

GOVERNMENT OF INDIA
(Ministry of Home Affairs)
DIRECTORATE GENERAL
CENTRAL RESERVE POLICE FORCE
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No. B.V-7/2018-19-C (QRS)

Dated, the 11th Dec'2018

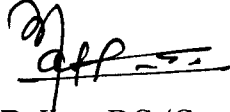
To

DIG (Comn), NSG
Meharam Nagar
Palam, New Delhi-37

Subject: Regarding QRs/TDs of "Command & Control Centre (Mobile) Vehicle based".

Please find enclosed here with QRs and TDs in respect of "Command & Control Centre (Mobile) Vehicle based" as per Annexure-A & Annexure-B respectively duly approved by the competent authority for further necessary action.

Encl: (QRs & TDs of Command & Control Centre (Mobile) Vehicle based).










{P.R.Jha, DC (Comn)}
For DIGP (Equipment)
Directorate General, CRPF

**QUALITATIVE REQUIREMENTS (QR's) FOR COMMAND & CONTROL CENTRE (MOBILE)
VEHICLE BASED**

1. **Command Control Centre.** NSG intends to procure Command & Control Centre (Mobile) based for NSG, which enables the field operatives to rapidly deploy the various communication and surveillance sensors in the area of operations. All the data from these field deployed sensors will be received in this Command & control centre for NSG, where senior officers and operatives will monitor the same and take appropriate decisions on the field itself. Apart from this, the centre shall provide an Integrated Communication System to conference various Wireless Radio, GSM, VoIP & Satellite telephony, this enables even the HQ NSG to get involved in the decision making and enables the coordination between various agencies involved in the operations. The list of equipment to make the centre functioning as per the requirement of NSG are detailed in this document. Due to the nature of Ops the command and control centre for NSG needs to be provide mobility.

2. **Information Required.** OEMs/Vendors are required to respond to the following details and indicate which may/may not be essential requirement of Command & Control Centre (Mobile) vehicle based (as per questionnaire below) :-


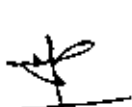

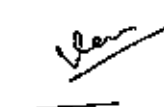


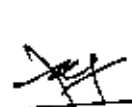

Sl. No.		Specification
(a)	Chassis	Wheel Base: 2650- 3150 mm, 4- wheel drive Kerb Weight (GVW): minimum 1990 Kg and max 6000 Kg Right-hand Drive required Power Steering required Fuel Tank Capacity: Minimum 60 Ltrs Ground Clearance : minimum 200mm
(b)	Engine	Engine Power: 75@3000 RPM or higher Engine Load : The engine shall power the AC only when the vehicle moving. The engine will not be used to power any equipment in the vehicle. When the Vehicle is stationary, the AC will be powered by the generator.
(c)	Body	Overall Length : 4655- 5548 mm. Overall Height : 1833- 2725 mm Overall Width : 1860-2100 mm.
(d)	Interiors	The body of the vehicle will consist of 2 partitioned internal sections: Driver-Cum-Crew Cabin, Operator Section.
(e)		There shall be two doors in the driver-cum-crew cabin.
(f)		The crew cabin shall accommodate and have seating for the driver of the vehicle and 1 crew members.
(g)		The cabin shall be air-conditioned.
(h)		The console in driver's cabin shall also feature a GPS-based tracking system and a GPS-based navigation system.

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(j)	Standard vehicle fitments like rear-view mirrors (2 nos.), wipers, etc. shall form part of the Driver's Cabin.
(k)	Bumpers should be full-length front and rear bumpers.
(l)	The vehicle battery should be below the vehicle's floor, with proper stowing space.
(m)	The vehicle shall be equipped with Beacon light fitted with powerful hooter.
(n)	The Front windshield of driver's cabin shall feature 5.5 mm. thick laminated glass, of single piece construction.
(o)	There shall be storage space to stow the vehicle's tool-kit and miscellaneous items.
(p)	Exterior lighting shall consist of halogen headlights, parking lights, hazard warning lights, license plate lights, tail, stop, and backup lights. Tail and stoplights shall have red, clear, and amber lenses. Electrical wires for the taillights shall be sealed to protect them from the elements of weather.
(q)	The vehicle body will have Three (3) Lights installed on the roof line. In addition two (2) lights will be mounted on the front of the vehicle.
(r)	A set of rear mud flaps shall be installed on the rearward side of each wheel well.
(s)	A medical-kit and fire extinguisher shall be provided.
(t)	Ground clearance of the vehicle should be 200mm.
(u)	Music system with Wi Fi/ blue tooth with Aux input facility.
(v)	Comfortable siting for the driver, commander and operator when the vehicle is moving with entire equipment.
(w)	Closed waterproof Rack on the upper side of the veh for housing equipment/tools while on the move (e.g Thule Rack).
(x)	Ladder shall be provided for setting the antennas/loading eqpt in the rack.
(y)	Side bumper with foot rest shall be provided to protect the veh
(z)	Entry and exit from the vehicle should not be cumbersome.
(aa)	Adequate no of Power socket shall be provided for charging the eqpt.
(ab)	Additional and appropriate lights inside the vehicle and roof top rack.
(ac)	MFD device shall be provided inside the veh.
(ad)	Rack with shock & vibration mounts for IT equipments.


