon the situation. To achieve this, the system should have the capability for cross referencing of event. When ever a call is merged , the system should not generate a new dispatch.	
		c) The software should alert the Call Taker, Dispatcher, and Supervisor about the possibility of a single incident - Duplicate call situation	
5	Multiple calls and incidents	The system should be able to handle multiple calls and multiple incidents.	
6	Call Recordings	All calls should be recorded and tagged with the concerned event. They should be easily retrievable. The call should be recorded as it enters the system i.e if a call is transferred from console to console the recording should continue and be stored for the desired period for 6 years using	

		external Hard Drive. Only the CFS (Call For Service) Data has to be stored.	
7	Caller History	In some cases previous history of the caller can be important. The system should remind the Call Taker of the caller's history. It should be possible to create a reject list where crank caller's could be added after warning them through SMS.	
8	Event Creation and Appraisal	The Call Taker module should facilitate Event creation, ' for various functions like creation of Event, Sub Event, files attachment, location , Landmark and other information related to a event should be recorder and updated.	
9	Integrated Soft Phone	The software should be provided with an integrated soft phone window allowing operators to dial, answer, end a call, keep the call in busy status, and free a specific call. The functionality should also provide the status of incoming and outgoing calls. The Call Taker should be able to call back the caller with the click of a mouse using integrated soft phone functionality.	
10	Standard Operating Procedures (SOP's)	the software should have capabilities to set the Standard Operating Procedures (SOP) for Call Taker. The same needs to be invoked during event creation by the Call Taker. It should also be possible to remodel the event, event sub types, priorities and type of service required by using a remodelling tool.	
11	'Hot Calls'	The software should have capabilities to create Hot Calls. Call Taker should fill minimum information for a Hot call. Dispatcher and Supervisor should receive the alert / notification for the same. Dispatcher should be able to initiate action for quick response. To facilitate quick response to emergency calls / hot call, there should be special and dedicated hot call button in the Call Taker software.	
12	Event Status Display and Search	The Call Taker GUI screen must be provided with 'Event Status Window' displaying the status of all event like 'Pending', 'Open', 'Dispatched', 'Closed' etc. The software should be able to search the events using various search option. Like Event status, Event ID, Telephone no, Date & Time, Event Type etc.	
13	Location of Interest (LOI)	Once a Location of the incident is marked in the map, The Call Taker shall have the facility to see for various 'Location of Interest (LOI)' in the vicinity of an event location like nearest Hospital, Blood Bank, Fire brigade. (Applicable in Dispatcher module also).	
14	Automatic Display of Police Zone and Police Station Name	The software should have the facility in the system to populate within it, the relevant Police Station name and Police Zone name (Based on Event Location through GIS), whenever any new event is created to save precious time in effective response to a distress call.	
15	Display Event Attributes on Map	There shall be tools to display on GIS map all attributes related to an Event by click of mouse.	

16	Update existing event information	The software should allow the Dispatcher / Supervisor to update / modify existing event details for any additional or supplementary information related to the same. Also there should be provision to attach relevant files like pdf, Word etc to the event, for ensuring an effective response.	
17	Audio Alert	Software should have capability to audio alert an operator or supervisor if an event is not attended in pre-defined time duration.	
18	Telephone data update	If the caller telephone number does not pre-exist in the database, then after entering for the first time manually, the software should be capable of storing it in the database.	
19	Telephone data search	The software should be able to search, add, delete and modify the telephone data i.e VIP, Black listed number and Normal.	
20	Pre-defined Q&A	A freely configurable structured query script should be available within the software to assist the Call Taker with pre-defined Q&A to ask for during the call. Based on the event and event subtype the response for the Call Taker should be prompted.	
21	User-defined Alarm	The application should be configured with user-defined alarm modules that will be flashed on all the other screens in case of major incident, for ex. Terrorist attack.	
22	Call back	Call Taker should be able to call back the caller with the click of the mouse.	
23	Caller Address conflict handling	It should be possible to find the numbers whose subscriber information and caller information recorded by the Call Taker are different and generate a report for the concerned agency.	
24	Event Acknowledgement	After the event has been logged in by the Call Taker, the CAD shall send an SMS to the caller stating the Event number, Acknowledgement, Brief text of the complaint.	
25	Call Taking Help Document	Centralized help/ process related document tool/ application to be enable to each end user with access control, which will assist the call taker and assist during the call taking process.	
	Dispatcher Software for Control Room		**Compliance (Yes / No)**
1	Dispatching	The event, once classified and detailed by the Call Taker, shall be passed by the system to one or more Dispatcher. The Dispatchers are usually one or two per radio channel and their area of control is divided geographically as per the Police Zone.	
2	Dispatch Decision / Response Plan	The software should suggest unit for dispatch based on a pre-defined algorithm. The conditions could include jurisdiction, proximity, specialization, available equipment, and on duties resources. The Dispatcher shall choose which units to dispatch and it should be possible to do so with a click of a button.	
3	Event Information	The software should display all the information entered by the Call Taker for an event. It should display the location as identified by the Call Taker, ALI, or Address database on the map. The Dispatcher should also have the option of relocating the event.	

4	Responding Unit Status	The Dispatcher should be able to enter the status of the event as reported by the Responding unit as an option, if the MDT cannot updated the status directly.	
5	Simultaneous Call Taking and Dispatching	Upon discovering that a call is of an emergency nature the Call Taker should be able to alert the Dispatcher and the Supervisor. They should begin dispatching as the call proceeds. Therefore, the event form should be displayed on the Dispatch console as it is being populated by the Call Taker and updated .	
6	Vehicle Tracking and Status update	The GIS map should display the assigned, un-assigned units using appropriate and intuitive graphical symbols. The Dispatcher can command an assigned unit to proceed to the event location through radio or through dispatching the event information . The unit shall report departure for arrival at and departure from a location. The software should be capable of displaying the vehicles on the GIS map with colour coding according to their current status. Vehicle colour should change automatically with their change in status i.e, dispatch, en-route, at scene, available etc. The entire movement of a vehicle from being assigned to an event till arrival upon scene should be time stamped and monitored by the Dispatcher.	
7	Chronology	The software should have the capabilities to record all event related information changes / updation made after the creation of event by the same or different Operators, like Call Takers, Dispatchers, Supervisors.	
8	Vehicle Playback	The software should have the tools to provide the playback of the vehicle history data, displayed on the integrated GIS map with auto scroll.	
9	Alarm for new event	The software shall provide an alarm or alert for every new event entered in the system.	
10	GUI based pre-defined route	The software should have the provision available within GUI for daily patrolling of the Police units and their patrol locations. Tools for route creation should be provided and Police vehicles assigned for regular patrolling, to those pre-defined routes as per the requirement of Police.	
11	Audio-visual indication	The software should provide with an indicator to indicate that the event has exceeded the pre-determined time in its current status.	
12	Event Status	There should be facility for event symbolization. To facilitate easy identification of event status (pending, open, closed), events should be displayed on map with different colours.	
13	Geo-fencing	The proposed software should have geo-fencing capability. Software tools should facilitate in allocating areas for all patrolling units depending on Police needs.	
14	Shortest Path indication	There should be provision for shortest route to guide Vehicles. Dispatcher can find from the GIS based map the shortest path from the dispatched vehicle to the event location and convey the shortest path direction to the dispatched vehicle. The shortest path feature allows user to identify the shortest path or route between the source and destination. The Dispatcher can direct the vehicle and assist them to reach the location using the shortest path.	
15	Display of resources & event on Map	There should be provision for display of field resources and event on map.	

16	Recording of all vehicle movements on map	There should be provision for recording of all vehicle movements on map - date wise, vehicle wise.	
17	Viewing	The software should facilitate viewing of events and vehicle chronology. Status of all vehicles and events on the map Police stations on the map.	
18	Provision of Standard Operating Procedures (SOP's)	the software should have the capabilities to set the Standard Operating Procedures (SOP's) for Dispatcher. The same needs to be invoked during creation of event or dispatch the vehicles.	
	Supervisor Software for City Control Room		**Compliance (Yes / No)**
1	Event monitoring	The software should facilitate supervision of Control Room operations. The Supervisor should be able to examine each event and ensure appropriate legal action is taken. He shall be able to call up the complainant to solicit feedback and satisfaction report. the Supervisor workstation should have the provisions for the functionalities of both Call Taker and Dispatcher. Supervisor should be able to issue instruction pertaining to an event while it is in progress.	
2	Schedule Event	The software should have the provision to schedule events like, VIP visit, Rally, Festival etc. On setting the data and time for the particular event, automatically the event should be generated on the set date. The scheduled event feature should allow operator to create, edit, delete, and search for a scheduled event. For example, a event should be scheduled for patrolling purpose on a daily, weekly or monthly basis.	
3	Digitization and Assignment of routes	The software should have the provision of tools for creation of digitized patrolling route (daily, weekly etc.) assign one or more Police vehicles to these pre-defined routes along with check points.	
4	Planning of Patrol, Response & compliance monitoring	It should be possible for the Supervisors to monitor the patrol response i.e which static positions to hold, when, which areas need mobile patrolling, when. It should be possible to analyze the extent to which the prescription was followed by matching with actual AVLS information.	
5	Unlock of event	The Supervisor software should be able to unlock the assigned event in process and reassign to another dispatcher to take further action.	
6	Over the Air (OTA) Configuration	The Supervisor software GUI should have the provision to configure the GPS modems installed in the vehicles by sending the SMS commands such as vehicle location refresh rate, restart and any other commands supported by the GPS modem.	
7	Response Plan	The Supervisor software should be configure/ create the response plan based on Incident type like, Accident, Robbery, Terrorist attack etc.	
	Remote Viewer for Monitoring and Report Generation for Supervisor		**Compliance (Yes / No)**
1	General	Remote Viewer will be a web-based software monitoring tool to be used by the senior officers for monitoring of limited CAD functionalities using LAN/WAN (Intranet) or Internet	
2	Monitoring	The software should support monitoring of all event. Critical functionality which related to Police control room namely - Event Monitoring, Police	

		Vehicles Fleet Monitoring, Reports, Charts and Analysis.	
3	GIS Map	The software should have integrated GIS map with Zoom In, Zoom Out, PAN functionalities. GIS map should display the current scale.	
4	Event Monitoring	The software should support active event monitoring with detail information and location & Id on the map.	
5	Live Vehicle Tracking	The software should support live vehicle tracking of the response units with details. Like Vehicle Call sign, Police Station, Time Stamp, Speed and Current location.	
6	Play back history	The software should view vehicle history data of the response units with details. Like Vehicle Call sign, Police station, Time Stamp, Speed and Current location. Using various search option like Date wise, Latest No. of Records.	
7	Geo-fencing	The proposed software should have 'Geo-fencing' capability. Software tools should facilitate in allocating areas for patrolling units depending on Police needs and also receive the Notification when vehicles cross the Geo-fence.	
8	Reports	The software should have in built web based Reporting module. The reporting module should have an ability to create various reports using various options like Date wise, Police Station, Police Zone, event Type, Sub Type etc. The application should have a variety of reports like;	
		1. Call Details	
		3. Average Response Time	
		4. Blank Calls, Crank Calls, Emergency Calls, Hot Calls, Information Calls and other details as per future requirement	
		5. Calls inflow per hour	
		6. Calls attended, Idle time and abandoned call.	
		7. Police Station wise Response time	
		8. Daily PCR	
		9. Event Audit Logs	
		10. Event Details, events Statistics	
		11. Events Sub Type	
		12. Fleet Summary with chart representation and timely movement	
		13. Geo Fence IN / OUT	
		14. Police Station / Police Zone wise Report	
		15. Operator Status	
		16. Operator activity Break code	

		17. Vehicle activity, Daily activity summary, Dispatch response, stop	
		18. Vehicle Status summary	
		19. Vehicle Modem Maintenance Summary	
		20. Vehicle Response Time	
		21. Vehicle Stoppages	
		22. Vehicle Daily Activity Summary	
		23. Active event By event Types	
		24. Zone and Police Station Wise Daily, Weekly	
		25. Zone and Police Station Wise events & Vehicles	
		26. Zone and Police Station wise event Count	
9	Dashboards	There shall be dashboards for different supervisory levels to give them graphical picture of the performance of those within their jurisdictions.	
		1. Call Trend – day, week and month	
		2. Average Response Time for call taking, dispatching and responding units.	
		3. By Event Type, time, Station	
		4.By Police stations	
		5. Vehicle Activity – Run Time and Halt Time	
10	Analysis	The reporting module should have an ability to create various GIS Analysis Reports. It should be possible to select the data on the basis of Police Zones, Police Stations, events, event Sub-type, Priority & date and time.	
		1. Incident Query	
		2. Incident Count	
		3. Repeat Incident	
11	Vehicle Dash board	The reporting module should have inbuilt dashboard to view the performance and health check of GPS devices fitted in the patrol vehicles.	
12	Tools for Analysis	There should be software tools for response analysis, mapping and hot spot analysis. It should be possible to select the data on the basis of jurisdictions , date and time of the day range and other data fields. It should be possible to create Thematic Maps like pin mapping, Incident count mapping and repeat Incident count Mapping . It should be possible to do detailed analysis at least the following ways – Hot Spot Analysis, Trend Analysis, Neighborhood Analysis and Change over Time Analysis.	
	Administrative Tool for Supervisor		**Compliance**