3 (a) The major parts of the system are as under:-

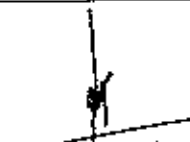
(i)	Roof top fixtures. The roof top of the vehicle shall be strong enough to hold a 01 x VSAT antenna/Docking antenna, 01 x DTH antenna, 03 x UHF antenna, 01 x DSPT antenna/Docking unit/Vehicular antenna, 01 x lightning arrestor and 04 x svt receiver antennas. Water proof storage box is required to keep the eqpt and assy while on move. (eg Thule Rack).
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(ii)	Integrated Comn System. Qty 01 x portable ICS is required per vehicle and should be able to interoperate ISDN, PSTN, Satellite Terminal, UHF, VHF, GSM, Mesh Radios and other comn eqpt available at the time of implementation with minimal deployment time and configuration. Should be able to operated by Ruggedized Wrist computer.
(iii)	Ruggedized Wrist Computer. Qty 01 x Ruggedized Wrist Computer is required per veh for operator to operate ICS and other comn eqpt and also providing complete freedom to continue with other operator tasks. The eqpt should be rugged and ultra-light weight wrist computer. It should have integrated options like GPS, camera etc. It should operate for approx 4 hours without Bty backup.
(iv)	Rugged laptop. Qty 01 x Rugged Laptop is required per vehicle for video conferencing/ streaming and will be operated by the control centre operatives in the operative section. The laptop will be connected with LAN.
(v)	VSAT Compatibility. Integration of VSAT system provided by NSG for both voice & data as and when provided by NSG.
(vi)	Satellite DTH Antenna. Qty 01 x Satellite DTH antenna is required per vehicle to view/monitor news channels and shall be sleek and vehicle roof mounted. The DTH channels should be viewable within the vehicle while on move or when the vehicle is stationary.
(vii)	Cabling Sub System. The cabling structure should have built in cable trays for fool-proof cabling arrangement. Concealed ducting needs to be provided in the vehicle body for electrical and network cabling separately.
(viii)	LED TV. Qty one ceiling mountable LED TV screen required per vehicle for viewing/monitor surveillance feed coming from Ops location during operation. High definition resolution (1920 x1080) LED monitor preferable.
(ix)	Wi-Fi Router with 3G Modem. Qty 01 x Wi-Fi Router with 3G Modem is required per vehicle for broadband and Wi-Fi connectivity.
(x)	Tablet PC with retina display. Qty 01 x Tablet PC with retina display is required per vehicle which works as wireless PC due to its light weight and portability and can be used frequently outside of the vehicle to monitor the svt feed through Wi-Fi.
(xi)	LAN Extender. Qty 01 x LAN Extender is required per vehicle to extend data or to receive data where distance of source is more than 100 Meters.
(xii)	Multi Functional Device (MFD). There is a requirement of 01 x Multi functional device per vehicle (ie printer, scanner, photocopier and Fax) to send/receive messages/data, Fax at the place of incident.
(xiii)	Power Sub System. The electrical sub sys in the vehicle shall allow power to be drawn from the generator or shall allow raw power based on availability to minimize use of the gen set. 01 x Portable Petrol gen set 7 KVA, 01 x UPS 5KVA with 1hr power backup are required in this sub sys.
(xiv)	Svt Eqpt. As per tasking there is a requirement to provide 01 x svt cover (ie Surveillance Sensor Integration, Video Encoders, Network switch, NVMS, DVR, Network Attached Storage and Video Management Server) per vehicle for integrating existing svt sensors for real time display of svt feeds to the Task Force Cdr for operational assessment.



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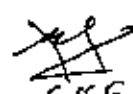

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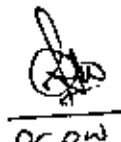

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(xv)	Car Navigation System. Minimum 7 inch interactive car navigation system. Should sync with the mobile and seamlessly make and receive calls. Should have option for rear view camera input option.
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4.

Roof-top Fixtures.


(a)	The roof-top of the vehicle shall be strong enough to hold a VSAT antenna/Docking antenna, a DTH antennas, UHF/VHF antenna, a DSPT antenna and a lightning arrestor.	
(b)	Adequate structural support and gaskets with framing will be given for installation of antennas and pneumatic masts on the roof and on the side walls.	
(c)	Access to the roof should be through fixed/folding steps from back.	
(d)	The vehicle should be mounted with one flood light each on the four sides giving visibility up to 15-20 meters.	
(e)	VSAT Antenna	There shall be a provision to house VSAT antenna and associated accessories provided by NSG. The antenna should be quickly deployable to make the link operational in a time not exceeding 10 minutes (when mode available). Integration to be done as and when VSAT terminal provided by NSG.
(f)	DTH Antenna	A mobile DTH antenna shall be supplied and fitted on the roof of the vehicle, at an appropriate location that does not impede the functioning of the video surveillance camera, VSAT antenna and the UHF/VHF antenna. The antenna will be capable of DTH transmission when the vehicle is on the move, through support for auto-tracking.
(g)	DSPT Antenna/Docking Unit/Docking Antenna/ Vehicular Antenna	Provision to mount one DSPT Antenna/Docking Unit/Docking Antenna/ Vehicular Antenna on the roof of the vehicle, at an appropriate location that does not impede the functioning of the video surveillance cameras, the DTH antenna, and the VHF/UHF antenna.
(h)	Lightening Arrestor	A lightning arrestor should be provided on top of the vehicle for protecting and equipment/personnel from lightning hazards. This lightning arrestor will be connected to the ground vide an earthing cable (minimum 20 metre length) attached to a good quality iron peg of minimum 40 mm. diameter and 500 mm. long.
(j)	UHF/VHF Antennas	The VHF/UHF antenna will be mounted on the roof, in the centre of the vehicle, and positioned at the centre of the breadth of the vehicle.
(k)	Mast	The roof-top masts shall be pneumatic with auto-control. In case of a non-functioning of the pneumatic system, the mast shall be deployed manually. The 4-metre mast will have a nested height not exceeding 1.5 metres and will support a payload of not less than 15 kgs. The mast shall be constructed of an aluminum alloy with a hard anodized surface coating treatment.