			(Yes / No)
1	Configuration & Creation of CAD Master Data base	The application software should offer administration tool for optimum utilization of resources, master database creation and other analytical purposes. It shall enable the Systems Administrator to define users & configure their access privileges The software should create / configure various master database like:	
		1. Users & Roll creation of operators	
		2. Dispatch Zones / Groups & Police Stations	
		3. Vehicles	
		4. Events & events Sub-type	
		5. Shift Master	
		6. Skill Master	
		7. LOI Creation	
		8. Add Agencies	
		9. Schedule Report	
		10. Schedule Backup	
		11. Language setting and dictionary creation	
		12. Response Plan	
	CAD Mobile Software for Mobile Data Terminal		**Compliance (Yes / No)**
1	General	CAD Mobile application is to provide the Mobile Workforce with full access to the police event data empowering them to make informed decisions while in the field. It will enable the mobile workforce to remain in communication with the command center allowing event assignment information to be delivered to the devices as required.	
2	Display Dispatch Message	The Mobile Application Software should display all the Dispatch related transactions assigned to the respective units. All the event information as dispatched by the dispatcher must be captured and displayed.	
3	Update Dispatch Status	On activating an assigned event by the mobile unit staff, the mobile application software should also display the Event & Vehicle Status – i.e. dispatch, en-route, at scene, back to base and closed.	
4	Event Details	On activating an assigned event by the mobile unit staff, the mobile application software should also display event information – i.e. Event-id, Event-Type, Caller Phone Number, Caller Name, Caller Address, on browser and Event location on map window. The Map view can be through Vector / Google Maps.	
5	Action Taken Report	It should also enable the mobile users to report Action Taken by attaching Audio Files, Image Files, Video Files and Text Entry . All Action Taken data should be available to Dispatcher and Supervisor through logs.	

6	Vehicle Location	The mobile application software should have the capability to display real-time location of the Vehicles on the map.	
7	Communication	The mobile application software should support GPRS Message / SMS Capabilities between the dispatch consoles and mobile unit.	
8	Location based Service	The Mobile application software should enable the mobile users to perform location based services like – Nearby events, Nearby responding Vehicles, Search for nearby Points of Interest and use the map to view the same.	
9	Mobile User Status	The Mobile application software should support a clock based status update to the command center. It should be possible to update the Status like Available, Attending to Events, On Break , etc should be supported	
10	Login/logout Support	The Mobile application software should support login/logout support and provide a secured access through unique user name and password.	

	RADIO GATEWAY SOFTWARE	**Compliance (Yes / No)**
1	All for ANALOG CHANNELS USING analog RADIOS	
2	Radio Dispatcher to SIP Console	
3	SIP console to Radio Dispatcher	
4	Radio dispatcher to PSTN/Landline number	
5	Patch the SIP /PSTN/Landline to the Radio dispatcher	
6	continuous listening of Radio Analog voice channel	
7	All call facility in Radio (All Analog channels to be conferenced together)	
8	Call Hold option in Radio dispatcher	
9	Call Conferencing	
10	CALL CONFERENCING AND PATCHING :	
11	Conference call between three to six phone lines from his console	
12	It shall be possible to patch phone and radio as well in Analog too	
13	These operations should have drag and drop ease.	
14	The unit should be connected to the radios using the audio and control interfaces of the radio	
15	Should be agnostic to the make of the radio and its frequency of operation	

16	The radio gateway unit should convert the audio and control signals received from the radio into IP packets and transmit them to the main system for further processing, over an IP link.	
17	Should have a DSP which should support VOX and VMR. The DSP should support active noise reduction for filtering out the noise from the radio network	
18	Should support both star and ring topology of the Ethernet network	
19	Should support cluster based redundant main system. The radio gateway unit should be able to get connected to the redundant main system when the working system fails. Preferably, the switchover from the working to redundant system should not affect the current voice communications	
20	Should be able to control the configuration of the radio, to which it is connected. The configuration will be done by the system administrator	
21	Should be capable of connecting minimum 8 radio nets	
22	It should be possible to add more Radio gateway units at different locations or at the same location over the IP network to connect more radio nets.	
23	Should support data transmission over radio	
24	Should have an optional E1/PRI interface, which would be used as a backhaul	
25	The system should be equipped with a voice recording system so that all the voice conversations can be recorded	
26	Recorded voice files should be accessible from the Web based application to the authorized users	
27	Voice logger should offer a reporting module to generate the desired reports.	
28	The configuration of the voice logger should be possible by the system administrator	
29	The system should have capacity to retain voice logs for a minimum period of 720 hours	
30	RADIO RECORDS The radio communications should be recorded by the system. Although at this stage, acquisition of a digital trunking radio system is not part of this project, it should be	
31	Possible for the CAD to integrate with one. The log should be retained for a period of 3 months	
32	CALL CONFERENCING AND PATCHING It shall be possible for the radio dispatcher to organize a conference call between phone lines from his console. It shall be possible to patch phone and radio as well. These operations should have drag and drop ease	

	Scenario 1	
33	Dispatcher talks to two different radio stations at same time. Voice recording for full conversation is saved on a shared network path. Voice recording file is tagged by time/date stamp/Incident ID/ Dispatcher ID (means should be customizable	
	Scenario 2	
34	Dispatcher talks to incident originator and conference him with field unit/units in one or all frequencies. Voice recording for full conversation is saved on a shared network path. Voice recording file is tagged by time/date stamp/Incident ID/ Dispatcher ID (means should be customizable)	
	Scenario 3	
35	Dispatcher is able to drag/drop and create crosspatch groups containing Radio channels and internal SIP extensions. Voice recording for full conversation is saved on a shared network path. Voice recording file is tagged by time/date stamp/incident ID/ Dispatcher ID (means should be customizable)	
	Scenario 4	
36	Dispatcher talks to two different radio stations at same time	
37	Dispatcher talks to incident originator and conference him with field unit/units in one or all frequencies	
38	Dispatcher is able to drag/drop and create crosspatch groups containing Radio channels and internal SIP extensions	
39	Dispatcher is able to initiate an external (PSTN) / internal (Extension) call using SIP phone using console	
40	Dispatcher is able to initiate an external (PSTN) / internal (Extension) call using SIP phone, keep it on hold, initiate another call(s) (upto 6 in single conference) using console and conference them in	
41	Dispatcher is able to initiate an external (PSTN) / internal (Extension) call using SIP phone, keep it on hold, initiate a radio call to single or multiple channel and conference them in (upto 6 in single conference) using console	
42	Using same console, voice files saved in the computer are played back on the opened CFS	
43	Common to all scenario	
44	A CFS is open and it has a number, which is clickable to dial. It also has the facility to drag and drop into a placeholder on the SIP / Console screen to get dial out (voice /radio)	

45	Each radio channel or up to 2 number of CUG / Out-dial have hot buttons with dial-out using single click (Configurable	
46	Output voice from each of the situation comes into single headset (wired or wireless)	
47	Voice recording for full conversation is saved on a shared network path	
48	Voice recording file is tagged by time/date stamp/Incident ID/ Dispatcher ID (means should be customizable)	
49	3 Supervisor able to login and view any of the 7 Dispatchers including voice calls	

ANPR System

Description	Compliance (Yes/N0)
The ANPR System shall enable monitoring of vehicle flow at entry/exit and at Strategic locations. The system shall support real-time detection of vehicles at the deployed locations, recording each four wheeler, reading its number plate, data base lookup from central server and triggering of alarms/alerts based on the vehicle status and category as specified by the database. The system usage shall be privilege driven using password authentication.	
The ANPR System shall have the following in built features:	
1. Vehicle Detection and Video Capture Module	
a.The System should automatically detect a vehicle in the camera view using video detection and activate license plate recognition.	
2. License Plate Detection	
a.The System shall automatically detect the license plate in the captured video feed in real-time.	
b. The system shall perform OCR(optical character recognition)of the license plate characters(English alpha-numeric characters in standard fonts).	
c.The System shall store JPEG image of vehicle and license plate and enter the license	
d.System should be able to detect and recognize the English alphanumeric License plate in standard fonts and formats of all four wheelers including cars, HCV, and LCV.	
e.The system should be able to process and read number plates of vehicles with speed even up to 120 km/hr. The accuracy should be more than 70% in daytime and more than 60% in night	
f. The Software should provide zoom function once cursor is brought over the number plate	
g. Cameras should be morethan1MP,1/35500S to1/6S, with IR corrected 5-50 mm lens with integrated IR25meters, 850nm and 20degrees.Multiple simultaneous individually configurable streams inH.264andMotion JPEG. Controllable frame rate and bandwidth	
h. The ANPR system supplied should have already been in use in city surveillance projects with at least 3 projects of more than 100 cameras in India.	
i.The system shall be robust to variation in License Plates in terms of font, size, contrast and color and should work with good accuracy.	

GIS Maps

Effort should be made to integrate into the system the GIS map being used by the Police department at present .

Functionality	Compliance(Y/N)
The system shall provide an up-to-date GIS database. This map data shall help operator to ensure a timely and appropriate response to the incident.	
The map shall have a very specific Camera Layer, displaying all CCTV camera location	
The layer will have geo-coded camera data (spatial & attribute) with the ability to view individual video feeds through a mouse click	
Features of the map: • The map shall depict PURI area with 1 metre resolution and have the scale of 1:1000. • The map shall have basic features like zoom in, zoom out, pan. • The map shall have provision to ON and OFF one or more layers simultaneously. • The map shall be digital in nature but also "intelligent" in nature. • It shall show the exact location of camera and other sensors. • It will be able to direct AVL units by shortest paths when integration with Dial-100 is done. • Using advanced GIS &network tools it will be possible to get driving directions to AVL units for 'Shortest Path' • It shall be possible to search for attributes such as "Nearest Hospital and Police Station" etc. • It shall have ability to provide 'Geo-fencing' capability.	

INDICATIVE ATTRIBUTE LAYERSFOR THE GIS MAP SHALL BE

(The markers for special locations in GIS maps such as polygons for bus stands are indicative only. 8 layers are required to be added and each should be clearly discernible from others. The bidder may use its own system but the scheme of depiction must be clearly mentioned while delivering the final map.)

SR NO.	Group	Layer	ATTRIBUTE LAYERS	METHOD	Compliance (Y/N)
G1	Political and Administrator Boundaries	1	District / Boundaries	Polygon / Point / Text	
G2	Police Jurisdiction and Boundaries	2	Police Jurisdiction Boundaries (STATION, Region and Zone)	Polygon / Point / Text	
		3	Police Station Boundaries	Polygon / Point / Text	
		4	Police Chowkies / Outposts	Points / Text	
G3	Other Police Establishments	5	State Police/ Central Police/Railway/Home Guards/ Civil Defense	Polygon / Point / Text	
G4	Supportive Services	6	Hospitals, Blood banks, Ambulance services, 24-Hour Medical Shops	Polygon / Point / Text	
		7	Fire brigade,	Polygon / Point / Text	
G5	Roads	8	Major and Minor Roads, Flyovers and Bridges	Lines / Text	
		9	Lanes and By-lanes	Lines / Text	
		10	Pedestrian Over-bridges	Lines / Text	
		11	Toll Plaza	Lines/ Text	
G6	Traffic Attributes	12	Traffic Islands / Major Parking Places.	Polygon / Point / Text	
		13	VIP Routes	Line / Text	
G7	Transportation	14	Railway Lines and Railway stations, Railway crossings	Line/Points / Text	
		15	S.T. Depots and S.T. Bus	Polygon /	

			Stands,	Point / Text	
		16	City Bus Depots, City Bus Stands	Polygon / Point / Text	
		17	Taxi / Rickshaw Stands	Points / Text	
		18	Airport	Polygon / Point / Text	
G8	Areas and localities	19	Defense Establishments and defense acquired area,	Points / Polygon / Text	
		20	Restricted / Silence Zone and other classified Area	Polygon / Text	
		21	Hindu / Muslim / Dalit / Mix Localities	Polygon / Text	
		22	Slums and major chawls	Polygon / Text	
		23	Police Colonies, Govt. Colonies	Polygon / Text	
		24	Communal Riot sensitive places and Fix Points (A, B, C).	Points / Polygon / Text	
		25	Industrial and Commercial Area (IT Parks, etc.)	Polygon / Text	
G9	Buildings / Landmarks (The address of each such building land mark must be in the conventionally known nomenclature in that area and not limited to only plot number and postal code)	26	Government Offices, Municipal offices,	Polygon / Point / Text	
		27	Jails, Courts, Remand Homes	Polygon / Point / Text	
		28	Offices of political parties	Points / Text	
		29	Offices of Print and Electronic Media	Points / Text	
		30	Residential Bungalows of VVIPs and Higher Officers Guest Houses.	Points / Text	
		31	Post and Telegraph offices, MTNL/BSNL offices & Exchanges	Polygon / Point / Text	
G10	Public Places	32	Cinema halls, Multiplexes,	Polygon /	