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5. Integrated Communication System.

(a)	<u>Portable Integrated Communication System (ICS)/ Portable Integrated Tactical Voice Communication System</u>
	<u>(i) Portable ICS – Interfaces</u>
(aa)	Interface for 3 x Digital UHF Radio Set 25W.
(ab)	Interface for 2 x Digital UHF Radio Set 5W.
(ac)	Interface for 1 HF Radio with Whip & Broadband Antenna
(ad)	Interface for 1 Wireless Mesh Radio.
(ae)	Interface for 1 VHF Radio.
(af)	2 Qty of GSM Mobile Interface.
(ag)	1 Qty of Analog PSTN Phone.
(ah)	1 Qty of Interface for satl telephone provided by NSG.
(aj)	1 Qty E1/PRI.
(ak)	2 port minimum FXO/FXS extends up to 200 Mtrs
(al)	Ethernet for VOIP.
(am)	ICS should have a operator console.
(an)	2 Qty headset and Mike for Cdr
	<u>(ii) Portable Integrated Tactical Data Communication System</u>
(aa)	Interface for rugged laptops with in-vehicle LAN over wired Ethernet
(ab)	Interface for rugged laptops and wrist computers with Wireless Mesh Radio.
	<u>(iii) Portable ICS – Basic Features</u>
(aa)	The system shall be portable and shall be able to interoperate ISDN, PSTN, Satellite Terminal, VHF, UHF, HF, Mesh Radios, GSM & VoIP voice technologies from any OEM or service provider with minimal deployment time and configuration. The seizure of ICS gateways (PSTN line, GSM, UHF, UHF, HF etc) should be possible from any operator radio in the network.
(ab)	The system proposed shall be 100% redundant in all its components.
(ac)	The system shall be based on a technologically OPEN platform, which is modular and expandable and has subsystems that interact and are 100% compatible, in order to completely guarantee the required resources.
	<u>(iv) Portable ICS : Radio Over IP Gateway</u>
(aa)	Transports voice (3-wire unbalanced or 4-wire balanced), I/O (PTT & COR) and Data (RS-232) for upto two radio circuits.
(ab)	Handles Tone Remote Control (TRC) and Local/E&M radio circuits
(ac)	Remote PTT operation controlled by VOX or COR.
(ad)	Use of TCP and Unicast UDP allows operation over standard IP networks.
(ae)	Compatible with many IP-based RTP voice recorders
(af)	Field-selectable voice compression includes PCM (64kbps), ADPCM (16-32 kbps), and GSM (13 kbps).
(ag)	Fully configurable via web browser, including all audio levels.



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(ah)	Embedded operating system, and no moving parts. Designed for harsh, unattended radio site environments.
(aj)	Size : Man portable and 19" or less .
(ak)	Operates from 12 Volts DC.
(al)	Vocoder Support: G.711 (64 kbps), G.726 (32-24-16 kbps) & GSM (13 kbps).
(v)	<u>Portable ICS – Communication System</u>
(aa)	The proposed communications subsystem shall be highly reliable (redundant), portable. It shall have a communications History and Statistics event viewer that shall allow its analysis as well as an analysis of system behavior in order to better monitor service quality.
(ab)	The system shall allow the system to be managed remotely through a standard protocol to manage equipment such as SNMP. All equipment shall permit real-time monitoring using commercial tools that follow this protocol, allow systematic or occasional errors.
(ac)	System shall be composed of a group of Switching Matrix elements (also called communications Gateway), with greater than 99.99% reliability.
(ad)	It shall have a user maintenance and error message interface. All subsystem component operation, service and maintenance manuals shall be provided.
(vi)	<u>Portable ICS- Technology</u>
(aa)	The system shall support Linux and Windows Server operating systems (for servers) and Windows XP, Windows 7 or better.
(ab)	All signaling traffic over different audio resources shall take place using VoIP and SIP standards, including the radio-type resources and signaling required for conferencing.
(ac)	The system shall have redundant components (RAID, power supply).
(ad)	The system shall be capable of receiving remote maintenance.
(ae)	System elements shall be interchangeable without interruption in system function.
(af)	The system shall allow the management of one or another type of resource depending on needs.
(ag)	Various Links between system elements shall be via VoIP.
(ah)	The implementation of this subsystem shall fully guarantee the scalability of the solutions in all aspects allowing expansion, both in number of lines and in number of resources.
(aj)	Integration of ISDN-PRI/BRI, Analog trunks, GSM, Wireless Mesh Radio, Analog Trunking, Intercom, Public Address and VoIP.
(ak)	System shall have following call facilities: Call Monitoring (listening to operators), Call Intrusion, multi conferencing, shared listening and transfer.
(al)	System shall be capable of integrating all the aforementioned resources, even when they belong to different technologies, regardless of whether they are half-duplex and/or full-duplex resources.
(am)	All system elements shall connect over the IP network.
(an)	The remote maintenance of the subsystem over the IP network (connectivity shall be supplied from the exterior).
(ao)	The subsystem to be offered shall fully guarantee the scalability and modularity of all the resource's solutions, allowing for expansion, both in number of lines and in number of operators.