			Theaters , Auditorium, Public Halls, Community Halls,	Point / Text	
		33	Hotels, Pubs, Lodges, Restaurants	Polygon / Point / Text	
		34	Shopping Malls, Major Jewelry shops, Banks,	Polygon / Point / Text	
		35	Stadiums, Play grounds, Open Space	Polygon / Point / Text	
		36	Parks, Gardens, Amusement Parks, beaches	Polygon / Point / Text	
		37	Heritage and Historical Places	Polygon / Point / Text	
		38	Places of worships (Mandir Masjid, Gurudwaras churches, Budhvihar) and Major Statues	Polygon / Point / Text	
G11	Educational Institutes	39	Colleges, Major schools, Major Hostels, Govt. institutes	Polygon / Point / Text	
G12	Vital Installations and Important Places	40	Vital Installations	Polygon / Point / Text	
		41	Electric Substations	Polygon / Point / Text	
		42	Petrol Pumps with owner information	Points / Text	
G13	Water Bodies	43	Lakes, canals, Rivers, Nalas,	Polygon/Line / Points / Text	

7. Annexure 2 – Non – Functional Requirement Specification

a. Setting up Command & Control Center

Functionality	**Compliance(Y/N)**
Following is to be ensured while setting up the State of the art "Command & Control Center":	

• All CCTV surveillance cameras shall be integrated with the Command & Control System	
• Complete Hardware and software along with necessary licenses to be provided	
• Recording of video feeds should be provided for 30 days minimum for all cameras in a resolution ranging from 4 CIF to 2 MP and user programmable.	
• Small Cubicles with smaller display units for location-wise display distribution.	
• The controls and displays should be mounted in ergonomically designed consoles to keep operator fatigue to a minimum and efficiency high.	
• Supervisor seat located in a convenient position to monitor all cubicles.	
• Intercom communication facility between all the operators.	
• Viewing screens and operator consoles only should be in the Operational area of the control room.	
• Separate server room & data control center with limited/restricted access. Equipment should be housed in suitable sized rack. Specifications for which is included with the technical specifications.	
• Customized Master Video Wall (LED-lit projection Module)	
• Network connectivity to Police	

commissioner's office as a provision to view video feeds	
• Proper air conditioned and comfortable sitting arrangements	
• Essential flooring, ceiling, air conditioning, racks, cabin, furniture etc. except civil work	

Data Center

Functionality	**Compliance(Y/N)**
Data Center will be co-located with Command & Control Center at Town Police Station which includes all the servers, storage, electrical work and necessary ICT infrastructure required to implement the system. Bidder is required to size the Data Center requirement for the system and fulfill the following requirement:	
1. High Performance of enterprise computing resources	
2. Scalability to address growing data storage needs	
3. Flexibility	
4. High Availability	

8. Annexure 3 – Technical Specification & BOM

Hardware specifications of the City Surveillance Solution are as follows:

Hardware Specification

1. CCTV Cameras

a. **Outdoor Fixed Camera(Box Type):-**

(The cameras are to be used in different environments. So the bidders are required to quote for the fixed box or bullet type cameras with 5mm to 50 mm verifocal lens and 3 mm to 9 mm verifocal lens. The requirement of lenses will be for about half of the cameras fitted with one type of lens and the rest with the other type.)

Parameter/item	Specifications	Compliance
Image sensor	1 / 3" CCD / CMOS Progressive Scan (2 MP)	
Electronic Shutter	1 /5 to 1 / 32,000 s	
Min illumination/ light sensitivity (Color)	0.06 lux (30 IRE, F 1.8)	
Min illumination/ light sensitivity (B/W)	0.001 lux (30 IRE, F 1.2)	
Wide Dynamic Range	Required	
Backlight Compensation	ON/OFF	
IRIS Control	P-Iris	
Focus	Automatic / Manual	
Automatic Gain Control	Auto / Manual	
Color, Brightness, Contrast functionality	Required	
Frame Rate	25 FPS for 1920 x 1080	
Varifocal Lens	2.8 – 12mm and 5-50 mm varifocal lens	
IR Illumination	Built-in IR illuminators, effective up to 30 meters with Smart IR, IR LED*6	
Video		
Day and Night functionality	Automatic, Color, Mono	
Video Resolution	2 MP (1920 x 1080)	
Video Streams	Individually configurable min. 03 video streams (H.264, MJPEG, MPEG-4, any)	
Intelligent Video	Motion detection	
Compression		
MJPEG	Required	
H.264	Required	
Audio		
Audio support	Required	
Audio Compression	G.711 or better	
Two-way audio	Required	
Input / Output	01 IN & 01 OUT	
Network & Interface		
Interface	RJ-45 for 10/100 base-T Ethernet	
I/O Port	01 IN, 01 OUT	
Upgrade	Through web browser , online, firmware upgrade	

Parameter/item	Specifications	Compliance
Network Protocols support	TCP/IP, HTTP, ICMP, PPPoE, DDNS, DHCP, UDP, DNS, SMTP, RTP, RTSP, SNMP protocols	
Alarm Event	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.	
Alarm Trigger	, manual trigger, digital input, periodical trigger, system boot, recording notification, camera tampering detection ,	
Compliance	ONVIF	
Security		
Password Protection	Required	
HTTPS encryption	Required	
IEEE 802.1X	Required	
General		
Operational temperature °C	0°C to 50 °C	
Humidity	0 to 80% RH non-condensing	
IP rating	IP66, NEMA 4X Rated Outdoor Housing	
Power	PoE, AC24V/ DC12V, 100-230VAC	
Certifications	CE, UL/EN, FCC	

b. Outdoor Vandal-proof PTZ Camera:-

Parameter/item	Specifications	Compliance
Image sensor	1 / 3" CCD / CMOS Progressive Scan (2 MP)	
Focal Length	4.7 to 84.6 mm	
Zoom	20x Optical & 10x Digital or better	
Electronic Shutter	1 to 1 / 10,000 s	
Min illumination/ light sensitivity (Color)	0.02 lux (30 IRE, F 1.6)	
Min illumination/ light sensitivity (B/W)	0.001 lux (30 IRE, F 1.6)	
Wide Dynamic Range	Should support WDR Pro	
Backlight Compensation	ON/OFF	
IRIS Control	DC or Automatic	
Focus	Automatic / Manual	
Automatic Gain Control	Auto / Manual	
Color, Brightness, Contrast functionality	Required	
Frame Rate	25 FPS for 1920 x 1080	

Parameter/item	Specifications	Compliance
Video		
Day and Night functionality	Automatic, Color, Mono	
Video Resolution	2 MP (1920 x 1080)	
Video Streams	Individually configurable 02 video streams (H.264, MJPEG) or better	
Intelligent Video	Motion detection	
Electronic Image Stabilization	Required	
PTZ Function		
PAN TILT Range	360° continuous pan & 180° tilt range	
PAN TILT Speed	360° / sec for pan & tilt. or better	
On-board Storage	Should preferably support Onboard storage up to 64 GB	
Presets	256 Preset Points	
Tour & Pattern	Required	
Privacy Mask	04 Zones	
Compression		
MJPEG	Required	
H.264	Required	
Audio		
Audio support	Required	
Audio Compression	G.711 or better	
Two-way audio	Required	
Input / Output	01 IN & 01 OUT	
Network & Interface		
Interface	RJ-45 for 10/100 base-T Ethernet	
I/O Port	04 IN, 02 OUT	
Upgrade	Through web browser , online, firmware upgrade	
Network Protocols support	TCP/IP, HTTP, ICMP, PPPoE, DDNS, DHCP, UDP, DNS, SMTP, RTP, RTSP, SNMP protocols	
Alarm Event	Events / alerts send via FTP, HTTP, email, Pre-Post alarm video buffering.	
Alarm Triggers	, manual trigger, periodical trigger, system boot, recording notification	
Compliance	ONVIF S Profile	
Security		
Password Protection	Required	
HTTPS encryption	Required	

Parameter/item	Specifications	Compliance
IEEE 802.1X	Required	
General		
Operational temperature °C	0°C to 50 °C	
Humidity	0 to 80% RH non-condensing	
IP rating	IP66, NEMA 4X Rated Outdoor Housing	
Power	AC24V/ DC12V, 100-230VAC	
Certifications	CE, UL/EN, FCC	

2. PRIMARY SERVERS (Qty = 2 Nos.)

(To host ANPR, Video Management Server, Video Recording Server, Application/Database Server, NMS, Server)

Rack Servers for Command Centre

Features	Specifications Required	Compliance (Yes/No)
CPU	2xIntel Xeon Eight Core E5-2670 V3 CPU@2.3GHz or Higher, upgradable to 2 processor	
No. of CPUs	2 Separate bare metal servers with adequate cores in primary and secondary nodes to manage the specified operational requirement	
CacheL3	20MB of L3 Cache	
Chipset	Intel C602J Chipset	
Memory	64GB Registered DDR-3E CC Memory Upgradeable to 384GB with RDIMM	
Drive Bays	Minimum of 16x 2.5"HardDisk Drive bays	
Hard Disk	Server should be configured with 3x600GB10 KRPM	
RAID Controller	RAID Controller with 512MB Battery back cache. The RAID controller should supportRaid0, 1,5, 10, 50.Raidcontroller should have an option to upgrade toRaid6 and 60 as well. Raid controller should support online Raid level migration, on line capacity expansion and data scrubbing as well.	
Graphics Controller	Integrated Video Memory 16MB DDR-2SDRAM	
Ethernet	"Quad-port with TCP/IP Offload Engine(TOE) or Quad port Ethernet, Wake on LAN, Serial over LAN ,PXE 2"	
I/O Expansions	Minimum Six Number of PCIe Slots	
Power Supply	Dual Redundant Hot Swappable Power Supplies	
Hot Swap/	Server should be configured with HotSwap Fans	
Warranty	5 Years Onsite Comprehensive Warranty	

Failure Alerting Mechanism	The server should be able to alert impending failures on maximum number of components. The components covered under alerting mechanism should at least include Processors and memory. It should preferably have warnings for failure of voltage regulator	
Ease of failure identification	Server should send an alert notification on the system front pannel for failure of any component like Processors, voltage regulator modules(VRMs), memory, power supplies, fans, HDDs, adapters and system temperature which will allow system administrator to identify the component failure	
Form Factor	2U	
System Software	OEM Server Management software with the device drivers	
Operating System	Latest version of Microsoft Windows 2012 server, RedHat Enterprise Linux, SUSE Linux Enterprise Server, VMware vSphere5	
Server Management	Server should support Management features as:	
	Latest OS failure screen capture	
	Graphical console redirection over LAN	
	Remote virtual floppy and CD-ROM	
	Support for IPMIv2.0 compliant management software	
	SSL (Secure Socket Layer)and LDAP (Lightweight Directory Access Protocol)support	
	IPMI over LAN	
	Serial Over LAN	
	Highly secure remote power on/off	
	NMI/SMI detection and generation	
	System reset control	
	Monitoring of system and battery voltage, system temperature, fans, power supplies, processor and DIMM status	

8.3 Workstation PCs

Specification	Compliance(Y/N)
- Processor Intel Core i7	
- RAM : 8.0 GB	
- Hard Drive 1 TB - Serial ATA-300 - 7200.0 rpm	
- Microsoft WINDOWS 8 Professional 64-bit Edition	
- Display Type 17.0 in x 3	
- Graphics Processor AMD FirePro M5950	
- Optical Drive DVD±RW	

- 64 bit system with WINDOWS 8	
- Latest anti-virus software with adequate user licenses on CD/DVD Media	
- Internet Explorer 9	
- Microsoft Silverlight 4	
- HD Graphics Card.	