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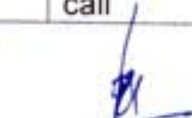

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(ap)	There shall be a recording system that records the operator's last conversations and allows access to these recordings using a simple select and playback interface. This information shall be stored in the system's hard drive and shall allow an operator to recover a conversation he has just had with a caller immediately, without having to access a recording search system.
(aq)	The bidder shall certify in writing his ability to adapt the hardware and firmware of the Radio Gateways, thus guaranteeing adaptability to the NSG's future requirements and the control necessary to resolve issues.
(ar)	Proposed Radio Gateways shall have local redundancy, in hot standby configuration, so that both manual and automatic switching from one Gateway to another is possible.
(vii)	<u>Portable ICS - Communication Module Resources/ Interfaces.</u>
(aa)	The subsystem to be offered shall include the following resources / interfaces:
(ab)	Basic analog lines (Lines without limit for incoming and outgoing calls).
(ac)	Standard Wireless Base Radio (VHF/UHF/HF) channels & Mesh radios. System shall allow listening and transmission by them and shall show each channel's signaling (busy channel, in use, etc.)
(ad)	It shall have GSM Modem Interface where any local service provider's SIM interface can be inserted.
(ae)	Should have E1/PRI Interface
(af)	Should provide interface for FXO/FXS.
(ag)	Should support VoIP calls these should provide Ethernet interface
(ah)	Should support interface for DSPT (Satellite Telephony)
(viii)	<u>Portable ICS - Communication Module functionalities/ Portable ICS - Tactical Communication Module functionality for voice communication</u>
(aa)	The subsystem to be proposed shall have the following functionalities:
(ab)	Make / Take call.
(ac)	Hold / Recover call.
(ad)	Hang up or terminate the call.
(ae)	Redial.
(af)	Shared listening with an operator. An operator shall be able to request the help of another operator or personal, so that the latter may listen to the conversation destination and at the same time listen and talk with the original operator to provide him/her with information.
(ag)	Incoming Calls: System shall provide Audio and visual indication of incoming calls. The caller's number shall be shown on the line (if the network sends the information) along with the time the caller has been waiting to be attended.
(ah)	Outgoing calls: Any line shall be used to call as long as the user has authorization to use it and the line is free.
(aj)	Call Hold: Shall be automatic (when the operator presses on another resource), or may be activated by pressing the hold button.
(ak)	Call Recovery: To recover a call on hold, the operator shall only have to press on the line.
(al)	Call Transfer to another operator. It shall be possible to transfer any call


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		to another operator, if available. The call transferred shall be shown to its new owner as a transferred call, and a tone shall advise him that a new call has arrived.
	(am)	Call Transfer with another line. A call shall be able to be transferred to another active (talking) voice channel.
	(an)	Call Transfer with radio. It shall be possible to transfer any (GSM or Analog PSTN) call on hold to a half-duplex type (VHF/UHF/HF) resource. In this case, radio transmission and reception shall take place automatically through voice activity.
	(ix)	<u>Portable ICS - Tactical Communication Module functionality for data communication</u>
	(aa)	The offered solution should support communication between all the rugged and wrist computers via the wired and wireless networks as required in this document via IP-based protocols.
	(ab)	The offered solution should have a provision to communicate via a variety of standard local wireless networks (Wireless LAN, cellular, tactical radio, etc.).
	(ac)	The field operatives should have a provision to communicate via a variety of commercial or dedicated wide area networks.
	(ad)	The offered solution should be able to integrate into any IP-based communication according to the specific deployment requirements like-LAN/WAN, Wi Fi, Tactical Radio, Microwave Links, Commercial Satellite Links, Dedicated satellite links, WiMAX and Cellular Networks.
	(ae)	The offered solution should maintain an ad-hoc mesh of the data communication nodes. Each mobile unit should try to establish connections with as many other units as possible in order to achieve the maximal flexibility for the information interchange paths
	(af)	The offered software solution should interface and abstract a number of communication devices of different technologies.
	(ag)	The offered solution should maintain addressing services of nodes with multiple identities (different identities in different networks).
	(ah)	The offered solution should automatically select the best communication channel (network) to use, per addressee.
	(aj)	The offered solution should acknowledge-and-retry mechanisms, which turns unreliable communication into reliable one.
	(ak)	The offered solution should provision automatic relay of information by a 3rd party unit – inside the network or between the networks.
	(al)	The offered solution should compress data when applicable for best utilization of the limited bandwidth. Imposing data security for the transmitted information.


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(am)	The offered solution should provide end-to-end encryption of the transferred information using commercial or proprietary mechanisms. The encryption for communication should be based on the AES 128/192/256 standard.
(x)	<u>Portable ICS : Graphical User Interface (GUI) for Telephony.</u>
(aa)	System shall graphically show all the active voice channels / lines through an Icon with information on the number of the incoming and outgoing calls.
(ab)	The subsystem shall allow the simultaneous management of multiple communication systems based on different and mutually incompatible technologies, from a unique graphic user interface.
(ac)	This graphic interface shall be designed from its conception to be used from a touch screen. It should also have the capability to be used with a keyboard and mouse from a conventional screen.
(ad)	The design shall be ergonomic and intuitive.
(ae)	The interface shall be based on icons, symbols, avoiding text as much as possible (no language).
(af)	The icons shall be reorganized, shown/hidden, or their size changed at the discretion of the user.
(ag)	The interface shall be personalized to different degrees to show/hide toolbars, change their location or change their functionality.
(ah)	It shall allow the use of advanced functions, such as drop & drag, to perform complex actions (conferences, transfers).
(aj)	Operators shall thus be allowed to manage telephone and radio communications or other existing systems, such as public address, intercom and message/data transmission, etc. seamlessly.
(ak)	Hierarchical directory with the possibility of showing an identifying photo/icon, as well as assigning various numbers to each entry.
(al)	Each channel / line shall have different colors to represent its following status:
(am)	Out of order.
(an)	Free (idle).
(ao)	Dialing.
(ap)	Talking.
(aq)	On hold.
(ar)	Being used by another operator.
(as)	On an Incoming call, the color of the icon shall change along with an acoustic tone. If a predetermined time passes, the color shall change.
(xi)	<u>Portable ICS : Graphical User Interface (GUI) for Radio</u>
(aa)	The GUI for Radios shall display following information:
(ab)	(a) Transmission (PTT).
(ac)	(b) Remaining transmission time (if configured for that purpose)
(ad)	(c) Detection of selective calls through tones or sub audio (for radios with serial port control).
(ae)	(d) Indication of the channel/group (for radios with serial port control or similar).


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(af)	(e) Scanner active channel indication: (For radios with serial port control or similar).
(ag)	(f) Group transmission: It shall be possible to select various radio for simultaneous transmission and reception by various channels.
(ah)	(g) Shows the status of radios integrated with the system by colors:
(aj)	- Out of order.
(ak)	- Free (idle).
(al)	- Dialing (private calls).
(am)	- Talking.
(an)	- On hold.
(ao)	- Being used by another operator.
(ap)	- Incoming call (private calls). This color shall go along with an acoustic tone. If a predetermined time elapses, the color shall change.
(xii)	<u>Portable ICS : Call Conference Features</u>
(aa)	System shall be able to monitor outside conversations.
(ab)	System shall support Intrusion in outside call.
(ac)	System shall be able to create various conference groups.
(ad)	System shall be able to have a Broadcast conference (multiplexing).
(ae)	System shall be able to have conference between any type of resource / interface.
(xiii)	<u>Portable ICS : Recording</u>
(aa)	A recording system shall exist that records the operator's last conversations and allows access to these recordings using a simple select and playback interface.
(ab)	This information shall be stored in the system's hard drive and shall allow an operator to recover a conversation he has just had with a caller immediately, without having to access a recording search system.
(ac)	It shall be possible to configure the maximum number of conversations that this recorder will save. When this number is reached, the oldest shall be deleted.
(ad)	The operator shall be able to block the recording to remove it from the sequential deletion queue. The operator shall be able to unblock it at any time.
(xiv)	<u>Portable ICS : Audio transducers.</u>
(aa)	The system shall allow one or several transducers to be assigned for the operator.
(ab)	A transducer may be a headset, a microphone with PTT button, auto amplified speakers, or a handset with PTT button, all with USB.
(ac)	The operator shall be able to establish as many simultaneous conversations (with transmission and reception audio) as there are transducers.
(ad)	The operator shall have no limit as to the number of calls he or she may attend and put on hold.
(ae)	The operator shall have as many active conversations as (s) he has resources / interfaces assigned.
(af)	The operator shall be able to dynamically assign the transducer to be used to attend a call.



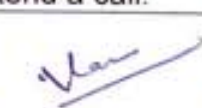
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(ag)	The system shall allow a transducer to be assigned by default to attend a call depending on the resource or type of resource.
(ah)	The operator shall be able to change the transducers' reception volume.
(xv) <u>Portable ICS : system Configuration.</u>	
(aa)	It shall possess a tool with the suitable graphic interface that allows resource management (audio lines connected to the system), users (operators, dispatchers and administrators), telephone directory and maintenance functions.
(ab)	This tool shall have a web interface.
(xvi) <u>Portable ICS : Third Party Integration.</u>	
(aa)	The systems shall allow integration with third-party applications.
(xvii) <u>Portable ICS- History Statistic</u>	
(aa)	It shall have a tool that allows statistical reports on the control center to be generated on the activities of resources and operators over time.
(ab)	This tool shall have a web interface.
(xviii)	Inbuilt dir for dialing of nos/ Phone Book.

6. **Ruggedized Wrist Computer.** It should be rugged and ultra lightweight wrist computer. It should have integrated options like GPS, camera etc. it should operate for approximately 4 hours without battery backup.

Ser No	Parameter	Specifications
(a)	Features	
	Overview	IP65 certified – Dust and Water resistant Design. Light weight <500g including the battery and excluding the wrist band. 4G LTE multi carrier mobile broadband with satellite GPS. 4 Inch-5 Inch display WXGA 1280 x 800 with LED backlighting. Should have facility to operate and control the function of Integrated Communication System (ICS) ie should function as a wireless console . Li-Ion battery 7.2v typical 7100mAh, minimum 6800mAh Password Security Super visor, User Hard Disk Lock. Should be remotely able to wipe the memory on the device (Online mode only) Alert user with sound and /or vibration Wrist computer only boots with relevant application and limited functionality to prevent cognitive overload on operator.
(b)	System Configuration	
	OS	Windows 8.1 pro 64 bit (window 7 downgrade option) or higher
	CPU Performance	2.3GHz or better with 3 MB cache or more

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	Storage	8GB SDRAM (DDR3L-1333 MHz) Up to 64GB with optional micro SDXC card 128GB and 256GB solid state drives (SSD) with heaters Wi-Fi Bluetooth and Optional Dedicated GPS Mil-STD 810 certified
(c)	Warranty	Should have minimum 3 years warranty along with Antivirus for three yrs.

7. **Rugged Laptop** The rugged laptop will be operated by the control centre operatives in the operator/ section. The laptop will be connected to the in-vehicle LAN over wired Ethernet.