8.4 EPABX System Matrix and Configuration

(Panasonic/Siemens/Avaya or equivalent)

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S. No.	Description	Parameter	Compliance (Yes/no)
1.	Technology	PCM-TDM , IP, Non-blocking	
2.	Interface	Should support all telecom interfaces in Indian Telecom Service provider offerings	
3.	Type of Interface	ISDN interface for digital, basic interface for Analog lines	
4.	No. of lines -,ISDN PRI lines & Analog / Digital Extensions	1 PRI from BSNL, 32 Extensions (IP / Analog / Digital)	
5.	Type of Extension Support	Analog , Digital and IP	
6.	Expansion of Extensions	Multiples of 8 / 16	
7.	Run Distance	Not less than 800 mtrs. on 0.5mm dia. Cable	
8.	Max. Loop resistance for analog	2500 ohms including telephone	
9.	Requirement at the time of supply	01 ISDN PRI, 24 Analog Ports & 8 Digital extension ports.. Expected to handle at least 30 external lines.	
10	Contact center Expansion available (Max. capacity)	It must support at least 32 Call center Agents	
11	Max. loop resistance for analog trunk lines	1200 ohms at –48 Volts DC	
12	Support for digital trunk lines		
13.	ISDN supplementary services for Digital phone		
14.	Support for ACD call center with CTI and advanced call routing		
15	Design of EPABX System	Modular with universal slots, wall mountable	

16	Conferencing	5 party conferencing to be provided (to be configurable dynamically)	
17	Working on 230v AC mains and DC voltage		
18	Digital / IP Extension telephone instrument with programmable one touch keys	Panasonic/Siemens/Avaya / Plantronics	

8.5 Core Firewall at Command center:-

Features	Description	Complied (Y/N)
Interface	6 x10/100/1000 Base-T 2 x1000BaseSX 2x10G SR Dedicated HA ports for clustering	
Architecture	• Separate control and data plane. • Discrete routing engine. • Multiple CPU cores should form a pool of resources where idle and under used processing resources are dynamically allocated to the security services that need them.	
Module options	1 expansion slot	
Memory	DRAM : 4GB	
Firewall performance	10 Gbps	
3DES/AESVPN performance	4 Gbps	
IP Sec VPN tunnels	5000	
Connections per second	70000	
IPS performance	3 Gbps	
Concurrent sessions	1500000	
Layer2 switching	• VLAN802.1Q •Link Aggregation 802.3ad/LACP • Jumbo Frame • STP, RSTP, MSTP	
	• Authentication 802.1x Port based and multiple supplicant	
Routing	• Static routes • RIPv2 • OSPF • BGP • Multicast	
Multicast	Internet Group Management Protocol , PIM, Session Description Protocol (SDP)	
Traffic management	• Marking, policing, and shaping • Class-based queuing with prioritization • Weighted random early detection • Queuing	

Virtualization	Security policies : 40000 VLANs : 4096 Security Zones : 250 Virtual Routers : 500 Logical Systems	
Security	• Firewall, zones, screens, policies • Stateful firewall, ACL filters • DoS and DDoS protection (anomaly-based) • Support for active/active IPS monitoring including advanced features such as in-service software upgrade. • Should havemorethan6,500 signatures for identifying anomalies, attacks, spyware, and applications • Should havemorethan65 protocol decodes with more than 500 contexts to enforce proper usage of protocols.	
User Authentication	• Third-partyuser authentication RADIUS, RSA SecureID,LDAP • RADIUS accounting • PKIcertificate requests • Certificate Authorities :VeriSign, Entrust, Microsoft, RSA Keon, iPLanet,(Netscape),Baltimore, DoDPK	
Application Security	• Application awarenessand classification • Nested application support • User-rolebased policies • SSLinspection • Classification based onrisk level, userID, zones, source, and destination addresses, as wellas volumes.	
VPN	• Tunnels (generic routing encapsulation,IP-in-IP,Ipsec) •Ipsec, DES, 3DES, AESencryption • MD5 and SHA-1 authentication	
High availability	•VRRP or equivalent •Active/active—L3 mode •Active/passive—L3 mode • Dual Power Supplies from Day1	
System management	• Web UI , - • CLI	
Certification	EAL3 or NDPP	

8.6 Storage

Bidder shall assess the requirement and propose suitable storage capacity.

Features	**Specifications**	**Compliance (Yes/No)**
Rack mount	Should be rack mounted.	

High Availability	*STORAGE SYSTEM shall be offered with high availability or in a no single point of failure. Vendor shall provide all high availability licenses on the day 1 itself.* Dual active controllers & Processing with quad core active processors in Power high availability mode and shall be scalable"	
Processor	Offered STORAGE SYSTEM solution shall be configured with total of Single OR Dual active Quad Core processors in power high availability mode and shall be scalable.	
RAM	48GB RAM and upgradable, SSD is not allowed to be used to meet the 48 GB RAM requirement.	
Hard Drives	Shall be supplied with suitable SATA or SAS drives.	
Storage Scalability	Storage subsystem shall be scalable to 100% or more in capacity. *The requirement is for a SAN storage to ensure optimal performance with VMWare.*	
Network Connectivity	Min. 4 X 8 Gbps auto sensing FCs ports and Minimum 4 x 10Gbps NIC ports.	
Network support	TCP/IP, ISCSI, FTP, CIFS, HTTP, NFS, Web Dev etc.	
Fault Tolerance	RAID protection for OS as well as for the data disk. The offered system shall support Raid 5 or Raid 6 in addition to Raid 0 and Raid 1.	
Network Client Types Support	Should support WINDOWS 8, Windows 2008, Windows XP, HP-UX, AIX, SOLARIS & Linux , VMware, Open VMS	
Manageability	Advanced web interface with following 1.Software with web interface for network management 2. Remote management through Remote desktop as well as through HTTP.	
Data replication	Software for STORAGE to STORAGE optimized data replication is not required.	
Operating System	Suitable OS to make the Storage System work with other subsystems	
Snapshots	Storage System needs to support point-in-time copies at the storage level".	
Availability	Offered Storage should provide 99.999 availability.	

Quality	The Storage OEM preferably should be in the Gartner Leader Quadrant or should be in Top 5 OEM as per IDC.	
Power Supply and FAN	Offered STORAGE SYSTEM shall have dual redundant power supply and load sharing FAN	
Capacity & Scalability	Min 250TB usable after meeting the fault tolerance requirements with 1 Hot Spare for every 30 drives. Storage system should be scalable to grow up to1 PB without a need for any data migration.	

8.7 Video Wall

Specification Item	Detail Spec. Description	Compliance (Y/N)
Configuration	DLP Technology based seamless Video Wall in a configuration of (2) C x (2) R 70"- 73" size cube providing display area of 10 ft x 6 ft approx.	
Cube & Controller	Cube & Controller should be from the same manufacturer	
Manufacturing	OEM should have a manufacturing setup in India running successfully for the last 3 years or more	
Reputed Company	The OEM should be an established multinational in the field of video walls and should have installations around the world	
Other	Quoted brand should have at least 1 installation in India for City Wide Surveillance RUNNING FOR ATLEAST 1 YEAR	
Chip Type	1-chip 0.95" Digital Micro Mirror Device	
Resolution	WUXGA Native (1920 x 1200) DMD chip resolution	
Light Source Type	6 segment LED for each colour for built in redundancy for the light source. No loss of any colour should happen due to failure of any LED of any colour	
Brightness ANSI	Minimum 700 Ansi Lumens	
Brightness Uniformity	≥ 90 %	
Dynamic Contrast	1400000:1 or more	
Control BD Input terminal	Input: 1 Analog RGB BNC x 5	
	Input: 1 Analog RGB Dsub-15	
	Input: 1 Digital HDMI	
	Input: 1 Digital DVI-D	
	Input : 1 Ethernet RJ45	
	Output: 1 RS422 RJ45	
	Output: 1 Digital DVI-D Loop out	
Power control:	1 AC power ON/OFF switch	
wire control:	RS232C/ RS485 input -	
IR remote	standard IR remote	
User Adjustment - Picture & Image	Brightness, Contrast, Clock, Phase, H-position, V-position, Auto-adjust, Saturation, Hue, Sharpness, color temperature, Reset, test pattern , Color Coordinate Adjust	
User Adjustment	User can control and monitor the video wall over IP	
User adjustment - On Screen Display style	List type On Screen Display format	

AC Power Input Range	100~240VAC, 50/60Hz, 5A max.	
Dual Power Supply	Cube Should have a Dual Redundant Power Supply	
Dual Power Supply For Complete Optical Engine & Input Box	Dual Redundant Power supply should be for both	
Hot Swappable	The Dual Redundant Power supply should be hot swappable	
Operating Temperature	10ºC to 40ºC	
Storage Temperature	-20℃ to +60℃	
Operating Relative Humidity	20% to 80%	
Storage Relative Humidity	10% to 85%	
Viewing Angle	Half Gain Angle H/V: 34°/ 33°	
InterScreen Gap	<0.4 mm	
Cube Size	Each cube shoud be 72" diagonal with a tolerance of ± 2%	
Full Cube Depth Including Screen & protrusion for mirror	≤ 700 mm	
Cube Type	Rear Access for Maintenance	

Display controller	As appropriate for the configuration , size and function of the video wall defined in the specifications	
Processor	Single Quad Core Intel® Xeon 64-bit 2.0 GHz CPU or latest	
Ram	8 GB minimum	
HDD	Min 500 GB Hard Disk	
	Hard disk Capacity should be upgradable	
Networking	Dual-port Gigabit Ethernet Controller inbuilt	
	Support for Add on Network adapters	
	Support for Optical Fiber interface Adapters	
Accessories	DVD-R,DVD+RW,, Keyboard, mouse	
OS	Support 64-bit Operating Systems Windows 7	
Power Supply	(1 + 1) Redundant AC-DC high-efficiency power supply w/ PFC	
	AC Voltage 100 - 240V, 50-60Hz	
Chassis	19” industrial Rack mount movable	
	Front Panel should have lockable Door to Protect Drives	
Wall configraution	4 DVI-D Outputs	
Resolution output support	1920x1200 per output minimum	
Universal Inputs	4 DVI Inputs	
Redundancy Support	**System Should have the redundancy support for following:**	
	Fans	
	Power Supply	
	LAN	

8.8. Client Systems for Regional Centres at Kumbharpada and Town Police Station :-

Sl No	Feature	Description	Compliance (Y/N)
1	Processor	X86processorXEON,3 GHZ,2MCache	
2	Motherboard	Chipset-AMD980G/equivalent chipset	
		Ethernet-•BroadcomBCM5761	
		Memory-•1333MHzDDR3 (Double Data Rate) dual channel memory	
		MemorySpeed-Upto1333MHzor higher	
		Maximum Memory- 12 GB or higher	
		Integrated Audio & Video Controllers	
3	Memory	8 GBDDR3	
4	Hard Disk	SATA- 3.5",7200rpm1.0TB	
5	Optical Drives	DVD Writer	
6	Physical Chassis	Small Form Factor	
7	Speaker	Multimedia Speakers Should be provided	
8	Slots	PCIExpressx1 -2NoLowProfile,PCIExpressx16 - 1 Low Profile,	
9	Bays	3.5'InternalHDDBay:1(memory card reader), 5'25ExternalODDBay:1,HDDSupport:1, ODD Support:1	
10	Environmental	EPEAT Rating-Gold	
GREENGUARD ® Certified-Yes			
11	Front I/O	HighSpeedUSB2.0:2, Microphone:1, Headphone:1	
12	Rear I/O	HighSpeedUSB2.0:6, Serial:1, Integrated VGA port:1, IntegratedDisplayport:1, RJ45:1, Microphone:1, AudioLinein:1, Audio Lineout: 1	
13	Operating Systems Preloaded	GenuineWindows8 with License	
14	Display	19in(481mm)viewable image size, Optimum resolution:1440x900,Adjustabletiltstand for viewing comfort,16x10aspectratio,Analogand DVI-D (support HDCP)attachments,Internalpower,100mm VESA compliance, Kensington lock slot for security, ENERGYSTAR4.1compliance, TCO'03compliance, Power consumption (Max): 22W, EPEAT Gold rating compliance	
15	KBD & Mouse	107chanical keyboard & Optical Mouse	

8.9 Management Console for Regional Location at Kumbharpada

SL	Specification	Compliance (Yes/No)

1	40”LED Display with HD capable with wall mounting kit Specifications :Panel :40"Diagonal Size, Professional series panel, 1920 x1080 (16:9 aspect ratio) resolution, 450 cd/m2 brightness, 4000:1 contrast ratio, 178/178 viewing angle (H/V), 8ms response time (G-to-G) Connectivity: VGA,	

DVI-D, Composite, HDMI video input, RCA (L/R), Stereo mini jack audio input, RCA (L/R)audio output, RS232c (in/out) external control Features : Anti image retention, temperature sensor, lamp error detection, built-in fan, built-in speakers(10W+10W), RS232 CMDC, Video wall feature, pivot display, button lock Certification : UL, FCC,Energystar5.0