Ser No.	Specifications
(a)	Windows 7 Professional or higher
(b)	14" (1366 * 768) HD Type (TFT)
(c)	Intel Core i5-2520M processor or better
(d)	4 GB DDR3 SDRAM memory or better
(e)	Video graphics card with dedicated 512 MB VRAM or more
(f)	500 GB HDD or better
(g)	DVD-RW drive
(h)	IEEE 802.11n, Gigabit Ethernet, Bluetooth
(j)	87-key backlit keyboard
(k)	10-hour battery life or better
(l)	MIL-STD 810 certified
(m)	Should have min 2 USB ports and min one HDMI port.
Applications	
(a)	Offered solution should have following basic functionalities:
	(i) Touch Screen Display HMI
	(i) Communication layer
	(ii) Video Streaming/Video conferencing
(b)	Offered solution should be built using open and modern standards and tools, and should use standard platforms for operation.
(c)	Anti Virus with three yr license.

8. **Satellite DTH Antenna for Live TV on wheels.** This satellite DTH antenna shall be sleek and vehicle roof mounted. This shall enable the live broadcast of the TV channels within the vehicle, while on move or when the vehicle is stationary. The bundled products should include following components:-

- Low-Profile Antenna
- Vehicle Roof Mounting Kit for the vehicle
- IDU (Antenna Control Unit)
- Set-top box from local satellite TV provider

The technical QR for the antenna is mentioned below:


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Serial No.	DTH Antenna
(a)	Physical: Outdoor Unit Weight shall not be more than 30Kg
(b)	Frequency: Ku-band
(c)	Support for regional DTH Services shall be available
(d)	Satellite Acquisition: < 1 Minute, fully automated with Integrated GPS
(e)	Satellite Re-acquisition: < 10 seconds with integrated gyro
(f)	Power Consumption shall be 50-60 Watts
(g)	Power Supply : 10-30 VDC
Misc	
(a)	Dish TV recharge should be min 1 year.

9. **Cabling Sub-system.**

(a)	The cabling structure should have built-in cable trays for fool-proof cabling arrangement. Concealed ducting needs to be provided in the vehicle body, for electrical and network cabling. The duct panels should be easily accessible by a technician, for maintenance purposes. Wires must be grouped or harnessed where practical. Metal edges through which cables pass shall be protected with non-metallic bushings or grommets. All auxiliary circuits shall be wired separate and distinct from the vehicle chassis circuits. All wiring shall be clipped or otherwise attached at suitable intervals to prevent rubbing or chafing due to wire movement, vibration, etc. All wiring should be copper based and should follow standard colour coding and tags to identify cables. There will be separate structured cabling for electric and communication.
(b)	The vehicle should have electrical cabling to power computer systems, telecommunications equipment, networking equipment, and surveillance equipment.
(c)	Power distribution should be through concealed cabling using metal housing with RFI/EMI filters. The power sockets should be JIS certified and must provide for one spare socket and one utility socket. RFI/EMI suppressor should be provided for each power panel.
(d)	All electrical equipment shall be electromagnetic radiation suppressed, filtered, or shielded to prevent interference to radio and telemetry equipment.
(e)	Networking All network cabling will terminate on the network switch in equipment rack. Each workstation area should provide for two (2) networking points. Cabling used in the vehicle has to be STP Cat6 Ethernet cable.
(f)	Cabling and positioning of UHF/HF/Satellite/DTH/VSAT antennas should be appropriate.










10. **LED TV Screens**

LED TV Screens: Supply, installation, testing & commissioning of ceiling Mountable full High Definition Resolution (1920x1080) LED Monitor having following technical performance parameters: -

(a)	LED Screen Size: Minimum 21" or higher
(b)	Resolution : 1920x1080 pixels
(c)	Brightness : Minimum 450/cd/m ²
(d)	Contrast Ratio : Minimum 4000:1
(e)	Should have RS 232C Control Port
(f)	Input : VGA / DVI / HDMI, RS 232C / RJ45/ USB

11. **Wi-Fi Router with 3G Modem**

(a)	Technical specification
(i)	High-speed ADSL2+ modem built-in
(ii)	Simultaneous Dual Band WiFi—2.4 & 5 GHz
(iii)	Memory: 128 MB flash and 128 MB RAM or better
(iv)	Five (5) (1 WAN, 4 LAN) Gigabit Ethernet ports
(v)	Supports Wireless Multimedia (WMM) based QoS
(b)	Standards
(i)	Two (2) USB 2.0 ports minimum
(ii)	One (1) ADSL2+ port
(iii)	IEEE® 802.11 b/g/n 2.4 GHz or better
(iv)	IEEE® 802.11 a/n 5.0 GHz or better
(v)	Five (5) 10/100/1000 (1 WAN and 4 LAN) Gigabit
(vi)	Ethernet ports with Auto-sensing technology
(c)	System Requirements
(i)	Broadband Internet service (aa Broadband Internet service. (ab) Cable or Fiber: Connects to cable modem via Gigabit Ethernet WAN port.
(ii)	2.4 or 5.0 GHz 802.11 a/b/g/n specification wireless adapter or Ethernet adapter and cable for each computer.
(iii)	Microsoft Windows 7, 8, XP, Mac OS, UNIX, or Linux.
(iv)	Microsoft Internet Explorer 5.0, Firefox 2.0 or Safari® 1.4 or better
(v)	Use with an N600 Wireless Dual Band USB Adapter (2.4 GHz or 5 GHz) for maximum performance
(i)	WiFi Protected Access® (WPA/WPA2—PSK)
(ii)	Double firewall protection (SPI and NAT firewall)
(iii)	Denial-of-service (DoS) attack prevention



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(e)	<u>Package Contents</u>
(i)	N750 Wireless Dual Band Gigabit DSL Modem Router
(ii)	Stand
(iii)	Ethernet cable
(iv)	Power adapter
(v)	Quick install guide
(f)	<u>Supported protocols</u>
(i)	Standard IEEE : IEEE 802.11b/g/n
(g)	<u>Physical Specifications</u>
(i)	Dimensions: 223 x 153 x 31 mm (L x B x H)
(ii)	Weight: 0.5 kg (1.10 lb)
(h)	<u>Operating conditions</u>
(i)	Operating Humidity : 10 % - 80 % Non-condensing
(ii)	Temperature : 0 Deg C - 40Deg C

12. **Tablet PC with Retina Display**

(a)	<u>General Features</u>
(i)	Category : Tablets
(ii)	Processor : Dual Core or better
(b)	<u>Platform</u>
(i)	Operating System : iOS 11/Android
(ii)	Sensors : Three-axis Gyro, Accelerometer, Ambient Light Sensor, Digital Compass
(c)	<u>Display</u>
(i)	Display Type : LED
(ii)	Other Display Features : Multi-Touch display with IPS technology
(iii)	Screen Size : 10 Inches or better
(iv)	Screen Resolution : 2048 x 1536 Pixels or better (300 PPI or better)
(d)	<u>Camera</u>
(i)	Primary Camera : Yes, 5 MP or better
(ii)	Secondary Camera : Yes, 1.2 MP or better
(iii)	Other Camera Features : Auto Focus, Geo-tagging, face Detection, Backside Illumination, Tap to Focus, Five-element lens
(iv)	Video Recording : Yes










(e) Multimedia	
(i)	Supported Audio Formats : AAC, MP3, WAV or latest
(ii)	Supported Video Formats : MPEG4, WMV, H.264 or latest
(f) Memory and Storage	
(i)	Internal Memory Capacity : 32 GB or more
(ii)	Internet Connectivity
(iii)	Wifi : Yes
(iv)	4G/3G or better
(g) Connectivity	
(i)	USB : Yes, Lightning Connector
(ii)	Bluetooth : Yes, V4 or better
(iii)	Audio Jack : Yes, 3.5 mm
(iv)	Other Connectivity Features : Stereo, Microphone
(h) Battery	
(i)	Battery Type : Lithium-polymer, 42.5 Watt – hour
(ii)	Standby Time : 10 Hrs
(j) Dimension	
(i)	Dimensions (lxbxh) : 241.2 x 185.7 x 9.4 mm
(ii)	Weight : <=700 gm
(k) Other Features	
(i)	Video calling , Video playback up to 1080p

13. LAN Extenders

(a) ATM/EFM Protocol (Software)	
(i)	ATM Adaption Layer Type 5 (AAL 5)
(ii)	Multiprotocol over AAL5 (RFC 1483/2684 bridged & routed PDU).
(iii)	Classical IP over ATM (RFC 1577 with MTU = 1500)
(iv)	Up to 12 PVCs
(v)	ATM QoS CBR, UBR, VBR, VBR-rt support.
(vi)	UNI 3.1/4.0 PVC
(vii)	1610 QAM FS loopback.
(b) PPP Support	
(i)	PPP (RFC 1661)
(ii)	PPP over AAL5 (RFC 2364)
(iii)	PPP over Ethernet
(iv)	User authentication with PAP/CHAP
(c) Protection	
(i)	Transmission Channel Lightning : 4KV 10/700us, common mode lightning: Level 4
(ii)	1KV 10/700us, differential mode lightning: Level 1
(iii) Executive Standard : IEC61000-4-5	
(iv)	DHCP server (RFC 2131/2132)













(d) Routing Capability
(i) Support IP/TCP/UDP/ARP/ICMP protocols
(ii) IP routing with static routing
(iii) Network Address Translation (NAT/PAT)
(iv) DNS relay and catching (RFC 1034/1035)
(e) Network Management
(i) Password protected management and access control list for administration.
(ii) SNMP management with SNMPv1/SNMPv2c
(iii) Software via TFTP server.
(f) Hardware LAN Port
(i) Standard: IEEE.802/IEEE 802.3u
(ii) Interface IEEE 802.3/802.3u 10/100 Base-T
(iii) Bridging: IEEE 802.1d transport, self learning.
(g) Physical Interfaces
(i) Ethernet: RJ-45, 4 ports, 10/100 Mbps/USB
(ii) DSL: RJ-11, 1 Port.
(iii) Console: 1-port for device configuration & management.
(iv) Dimension: 130 x 161 x 28.8 mm (l x W x H)
(v) Power Supply: External power adopter 12V DC, 1000 mA
(h) Features
(i) Efficient IP routing and transparent learning bridge to support broad internet services.
(ii) VPN pass through for safeguard protections.
(iii) Fully ATM protocol stack implementation over SHDSL
(iv) Built-in 4-port 10/100 Mbps Switch.
(v) Dying Gasp circuit built-in.
(vi) WAN port ping Disable/Enable, URL blocking


14. **Multi Functional Device (MFD) (Printer, Scanner, Fax & Copier)**


(a) Technical Specification
(i) Functions : Print, copy, scan, fax, web
(ii) Print speed (letter/A4) : Up to 19 ppm black, up to 14.5 ppm color
(iii) Control panel : 2.65-inch (6.75 cm) color touch screen
(iv) Print input capacity : 250 or higher
(v) ADF input capacity : 35 or better
(vi) Mobile printing capability : HP ePrint, Apple AirPrint™, HP wireless direct printing
(vii) Scan Speed : Up to 6 ipm (200 ppi, b&w), up to 6 ipm (200 ppi, color)
(viii) Scan size maximum Flatbed: 8.5 x 11 in; ADF: 8.5 x 14 in
(ix) Scan Resolution : Hardware: Up to 1200 x 1200 dpi Optical: Up to 1200 dpi
(x) Scan Input Modes : Front-panel scan, copy, fax, or from software
(xi) Copy speed : Up to 13 cpm black, Up to 11 cpm color