8.10 Rack Servers for Video Analytics System (To be created by VM WARE FROM THE PRIMARY SERVERS)

Features	Specifications Required	Compliance (Yes/No)
CPU	Intel Dual Quad CPU @ 3.0GHzor Higher	
No. of CPUs	5	
CacheL3	20MB of L3Cache	
Chipset	Intel C602J Chipset	
Memory	24GB Registered DDR-3ECC Memory Upgradeable to64 GB With RDIMM	
Active Memory protection	Advanced ECC memory protection support, Memory mirroring	
Drive Bays	Server should have Minimum of 16x2.5"HardDiskDrive bays	
Hard Disk Drives	Server should be configured with 3x600GB 10KRPM	
RAID Controller	RAID Controller with 512MBBatterybackcache.TheRAID controller shouldsupportRaid0, 1,5, 10, 50.Raidcontroller should have an option to upgrade toRaid6and60aswell.Raid controller should support online Raid level migration, on line capacity expansion and data scrubbing as well.	
Graphics Controller	Integrated Video Memory 16MB DDR-2SDRAM	
Ethernet Adapter	Quad-port with TCP/IP Offload Engine(TOE),Wake on LAN, Serial over LAN ,PXE 2	
I/O Expansions	Minimum Six Number of PCIeSlots	
Power Supply	Dual Redundant Hot Swappable Power Supplies	
Hot Swap/	Server should be configured with Hot Swap Fans	
Warranty	5 Years Onsite Comprehensive Warranty	

Failure Alerting Mechanism	The server should be able to alert impending failures on maximum number of components. The components covered under alerting mechanism should at least include Processors, memory, voltage regulator modules(VRMs),	
Ease of failure identification	Server should send an alert notification on the system front pannel for failure of any component like Processors, voltage regulator modules(VRMs),memory, power supplies, fans, HDDs, adapters and system temperature which will allow system administrator to identify the component	
Form Factor	2U	
System Software	OEM server Management software with the device drivers	
Operating System Support	Latest version of Microsoft Windows 2008/2012 server, RedHat Enterprise Linux, SUSE Linux Enterprise Server,	
Server Management	Server should support Management features as:	
	Latest OS failure screen capture	
	Graphical console redirection over LAN	
	Remote virtual floppy and CD-ROM	
	Support for IPMIv2.0 compliant management software	
	SSL (Secure Socket Layer)and LDAP (Lightweight Directory Access Protocol)support	
	IPMI over LAN	
	Serial Over LAN	
	Highly secure remote power on/off	
	NMI/SMI detection and generation	
	System reset control	
	Monitoring of system and battery voltage, system temperature, fans, power supplies, processor and DIMM status	

8.11 . Video Recording Server Specification (To be created by VMWARE)

Sl No	Functions	Specifications	Complied (Yes/ No)
1	Processor	Intel®2 x E5-2640v2Xeon12core	
2	Memory	32GBR DIMM,1333 MHz,Low Volt,Dual Rank,x4 Bandwidth	
3	OS Drive	2X 300GB SAS/ SATA at10k rpms	
4	Hard disk drive	300 GBx 18,15 KRPM,6 Gbps SAS 3.5"Hot Plug Hard Drive	
5	Video Standard:	NTSC(30ips) and PAL(25ips) both to be supported	
6	Compression:	Should support H.264,MPEG-4 AS Por MJPEG from camera	
7	Raid Controller	PERCH 710 p Integrated RAID Controller,1GBNV Cache, Mini-Type	
8	USB2.0 Ports:	Minimum4(4x USB2.0)	
9	Hard Drive Storage:	Enterprise Class	

10	VGA Output:	1 VGA+1HDMI 1.4+1 DVI-D, minimum 2 simultaneous monitors	
11	Keyboard& Mouse:	Should be included	
12	DVD/CDRW:	Front panel access required	
13	Operating System	Windows 2008Std/ Enterprise Edition64bit	
14	Operating Temperature:	40°–95℉(4.5°–35℃)	
15	Relative Humidity:	5–95%RH(non-condensing)	
16	Network Card	4x1Gbit/s network cards with separate segment for Cameras and viewing station	
17	Warranty:	Should have minimum 5 Years of warranty	
18	Camera Support:	Should support minimum128 cameras on a single NVR	
19	Storage space:	Should support Minimum 80TB ISCSI/ SAN/ NAS.	

8.12 Specification for Fiber Module

Specification	Compliance(Y/N)
FO Module should be fully compatible with Switch	
Media Type: SMF	
Wavelength: 1310nm	
Maximum Data Rate: 1.25Gbps	
Distance: 10km	
Digital Diagnostics: Yes	
Transmit Power: (min)-9dBm	
Transmit Power: (max)-3dBm	
Receive Sensitivity	
at 1.25Gbps: (min) -20dBm	
at 1.25Gbps: (max)-36dBm	
Fiber Connectors: LC	
Environmental Specifications	
Operating Temp.: -5℃ to 70℃	
Operating Humidity: 0% to 85% (non-condensing)	
Storage Temperature: -40℃ to 85℃	
Storage Humidity: 0% to 85% (non-condensing)	

8.13 Edge Managed L2 switch with POE"

Specification	Compliance(Y/N)
Layer 2 Managed Outdoor Industrial grade Switch	
Six port switch with minimum four 10/100TX: RJ-45 and two SFP or 100/1000T Combo , The SFP slots shall support both 100 Fx and 1000SX /LX Optical transcievers	
Console port : RJ45 x 1 or Equivalent	
Key Features	
Supports 100/1000Mbps SFPs	
Optimized for CCTV operations.	
Up to 7K MAC address table	

12 - 48 VDC Redundant power inputs , Bidder shall propose for Industrial grade AC power suypply	
IP 30 Metal Case	
VLAN IEEE 802.1Q, GVRP, Port-based VLAN	
The Ring technology should seamlessly interop / integrate with the Core and Distribution switches specified under this RFP	
IP Access security, port security, DHCP Server, IP Binding per Port, IEEE 802.1x	
IGMP Snooping/ Query for multicast	
Port trunking, Static IEEE 802.1p QoS/CoS/ToS/DSCP priority queuing	
802.3x flow control	
Port Mirroring, LLDP, Real-time trace	
Dynamic ARP Inspection	
IGMP	
Performance	
Reliability : MTBF support for 190280 Hrs or better	
Switching capacity 4 Gbps or better	
Throughput 3 Mpps or better	
Packet Buffer - 1Mbits	
Mac Address 7K	
Power consumption : preferably not more than 135 Watts .	
Power Connector 6 poles terminal block x 1	
Relay Output 1A @ 24VDC, All ports shall support PoE with support Class 3 and 15.4 W per port	
Standards	
IEEE 802.3,	
IEEE 802.3u,	
IEEE 802.3AB,	

IEEE 802.3z,	
IEEE 802.3x,	
IEEE 802.3ad,	
IEEE 802.1d,	
IEEE 802.1p,	
IEEE 802.1Q,	
IEEE 802.1x	
Environment	
Operating Temperature 0 ~ 75oC	
Storage Temperature 0 ~ 85oC	
Storage Humidity 5 ~ 95% (non-condensing)	
Certification	
Safety UL/cUL60950-1, EMC CE, FCC Class A	
EN61000-6-4, EN61000-6-2 ,EN61000-4-2 (ESD), EN61000-4-3 (Radiated RFI)	
EN6100-4-4 (Burst), EN61000-4-5 (Surge), EN61000-4-6 (Induced RFI) ,EN61000-4-8 (Magnetic Field)	
Shock IEC60068-2-27	
Freefall IEC60068-2-32	
Management : TFTP firmware update, system configure, restore and backup, SNMP v1/v2c/v3, Web, Telnet, CLI, traffic statistic, MAC Address Table, SNTP, Syslog, E-mail Alert, SNMP Trap, RMON	

8.14 L3 Managed Giga Switch with FO Port

Specification	Compliance(Y/N)
Port Density	
24-port 10/100/1000T Gigabit ports	
4 x 1000BASE-X SFP combo ports and Min 2 * SFP + slots for 10G scalability	
Should support Active – Active Clustering VSS or equivalent technology for high	

availability and quick resiliency.	
The VSS links between the 2 High Available switches should be min of 32 Gbps bandwidth with no single point of failure , all the required modules / other related cards should be proposed from day 1	
The proposed VSS technology should support high availability for both Layer 2 and Layer 3 Including for IP Multicasting applications	
The VSS / equivalent high availability technology to connect the switches either locally or across the geographically diversified locations for high reliability	
Performance	
Forwarding Rate: 95Mpps	
Switching Fabric: Min 128 Gbps or better	
Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure	
IEEE Standards	
IEEE 802.1Q Virtual LANs	
VTP or Equivalent technology	
Resiliency	
Resiliency as per the IEEE 802.17 / RPR / ERPS or equivalent technology for providing sub 50ms convergence time	
Loop Protection and Loop Detection	
RSTP / MSTP	
Routing	
Should support Static and RIP routes from day 1	
Should support OSPF routes from day 1	
Multicast Support	
Internet Group Management Protocol v2 /v3	
Security	
802.1x support	
Private VLANs providing security and port isolation	
Should support MAC address filtering and MAC limiting functionality.	
Switch should provide the ability to monitor events and take corrective action	

proactively	
The switch should support detection of Denial of Service (DoS) attack.	
Radius / TACACS +	
Quality of Service	
Policy based QoS features	
Control plane traffic prioritization	
WRED / SDWRR or equivalent queuing technology	
Management	
Out of band Ethernet management port and console management port	
Port mirroring and sFlow	
Optical Digital Diagnostics Monitoring (DDM) in accordance to the open standard specification SFF - 8472 or equivalent	
An External memory card like USB or equivalent , allowing switch firmware, configurations to be stored for backup and distribution to other switches	
IPv6 specifications	
6to4 tunneling	
DHCPv6 relay	
DNSv6,SNMPv6, Telnetv6 and SSHv6 , NTPv6	
IPv4 and IPv6 dual stack	
Device management over IPv6 networks with	
Transmission of IPv6 packets over Ethernet networks	
Connection of IPv6 domains via IPv4 clouds	
MLD and IPv6 Multicasting	
Electrical Approvals and Compliances	
Restrictions on Hazardous Substances (RoHS) Compliance	
Energy Efficient Ethernet compliant (EEE) compliance	
Interoperability	
All active components including the SFP modules should be from one single OEM for seamless interoperability	

Port Density	
24-port 10/100/1000T Gigabit ports	
4 x 1000BASE-X SFP combo ports and Min 2 * SFP + slots for 10G scalability	
Should support Active – Active Clustering VSS or equivalent technology for high availability and quick resiliency.	
The VSS links between the 2 High Available switches should be min of 32 Gbps bandwidth with no single point of failure , all the required modules / other related cards should be proposed from day 1	
The proposed VSS technology should support high availability for both Layer 2 and Layer 3 Including for IP Multicasting applications	
The VSS / equivalent high availability technology to connect the switches either locally or across the geographically diversified locations for high reliability	
Performance	
Forwarding Rate: 95Mpps	
Switching Fabric: Min 128 Gbps or better	
Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure	
IEEE Standards	
IEEE 802.1Q Virtual LANs	
VTP or Equivalent technology	
Resiliency	
Resiliency as per the IEEE 802.17 / RPR / ERPS or equivalent technology for providing sub 50ms convergence time	
Loop Protection and Loop Detection	
RSTP / MSTP	
Routing	
Should support Static and RIP routes from day 1	
Should support OSPF routes from day 1	
Multicast Support	
Internet Group Management Protocol v2 /v3	
Security	

802.1x support	
Private VLANs providing security and port isolation	
Should support MAC address filtering and MAC limiting functionality.	
Switch should provide the ability to monitor events and take corrective action proactively	
The switch should support detection of Denial of Service (DoS) attack.	
Radius / TACACS +	
Quality of Service	
Policy based QoS features	
Control plane traffic prioritization	
WRED / SDWRR or equivalent queuing technology	
Management	
Out of band Ethernet management port and console management port	
Port mirroring and sFlow	
Optical Digital Diagnostics Monitoring (DDM) in accordance to the open standard specification SFF - 8472 or equivalent	
An External memory card like USB or equivalent , allowing switch firmware, configurations to be stored for backup and distribution to other switches	
IPv6 specifications	
6to4 tunneling	
DHCPv6 relay	
DNSv6,SNMPv6, Telnetv6 and SSHv6 , NTPv6	
IPv4 and IPv6 dual stack	
Device management over IPv6 networks with	
Transmission of IPv6 packets over Ethernet networks	
Connection of IPv6 domains via IPv4 clouds	
MLD and IPv6 Multicasting	
Electrical Approvals and Compliances	
Restrictions on Hazardous Substances (RoHS) Compliance	

Energy Efficient Ethernet compliant (EEE) compliance	
Interoperability	

8.15 Network Management System (500 network devices ie Managed switches, IP cameras, appliance firewall etc).

S.no	Technical Specification for Network Management Software	Compliance (Yes /No)
1	Automatic topology discovery and creation of network maps for Layer 3 and Layer 2 network , All the available VLANS. Should seamlessly integrate Core switch at outdorr switches	
2	Should have high level Network Inventory polling capability for IP Network nodes, All available line cards , Modules , ports , Physical links , VLAN interfaces and all the other SNMP capable devices in the network	
3	Should have powerful administration control	
4	Detailed performance monitoring and management	
5	Should have extensive fault management capabilities with Real time Event and Alarm notifications , System Logs and Audit trials	
6	Creation and management of security and QOS policies	
7	Scheduled Device configuration back-up and restore functionality	
8	Automatic Detection of configuration changes for easy trouble shooting and Isolation	
9	Should support 3rd party devices and end points	
10	Should have the functionality of Group provisioning / Scheduled configuration roll out management	
11	Should have the ability to perform scheduled or Unscheduled network wide software or Firmware upgrades	
12	Should have the ability to customize the NMS dash boards as per the requirements of police	
13	Should have the ability to perform / create group of devices for applying same task	
14	Should have extensive Event notification capability	
15	Should provide the flexibility to the network administrator to assign task to an Individual network engineer and assign ownership / track the status of the issue resolution	

16	Should have extensive centralized trouble shooting tools in built	
17	The NMS solution should be preferably from the same Active switching vendor , in case vendors proposing for 3rd party NMS solution should provide all the interop reports certified by both the NMS vendor and Active switching vendor on seamless interoperability	
18	All the required Hardware / Software licenses for the NMS solution should be proposed by the bidder	

8.16 Wireless FOR connectivity for cameras

Please note the following general points for wireless connectivity

- The operational band mentioned for all following radio units may also use the 5.825-5.875 Ghz band with EIRP up to 36dBm. The bidder must ensure the legal aspects of the use of the bands and ensure that the user is protected from any legal issues related to the use of the radios in the frequency band offered. Necessary notifications/documents , including approval certificate from appropriate authority must be produced in the technical bid to establish the permission to use those equipments and radio bands for communication purposes by security agencies..
- The technology offered can be of any of the following type. TDD OFDM, MIMO & Diversit
- The Min, output power requirement for the subscriber unit is deleted. It should be appropriate for the use for which it is being offered.
- Temperature range should be 0 degree centigrade to 50 degree centigrade.
- The radio should ensure adherence to the following security systems: WPA 2 and IEEE 802.1

a. Wireless BASE Station (Point to Multipoint)

System consisting of Outdoor & Indoor equipment, antenna, scables (RF/IF) with connectors, system software and all other hardware & software required for operation, monitoring & configuration of the link	Comply (Yes /No)	If 'yes' give details & support documents & its Reference Page No.
It shall be carrier type Point-to-Multi point Wireless Access radio system.		
The system should be of reliable and field proven design and suitable for harsh environmental conditions.		
Should work in ISM Unlicensed Frequency Band - 5.150-5.350GHz / 5.470-5.725GHz / 5.725-5.825 Multi-band		
Channel Bandwidth - 10 MHz, 20 MHz, 40 Mhz		
Max output power (at antenna port)		
(i) Base station: - Min. 5 dbm to 17 dBm		

(ii) CPE :- Min. 5 dBm to 17 dBm, automatically adjusted within allowable EIRP		
Modulation Scheme		
(i) BPSK, QPSK, 16-QAM and 64-QAM with Forward Error Correction (FEC)		
(ii) Should support automatic adaptive modulation, separated per CPE per direction for maximum performances		
Architecture		
(i) Single cable between indoor unit and outdoor Radio		
(ii) Should support AC, DC and solar power supply.		
Transmit power control - within allowable EIRP (Equivalent Isotropically Radiated Power)		
Built in Spectrum analyzer and radio should have site management and link management facility (software) for initial configuration, installation and maintenance.		
Automatic Clear channel Selection (ACCS)		
Radio Technology – TDD OFDM		
Capacity and performance		
Distance coverage: Based on target coverage area		
Should support greater than 1400 bytes max packet size		
The system shall support multicast & unicast for IP traffic.		
VLAN Support : Based on IEEE 802.1Q		
VLAN Q-in-Q support		
Security : 128 -bit authentication (AES and WEP or better) The system should support MAC address locking between radios to avoid stealing of the information.		
f. Operating temperature :-		
(i) Outdoor Unit - 0º to 55º C		
(ii) Indoor - 0º to 40º C		

g Data Rate of up to 108 Mbps		
h greater than 25000 Packets per second processing power each on the Base Station & Subscriber Unit		
i Out door unit protection : IP67		
j. Base Station Antenna		
Frequency Range 5.150-5.350GHz / 5.470-5.725GHz / 5.725-5.825GHz. Base station must have mandatory over the air data encryption AES 128 Radio should support and store performance logs for 30 days via EMS.		
K. All radios must have appropriate surge protectors		

a. Subscriber Unit (Point to multipoint system)

System consisting of Outdoor & Indoor equipment, antenna, cables (RF/IF) with connectors, system software and all other hardware & software required for operation, monitoring & configuration of the link.	**Compliance (Yes/No)**	**If 'yes' give details & support documents & its Reference Page No.**
It shall be carrier type Point-to-point Wireless Access radio system.		
The system should be of reliable and field proven design and suitable for harsh environmental conditions.		
Should work in ISM Unlicensed Frequency Band –5.150-5.350GHz / 5.470-5.725GHz / 5.725-5.825 Multi-band		
Channel Bandwidth - 10 MHz, 20 MHz, 40 Mhz with 10 MHz steps		
Integrated Antenna in radio		
Software Upgrade for higher throughput without changing the hardware on field.		
Min. output power (at antenna port)-5 dBm to 17 dBm, automatically adjusted within allowable EIRP		
Modulation Scheme		
(i) BPSK, QPSK, 16-QAM and 64-QAM with Forward Error Correction (FEC)		

(ii) Should support automatic adaptive modulation, separated per CPE per direction for maximum performances		
Transmit power control - within allowable EIRP		
Radios should have site management and link management facility(software) for initial configuration, installation and maintenance.		
Radio Technology – TDD OFDM		
Capacity and performance		
Distance coverage: **As appropriate for the locations indicated in the bid document.**		
Should support AC, DC (-48) and solar power supply.		
VLAN Support : Based on IEEE 802.1Q		
Security : 128 -bit authentication (AES and WEP or better, the system must support MAC address locking bet the two radios of the link to avoid pilferage of the information)		
Out door unit protection : **IP65 and better**		
(f) Operating temperature :-		
(i) Outdoor Unit : -20º to 60º C		
(ii) Indoor : 0º to 40º C		
Regulation Standard		
ETSI DFS: EN 301 893 v.1.5.1 & EN 302 502 v.1.2.1		
Safety: UL 60950-1		
EMC: FCC part 15 class B, and ETSI EN 301 489-1		
Lightning: EN 61000-4-5, Class 3 (2kV)		
Frequency Range 5.150-5.350GHz / 5.470-5.725GHz / 5.725-5.825. Base station must have mandatory over the air data encryption AES 128 (CCMP). Radio should support and store performance logs for 30 days via EMS.		
All radios must have appropriate surge protectors		

b. Radio Modem (Point to Point)
{Radio for Back haul link to interconnect base stations}

S. No.	Specification	Compliance (Yes/No)	If 'yes' give details & support documents & its Reference Page No.
1	Each set supplied is to comprise of two independent links with antenna, cables, IDU, ODU		
2	The individual System should comprise of Outdoor & Indoor equipment, antenna, cables (RF/IF) with connectors, system software and all other hardware & software required for operation, monitoring & configuration of the link.		
3	It shall be a carrier type Point-to-point Broadband Wireless Access radio system.		
4	The system should be of reliable and field proven design and suitable for harsh environmental conditions.		
5	The system shall support Flexible Quality of Services and concurrent use of IP, VoIP & Video.		
6	Should work in ISM unlicensed Frequency Band –5.150-5.350GHz / 5.470-5.725GHz / 5.725-5.825 Multi-band in same radio unit. The entire frequency band should be covered in the same box.		
7	Capable of Channel Bandwidth band-width selection of –10 Mhz, 20 MHz, 40 Mhz with 10 MHz steps.		
8	Output power atleast 36 dBm or higher, As per WPC Regulation.		
9	Integrated/External antenna as per need to achieve desired coverage.		
10	Should support greater than 25,000 PPS in each radio.		
11	Flexible asymmetric link supporting any up-link / down-link ratio.		
12	Data Standard Compliance: IEEE 802.3 CSMA/CD.		
13	Modulation Schemes: - BPSK, QPSK, 16-QAM and 64-QAM with Forward Error Correction (FEC).		
14	Transmit power control - within allowable EIRP		
15	Built in Spectrum analyzer. Radio equipment should have site management and link management facility(software) for initial configuration, installation and maintenance.		
16	Radio Technology – TDD OFDM		
17	Capable of using in full duplex mode.		
18	Should support TELNET/ SNMP based/ NMS with SNMP Agent: SNMP V1 Client, MIB II, Bridge MIB		
19	VLAN Support: Based on IEEE 802.1Q protocol with support for transparent, tagged (with support for VLAN overwrite) and untagged.		

20	All radios must have appropriate surge protectors		
21	QoS classification based on IP address, Port number and Protocol type/ 4Que		
22	Security : 128 -bit authentication (AES, WEP or better). The radios should have the capability for locking MAC address.		
23	Should support AC, DC (-48) and solar power supply.		
24	Should have facility to upgrade Software /firmware over the air.		
25	Should support cumulative bandwidth of all the connected remote.		
26	Should support hope length of 40Km up to throughput upto 100MBPS full duplex (max)		
27	Frequency Range : 5.150-5.350GHz / 5.470-5.725GHz / 5.725-5.825 GHz. Base station must have mandatory over the air data encryption AES 128 (CCMP). Radio should support and store performance logs for 30 days via EMS.		
28	Regulation Standards		
29	Safety: UL 60950-1, EN 60950-1		
30	EMC FCC part 15 class B		
31	Maximum Effective Isotropic Radiated Power (EIRP): 41 dB		
32	Supports ETSI EN 02 502; EN 301 893 (1.5.1)		
33	Operating temperature		
34	(a) Outdoor Unit - -40º to 55º C		
	(b) Indoor - 0º to 40º C		
35	All radios must have appropriate surge protectors		

c. Supporting Mast/ Tower for Base Station(s) / CPE with accessories

S. No.	Specification	Compliance (Yes/No)	If 'yes' give details & support documents & its Reference Page No.
1	Mast should be made up of : 1 " GI PIPE (ISI Mark) (should comply with IS -1161 for properties of tubular sections and IS 806 – 1968 for design of leg members)		
2	Galvanized : Hot Dip Factory galvanized pipe		
3	Wind velocity : Support 200 KM per hour wind velocity		
4	Aviation Light : Each tower will have a aviation light with wiring properly fixed to sustain wind velocity.		
5	Each section to be painted one by one in white and red (3 mtr. Each) with top as red and subsequently.		
6	Grounding : Each tower to have a copper lightening arrestor on top properly grounded		

	using copper strip/wire from top to bottom.		
7	Mast/tower should be provisioned with climbing arrangement.		

8.17 Rugged Mobile Data Terminal - Vehicle Mounted (Core Technologies / Pentagon / Panasonic or equivalent)

Description	Specification	Compliance (Yes /No
Item Type	: Rugged Tablet PC	
CPU	: Qualcomm MSM 8225 Dual Core 1.2 GHz,	
Operating System	: Android 4.0.4	
Memory	: 1GP RAM, 4GP ROM	
Storage	: T-Flash/Micro SD card, up to 32 GB	
Display	: TFT LCD 7 inch	
Touch type:	: Capacitive type	
Display Resolution	: 1024 * 600	
Network interface	: Integrated WLAN 802.11 b/g; integrated Bluetooth 2.1	
Camera	: Front 1.3M, rear 5.0M, auto focus	
Control Switch	: 1* Power on/off button	
Buttons	: 3* Functional Key button	
Indicators	: 1 Power / 1 Battery status LED	
Speaker & Microphone	: Built-in Voice Calling Facility with Speaker & Microphone	
USB	: Mini USB 10-PIN, OTG supported	
DC Jack	1* DC Power input	
Micro SD	: 1* Micro Secure Digital (SD) card slot	
UART & RS232	Supported	
SIM Socket	: 1* SIM socket	
AC/DC Adapter	: Input AC: 100 240v Output DC:5V	
Battery Pack	: DC 3.7V/5000mAh	
3G	: HSDPA: Downlink Category 8 (7.2 Mbps) or 10 (14.4 Mbps)	
Ruggedness Standard	: IP 65 Certified , 1.8M free drop test , Impervious to Dust	
GPS	: Inbuilt, 10m	
Waterproof	: IP65	
Shockproof	: 1.0M falling	

20 KVA UPS AT CONTROL AND COMMAND CENTER

SPECIFICATION – Minimum Requirement. The bidder can offer equivalent or higher

Note: 1. Only APC/EMERSON/NUMERIC brands will be accepted.

2. **Two nos of UPS will operate in dual redundant mode** with Common battery back up

9.2 UPS Systems

It is proposed to have two UPS systems working in dual redundant mode with Common battery back up, capable of feeding the power required for equipments at Data center. The dual redundant UPS shall provide power to servers, SAN, other devices, Access Control System, CCTV, Smoke detection System, fire protection system, rodent repellent system, water leakage detection system, etc.

These systems shall have three phase incoming and three phase out going. Redundancy shall be provided up to the Server rack end by using Dual distribution system. The UPS System must operate under environmental conditions.

9.6.1 Modes of Operation

The UPS shall be designed to operate as an ON LINE reverse transfer system in the following modes:

i. Normal - The critical AC load is continuously supplied by the UPS Inverter. The rectifier/ charger derives power from AC Input source and supplies DC power to the Inverter while simultaneously load charging power reserve battery.

ii. Emergency - Upon failure of AC Input power, the critical AC load is supplied by the Inverter, which without any switching obtains power from the battery. There shall be no interruption in power to the critical load upon failure or restoration of the AC input source. In case of AC power outage, the diesel generator would automatically be started to provide power to the UPS. In the event of the DG set unable to start within reasonable time, the UPS shall automatically shut down the ERP servers.

iii. Recharge - Upon restoration of AC input power during the emergency mode of operation, the rectifier/ charger shall automatically restart, walk-in and gradually assume the inverter and battery recharge loads.

iv. Bypass - If the UPS be taken out of service for maintenance or repair or should the inverter overload capacity be exceeded, static transfer switch shall perform reverse transfer of the load from the inverter to bypass source with no interruption in the power to the critical AC load.

Both the UPS modules should be operated in parallel mode with equal load sharing. However each UPS will be adequately sized to feed rated load. In case of trouble in one of the UPS section, the other UPS will continue to feed the load while the faulty section will be isolated without interruption in the output. If both the UPS fails, the load should be transferred to bypass with no interruption in power to the critical AC load. There should not be any common parts in parallel circuit, which will lead to single point failure. If parallel circuit is removed both the UPSs should be able to work independently without any modification. There should be independent battery bank connected to each UPS with facility to connect both battery banks and rectifiers in parallel and if one of the battery bank or rectifier fails, then other battery bank or rectifier should support both Inverters without interrupting the load.

9.6.2. Technical Specifications

A	Input	
1	Input voltage	415V, 3 phase, 4 wires

2	Input voltage tolerance	+15%, -20 %
3	Input frequency	50 Hz
4	Input frequency tolerance	+/- 5 %
6	Input circuit	IGBT based PWM rectifier
7	Input Circuit harmonic distortion	< 5%
B	Output	
1	Module full load rating KVA/ KW	
2	Rated voltage	415 V, 3 Ph, 4 wire
3	Rated current	
4	Phase Voltage asymmetry a] Balance load b] 100% unbalanced load	 1 % 2 %
5	Phase displacement a] Balance load b] 100% unbalanced load	 120 deg. +/- 1 deg 120 deg. +/- 1 deg
6	Output power factor support capability	0.6 lag to unity
7	Internal oscillator stability	+/- 0.1 %
8	Mains synchronization tracking	+/- 1 Hz (settable to +/-2)
9	Max. rate of change of frequency	1 Hz. Per second
10	Output voltage harmonics a] Linear load b] Non-linear load (Crest factor of 3:1)	 < 2 % < 5 %
11	Crest Factor	3:1 or better
12	Overload rating	110% for 60 minutes, 125% for 10 minutes, 150% for 60 seconds
13	Overall Efficiency	at 100 % load > 90 %
14	Transient recovery time	Recovery to +/- 5 % in < 4 msec.
C	DC Characteristics	
1	DC Bus voltage ripple	< 1 RMS
D	Controls	
1	Charger input MCCB	
2	Inverter output MCCB	
3	Standard controls to be specified	
E	Measuring Instruments	
1	LCD panel for Measuring Input voltage per phase, frequency Output voltages, Output currents and Frequency, Battery Voltage and Charging/ Discharging current. Load in KVA, Load in KW, percentage of load.	
2	LCD panel should display status of the Battery capacity and backup Time in minutes.	

F	**Protections**
1	RC surge suppressor, Sustained under voltage on input side, Phase loss on input side, Negative sequence on input side, Semiconductor fuses in the lines for thyristor, Snubber circuit for device dv/ dt protection, Charger input current limit, HRC fuses for filter capacitors, Battery current limit, DC over voltage, Low battery, Semiconductor fuses at inverter output, Overload, Over temperature for the inverter, HRC fuses in the control circuit.
G	**Indications (Alarms)**
1	Inverter Failure, Overload (if load exceeds 100%), Overload shutdown, Emergency shutdown, Equipment over temperature, Maintenance Bypass ON, DC over voltage, Low battery, Battery circuit breaker open, Battery on load, Mains failure, Rectifier Failed or Off, Inverter Unsynchronised, Load on bypass, Output voltage error

Special features:

UPS shall be provided with SNMP hardware and software for remote diagnostics.
Microprocessor based digital control and redundant control power supply.
PC based monitoring, control and reporting unit.
Monitoring system performance with automatic generation of daily, weekly reports.
RS 485 communication port.

Fan redundancy
Battery management system with battery diagnostics
Galvanic isolation transformer at UPS output side shall be in scope of work.

Environmental conditions:

Temp : Max. 45°C

Humidity : 95% Rh

Cable Entry : From bottom

Ventilation: Forced air cooling with integral fans.

Battery details

Battery type : Sealed maintenance free (SMF)
Battery back up time : 30 minute with 100% load
Battery Make : EXIDE or equivalent
No and AH of batteries :Suitable to meet the load demand of the control room
Expected battery life : 5 Year
Battery Warranty : 5 Year .
Tests : As per IEC
Documents to be provided:
Operational and maintenance manual including card wise component details and PCB Drawings. UPS KVA and Battery computation sheet.

All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.

1 KVA ONLINE UPS AT TRAFFIC JUNCTION

SPECIFICATION – Minimum Requirement. The bidder can offer equivalent or higher

SPECIFICATION	COMPLIANCE	DEVIATION
Input phase : 1 phase		
Output Phase : 1 Phase		
Output Power : 1 KVA on line		
Input / Output Voltage : 165-270V AC / 230V AC at 1 %		

variation		
Frequency : 46 - 54Hz		
Backup time at full load : 1 Hour		
Battery Type : Lithium Polymer		

GANTRY FOR ANPR CAMERAS

SPECIFICATION – Minimum Requirement. The bidder can offer equivalent or higher

SPECIFICATION	COMPLIANCE	DEVIATION
Shape: Inverted "L"		
Height: 25Feet		
Material: MS tubular hot dip galvanized (medium) pipes as per IS1239 (Parti)-1990		
Foundation : As per site requirement		

Pole for Mounting Outdoor Cameras

SPECIFICATION – Minimum Requirement. The bidder can offer equivalent or higher

Description	Compliance (Yes/No)
Carriage & erection of GIpole of 8 mtr.Height,Hot dip galvanized at 90 microns with 8gussets, earth point provision, one concealed junction box with IP65rating and IO box provision, anti-climbing restriction on the pole using thorn wires / taut wires, Cross arm support, equal thickness for the base plate of the pole and pillar, provision of anti-vibration mats, The pole shall be erected on a Reinforce concrete Foundation of1.50 Mt.J type foundation bolts will be 24mm and for an length of 1 meter. Belowground, RCC readymade muff shall be filled with cement concrete 1:2:4.Thepoles should be should be of industry grade, GI coated, weather and should have lightening proof with appropriate earthing. (The maximum value of earth Resistance shall be 0.5 ohm)	

Outdoor IP 66 enclosure

(TO HOUSE EMBEDDED SYSTEM, SWITCHES, UPS & BATTERIES)

SPECIFICATIONS – Minimum Requirement. The bidder can offer equivalent or higher

Sr. No	Description	Specification	Compliance (Y/N)
1	Dimensions (mm)	The Overall dimension of cabinet should not exceed 800W X 1300H X 600D.	
2	Enclosure	Outdoor IP66 Enclosure. Condensate discharge plug to be provided inside the enclosure to prevent condensation.	
3	Load carrying capacity (Kgs.)	1000	

4	Plinth height (mm)	100	
5	Doors and locking system	Front and rear 2 mm thick sheet steel door with PU Foamed Seal (Gasketing) with removable galvanized rectangular frame with holes on a 25 mm DIN pitch pattern with 3 point locking system.	
6		The hinges and retainers should be made of die cast, copper nickel chrome plated with SS hinge pins. The doors should be swapped to LH if required with door opening angle 130 deg to VDI.	
7		Top panel made of 1.5 mm thick sheet steel with PU foamed (Gasketing) boltable from inside.	
8	Panel Sizes (mm.)	Bottom panel made of 1.5 mm thick sheet steel with PU foamed (Gasketing) with provision for fixing 4 nos of PG 29 glands.	
9		Side panels in double walled construction with air gap of minimum 20 mm between two walls with PU foamed (Gasketing) for IP 55 protection	
10	Regulatory Compliances	IP55 to EN60529/09.2000, ISO 9001, 14001, 18001 comply with EIA 310, DIN 41494 and IEC 297 standards.	
11	Painting	The cabinet has to be nano ceramic coated, Electro phoretic (EC) dip coat priming to 20 Microns and then powder coated to RAL 7035 textured Pure Polyester (PP) to 80 to 120 Microns.	
12	Rain Canopy Height (mm)	75	
13	Universal sockets	One 19" mountable socket strip with 4 nos of 5/15A universal sockets	
14	Angles	2 pairs of L type 19" angles to be provided at front and rear for mounting the equipments on 23X73 (maxim) punched sections:	
15	Earthing	To be done for entire cabinet with 4 sq mm earthing cables.	
16	Cantilever Shelf	One 1U cantilever shelf of 250 mm deep.	
17	Cable Manager	2 Horizontal 1U cable manager with 5 nos of plastic cable loops.	
18	Limit Switches	2 Door Operated limit switch to be provided at front and rear door.	
19	Hardware	Captive hardware (pack of 20): 1 pack.	
20	For Front and rear door	4 Ergoform S handles with key insert and pad locking arrangement for front and rear door	
21	Cable Entry	PG 29 glands to be provided at the bottom for cable entry	

Video wall : (For Kumbharpada Regional Centre)

DISPLAY	Qty-2 (2x1 Matrix)
Panel	55 inch Ultra Narrow Bezel variations in physical size upto 5 % acceptable
Bezel to Bezel	3.5mm
Back Light Type	Direct LED
Resolution	Full HD 1920 x 1080, professional-grade display
Display Colors	8 bits, 16.7million
Display Mode	Direct LED Backlight / Normally Black
Brightness ANSI	700 nits
Contrast Ratio (Full On/Off)	4000:1
Brightness Uniformity	< 25 % by 9 points
Input	1 x Digital DVI-I
	1 x CVBS on BNC
	1 x HDMI
	1 x RS232C Dsub-9
	1 x R422 RJ45
	1 x Ethernet RJ45
Output	1 x RS422 RJ45
	1 x Digital DVI-D
Video Compatibility (CVBS)	NTSC3.58/NTSC4.43, PAL, SECAM
DVI-D Input Frequency Range	Fh : 30~75KHz Fv : 50~85Hz Max. pixel rate : 162MHz
RGB Input Frequency Range	Fh : 30~75KHz Fv : 50~85Hz Max. pixel rate : 162MHz
RGB, DVI-D Timing Compatibility	VGA/60Hz, 72Hz, 75Hz, 85Hz
	SVGA/60Hz, 70Hz, 75Hz, 85Hz
	XGA/60Hz, 70Hz, 75Hz, 85Hz
	SXGA+/60Hz, 75Hz
	UXGA/60Hz
	Full HD/60Hz
Power Control	AC power ON/OFF switch
Wire Control	RS232C/ RS422 input
AC Power Input Range	100~240VAC, 50/60Hz, 4A max.
Power Consumption	Normal mode <209W with 55" panel
	standbymode < 2W at 110V
Dimension (W x H x D)	1213.5 x 684.3 x 127.3mm
Weight	32.5 KG (net)
Operating Temperature	0ºC to 40ºC
Storage Temperature	-20℃ to +60℃
Humidity	10% - 90%, non-condensing
Operating Life	> 50,000 hours
Others	The LCD System, Controller & Wall Management Software should be from the same OEM to ensure compatibility
	The OEM should have direct present in India through an own office
	Authorization for the subjected tender requirement should be produced from the OEM

Wall Controller	
Basic Function	To make the above display behave as a single logical screen and provide functionalities of display of windows through LAN, VGA, Video, inputs as per specifications below
Processor	Quad Core Intel® 64-bit Xeon 2.0 GHz
RAM	4 GB -DDR2 SDRAM (400MHz)
HDD	Min 500 GB SATA Hard Disk . Hard disk Capacity should be upgradable
Networking	Dual-port Gigabit Ethernet Controller inbuilt
	Support Add on Network adapters
	Support Optical Fiber interface
Accessories	DVD-ROM, Floppy, Keyboard, mouse with 2-buttons + wheel/button
Remote Management	Serial Over LAN (SOL)
	* LAN Alert-SNMP Trap
	* Event Log
	* OS Independent
	* Hardware Health Monitor
	* Remote Power Control
Monitoring	CPU, Hot plug FAN, Temperature and Chassis intrusion detection and alarm
OS	Supports 64-bit Operating Systems Windows 7
Power Supply	Redundant AC-DC high-efficiency power supply w/i PFC
Chassis	Single or multiple 19” industrial Rack mount movable
Drive Bays	Minimum 6 x 3.5" Hot-swap SATA Drive Bays
Operating conditions	Operating Temperature: 10° to 35°C (50° to 95°F)
	Non-operating Temperature: -40° to 70°C (-40° to 158°F)
	Operating Relative Humidity: 8% to 90% (non-condensing)
	Non-operating Relative Humidity: 5 to 95% (non-condensing) * Humidity: 10 – 90% non-condensing
Output	2 DVI outputs to be provided
Resolution output support	1920x1200 per output minimum
Input cards	One
Inputs to be provided	One Universal i/P & 4 Video i/P
Input format	Should Support NTSC, PAL, SECAM standards
DVI/RGB Inputs	1 Universal Inputs to be provided(RGB, DVI & Component to be suppported)
Ethernet Port - Dual	1 Gbits

Redundant & Hot Swappable	Power Supply
Redundant & Hot Swappable	Fans
Redundant & Hot Swappable	Hard Disk Drive with RAID 0,1,5 and 10 support
Wall Management Software	
	The software shall be able pre configure various display layouts and access them at any time with a simple mouse click or based on the timer.
	The software shall copy the screen content of the WIN XP PC / workstation connected on the Ethernet with the Display Controller to be shown on the Display wall in scalable and moveable windows in real time environment.
	The wall management software shall allow the Multiple concurrent client users
	Selected inputs and presence of sources on either input
	The wall management software shall supports multiple view of portions or regions of Desktop, Multiple Application Can view from single desktop simultaneously

9. Annexure 4. Specification of Data center Infrastructure

Only the following aspects of the data centre will be in the scope of the work of the bidder.

9.1 Fire Detection And Suppression

In order to minimize fire damages to computer equipment, the equipment and furniture used inside Data center should, as far as possible, be made of non-combustible material or at least having minimal fire propagation or smoke generating properties.

All the areas of the Data center and battery room shall have *fire detection system which shall be as per NFPA72 standard* ,ll the detectors shall be connected to an Analog Addressable Fire Alarm Panel, which indicates the exact address of the Detector on Fire. In case of Fire the alarm needs to be generated at the local site .

9.2 Detecting Device and System

Detector

The detection and control system shall employ multi-sensor detectors which are a combination of photoelectric and heat detectors. The detectors shall be located in the data center and UPS room. The detectors shall be strategically located in the false floor and above and below the false ceiling.

Detecting System

Analogue addressable fire alarm system comprises of

- Multi sensor Detectors.
- Manual Call Points
- Manual Abort
- Manual Release Station
- Isolator Modules
- Relay Output Device (Control Modules)
- Hooter: output 86-90dBA. Additional set hooter to be installed in the Systems Dept.

9.3 Fire Suppression System

Fire Protection system using fire suppression agent FM200 gas conforming to NFPA 2001 "Standard on Clean Agent Fire Extinguishing Systems" shall be provided with automatic and manual gas release mode. The gas release panel will be interfaced through control modules to the Analog Fire Alarm System.

The FM 200 gas cylinders should be CCOE approved.

FM200 gas based suppression is considered for the Server .

- The bidder shall enclose their design sheet along with the offer and the offer/BOQ should be in line with their design.
- All materials and equipment shall be from approved manufacturers and shall be suitable for the performance of their respective functions.
- The cylinders should be complete with all accessories. The contractor shall indicate the dimensions of the cylinders required for each area while quoting. The FM 200 cylinders will be located in the protection area adjacent to the Data center.
- Nozzle shall control the flow of FM 200 to ensure high velocity, proper mixing in the surrounding air and uniform distribution of the agent throughout the enclosure. The number of nozzles and their positions must be chosen so that the design concentration is maintained everywhere in the enclosure. Nozzle shall be located where they can be adequately supported on walls, ceiling or structural members.
- In case of any leakage or accidental discharge of the agent, it should be possible to refill the cylinders in India itself. The bidder should indicate the source of refilling and time that will be taken for refilling and replacement.
- The scope of work involves supply, installation, testing and commissioning of FM200 based Fire Suppression system for Data center.
- *- For the battery room/UPS room FM 200/NAF based fire extinguishers to be considered .*

9.4 Access Control

The Access Control System shall be used to serve the objective of allowing entry and exit to and from the premises/ restricted areas within the facility to authorized personnel only. The system employed shall be based on Biometric Technology for the Server Rack area, and Proximity technology for Backup area. Proximity Card Readers shall be used for entry and exit control at each door. The readers at each door shall be connected to Door Controller dedicated to that door. The components of the system are as follows:

- Network Server
- Card issue terminal – PC
- Application software
- Controller
- Proximity card reader
- Finger print reader
- Proximity card
- Cables

The scope of work involves supply, installation, testing and commissioning of Access Control system for Data center with requisite GUI software, PC and database for monitoring the entry/exit by authorized persons. *The main entrance door shall have fingerprint verification unit with proximity card for 50 persons. Other doors to have proximity card based access system for 200 or more number persons*

9.5 Closed Circuit Television (CCTV) System – *IP Based*

- Closed Circuit Television (CCTV) System shall be provided for surveillance and record for post event analysis. The cameras will conform to the specifications of the fixed and PTZ cameras mentioned in Annexure 1.
- The CCTV cameras shall be located in Data center, entry passage and battery room. It will be connected to the storage system of the main surveillance system and the Central video management system for storage and management.
- The output of the cameras shall be viewable on the video wall and the operator console.
- *Four (4) Fixed cameras will be employed.*

ANNEXURE 5

PCR VAN technical Specifications

Description

The PCR vans are proposed to be equipped with CCTv cameras.

Each will have 3 cameras mounted on a suitable frame . Each one of those cameras will have a 120 degree coverage totaling 360 degrees coverage around the van . The vans will go to the TOWN POLICE STATAIONonce everyday where the Digital Video Recorders will download the recorded contents into the central storage system at the command and control centre by using high speed LAN connections which shall be created at the parking area of the TOWN POLICE STATAIONbuilding

Camera Specifications

Colour Analog Camera specifications

Sl. No.	System Description	Specified value	Comply Yes / No
1.	Vari-focal lens	2.9mm - 9 mm or better	

		(wider range on both limits acceptable)	
2	View Angle	As appropriate	
3	Usable Illumination	0 Lux (IR LED ON)	
4	Horizontal Resolution:	600 TVL or better	
5	Power supply	12 v DC	
6	Signal System	PAL	
7	IR Range	10 mtrs minimum	
8	Housing	IP66 / IP 67 , vandal resistant	
9	Effective Pixels (Both figures Minimum acceptable for PAL system)	720(H) 480 (V)	
10	Sensor	1/3 " inch	

Mobile Vehicle surveillance system with NVR for vehicle

Features	Description	Compliance (Yes/No)
Typical Video Storage Rate (Mbps)	Minimum 250Mbps(Windows), 300Mbps (Linux)	
Local Client Display Rate (FPS)	450/750 (Windows, Standard/Optional CPU) 300/500 (Linux, Standard/ Optional CPU)	
Storage	8TB	
Monitor Output	1 DVI-I, 1 DVI-D, 1 Display Port,	
Operating System	WINDOWS 8 64bit/Windows 2008 R2/ Linux	
Operating System	500GB HDD&64 GBSSD	
Processor	Gen 3 Intel®i3 (16 Camera), Intel® Corei5(32 Camera)	
RAM	Minimum4 GB	
NIC	Minimum2	
USB Ports	minimum8 USB2.0 /USB3.0,	
DVD/CD RW	Standard	
Keyboard &Mouse	Standard	
Power Supplies	As these device will be installed in Mobile Vehcles, It should be customized to be powered from the Vehicle batteries or using	
Operating	Should be supported up to 50 °C	

Cabling specification

- The cabling should be ISI certified
- It should be single cable with multi core to carry Power and Video signal

U Channel Specifications

- It should be U shaped MS channel
- The channel should be powder coated
- The U Channel should be fixed by using rivets

10" LCD Monitor-1No

- Should be ceiling mountable
- Should be min 10inch LCD screen
- It should be foldable when not in use
- Required video input connectors should be available

Power supply

- Should provide Battery of required AH to match with the Vehicle's battery - 1No
- Should provide necessary convertor to charge the battery when vehicle is moving
- Should provide power supply to the DVR ,camera and the Monitor

ANNEXURE 6 - Important points to note

1. It is not the intention of the buyer to opt for any proprietary technologies. In case some specifications or functionalities are considered as proprietary then the bidder may specify the same and include an equivalent in its offer. However it must substantiate its claim during the technical evaluation to the evaluation committee and the decision of the committee will be final on the subject.
2. The specifications given are the minimum required. Bidders may provide solutions with better specifications.
3. Minor deviations from the threshold values of non critical parameters mentioned in the specifications may be considered for acceptance by the evaluation committee at its discretion.
4. There is no existing Dial 100 system or CCTV system in Puri and so no integration with any such existing system is required.
5. The wireless connectivity will be on free-to-use band or public band but the wireless system supplied should be capable of running on license band if the need arises in future. Please specify the license band on which it can operate.
6. **Please submit a write up on the licensing policy** for the software and hardware offered by you in the Technical bid. The write up must clearly specify the situation in which a license is required , cost of each unit of the license, in which situation additional licenses will be required for each type of license, the duration for which the license is valid, the requirement for renewal of the licenses and periodicity of renewal. It must also clearly define the implication on the licenses if any hardware such as cameras are added to the network from a manufacturer other than the one offered by the bidder , either as replacement to the existing cameras or as additional cameras. The duration of the project is to be taken as 7 years and the system must be capable of handling up to 1000 cameras.
7. **Servers** : All the servers mentioned in the RFP Volume I which will be used in the command and control centre and data centre will be created using VM Ware from the primary servers whose specifications are given under the headings of **Primary Servers** in **Point 2** of **Annexure III RFP volume I** . There will be 4 such servers as mentioned in the BOQ and all the main and failover servers will be created from them.
8. **Softwares to be used in VMWare environment**: All software that is to be installed in the Data Centre must be capable of being used in a VMWare environment. This includes software for Dial 100, ANPR, Storage, NMS, VMS and all others that are to be used in the Command and Control Centre at the Town Police Station.

9. All cameras, VMS, analytics software and allied hardware & software must be ONVIF II compliant to ensure that they can be replaced by another similarly compliant product from any source.

10. All deviations from the circulated technical and operational specifications must be clearly mentioned in the relevant column of the technical bid. If there is no mention of any deviation against a specification it will be considered as being compliant to that requirement. In its own interest the bidder should highlight wherever the offered hardware or software is better than the specified one as it will be a considered positively during evaluation.

11. The compliance statements must specify the data sheet which supports that claim. The page number of the bid where the data sheet is located must be clearly mentioned against the specified parameter, feature or which meets a specified functional requirement.

12. All the analytics capability offered by the system must be possible on the server side by the VMS. Edge analytics capabilities may not be considered as valid for evaluation.

13. The cameras are expected to be record @ 15 frames per second (FPS) and at least 720p resolution.

14. Since the temperature in the area of proposed deployment never goes below Zero degree please read as Zero the lower range of operating temperature for all purposes wherever they are mentioned as below Zero. The upper temperature range for all items should be considered as 50 degree Celsius wherever they are to be deployed in a non –air-conditioned environment.

15. Ability to write the SOP in Oriya Language will be preferred but is not an essential requirement.

16. The shapes mentioned for specific locations in the GIS map are suggested ones and can be modified at the time of execution.

17. The Dial 100 system will work in conjunction with the CCTV command and control system. The operators will be the same for both the purposes. All the ten operator consoles in the Command and Control Centre will function as call taker and dispatcher.

18. The licenses for devices including those for analytics and camera management must not be tied to the MAC id of the device. The user must have the freedom to use the license for any device in the network and even for those which will be added to the network in future.

19. The Police at Puri is using the following Radios . All of them operate on 158.8 MHz
    - GM 338 AND gm 950 + of Motorola.
    - TK 716, 760 G and TK 2170 manpack from Kenwood