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(xii)	Copy Resolution : Black (text and graphics): Up to 600 dpi; Color (text and graphics): Up to 600 dpi
(xiii)	Max No of Copies : Up to 99 copies or better
(xiv)	Fax Speed : 4 sec per page or better
(xv)	Fax Resolution : Black(standard): 203 x 98 dpi; Black and White(fine): 203 x 196 dpi, 256 levels of gray
(xvi)	Standard Connectivity : 1 USB 2.0; 1 Host USB; 1 Ethernet; 1 Wireless 802.11b/g/n; 2 RJ-11 modem ports
(xvii)	Network capabilities : Standard (built-in Ethernet, WiFi 802.11b/g/n)
(xviii)	Memory/Processor speed : 128 MB/600 MHz or better
(xix)	Duty cycle (monthly) : Up to 5,000 pages or more;
(xx)	Input : 250-sheet input tray; Optional 250-sheet input tray
(xxi)	Output : 150-sheet output tray
(xxii)	Input voltage: 100 to 240 VAC (+/- 10%), 50/60 Hz;
(xxiii)	Software : HP Printer Software, Google Toolbar, HP Update.
(xxiv)	Operating System : Windows 8.1, Windows 8, Windows 7, or higher (32-bit only): Mac OS X v 10.6, v 10.7, v 10.8 or v 10.9; Linux .
(xxv)	Security management : Device firewall configuration; Control panel lock; Password protect EWS, SSL/TLS (HTTPS)
(xxvi)	Power consumption: 35 watts (Maximum), 0.15 watts (Manual-Off), 6.80 watts.
(xxvii)	Dimensions (W x D x H) : 19.7 x 18.5 x 11.8 in with duplexer installed, output tray folded up
(xxviii)	Weight : Not more than 15 Kg with duplexer
(b) Features	
(i)	Easy access USB port to print from and save scans to a flash drive
(ii)	Plate glass color scanner handles up to 8.5 x 14 in (215 x 355 mm)4 paper
(iii)	150-sheet output tray 250-sheet input tray
(iv)	2nd 250-sheet paper tray3
(v)	Automatic two-sided printing
(vi)	600 MHz processor, 128 MB RAM
(vii)	Integrated 802.11b/g/n wireless networking
(viii)	RJ-11 fax modem ports (2)
(ix)	Ethernet network port for easy sharing
(x)	Hi-Speed USB 2.0 printing port
(xi)	Power connection

15. **Web Camera**


(a) Technical Specifications	
(i)	Lens high Quality 3P lens or better
(ii)	Built In Microphone
(iii)	6 white LED indication lights for night view
(iv)	Manual Control Button for LCDs



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(v)	Suitable for both laptop and desktop
(vi)	Zoom function with four choices for the zoom (1x, 2x, 3x & 4x)
(vii)	With 16 sorts of photo frame & mosiases image effect with driver
(viii)	Automatic exposure control, Auto White balance
(ix)	Interface : USB 2.0 High-Speed (UVC)
(x)	Frame rate : With VGA (640x480) format rate upto 30fps
(xi)	Valid Pixels: 20 Megapixels or better with driver
(b)	System Requirements
(i)	Pentium II 350 MHz CPU or advanced
(ii)	One free USB port minimum
(iii)	32 MB RAM Or Advanced
(iv)	At least 50MB hard Disk Space available
(v)	16 bit VGA card, sound card
(vi)	USB interface / CD-ROM drive / VGA monitor
(c)	Features
(i)	In built Microphones
(ii)	Interpolated in 40 Mega pixels
(iii)	In driver, have 16 kinds of photo frames
(iv)	Zoom function (1x, 2x, 3x, 4x)
(v)	Game function
(vi)	Night Vision
(d)	Warranty : 1 Year Manufacturer Warranty

16. **Power Sub-system.**

(a)	The electrical sub-system in the vehicle shall allow power to be drawn from the generator or shall allow raw power, based on availability, to minimize use of the Gen Set.
(b)	MCBs, change-over switches, and other equipment should be installed to make possible operation of electrical devices in the vehicle either from generator-operated power or mains commercial power. There shall be an easily deployable power cable arrangement, using a 50-metre power-cable spool, to draw power from an external (outside the vehicle) raw power outlet.
(c)	The generator will be situated at the rear of the vehicle. It will be accessible only from the outside of the vehicle thru a rear or side door.
(d)	The vehicle will be well ventilated and acoustically padded, to ensure that fuel fumes and the noise/vibration/heat of the generator do not disturb the occupants of the vehicle.
(e)	The generator will house a compact size reputed make 7 KVA capacity generator with a fuel tank adequate to power the equipment for 10 Hrs.

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(f)	The Batteries for UPS shall also be accommodated in this vehicle. The vehicle shall be well ventilated to ensure that battery fumes and the heat of the batteries do not disturb the occupants of the vehicle.	
(g)	This vehicle shall be able to accommodate SMF batteries to have the power backup up to 1Hr with min bty that can be accommodated in space available.	
(h)	Petrol Generator (Portable)	The generator will power the electronic equipment and will power the AC when the vehicle is stationary. The power to the electronic equipment will be through the UPS.
(j)	Generator Specifications	Generator Specifications: (i) Capacity: 7 KVA (ii) No of cylinders: 1 (iii) Cooling System: Air Cooled (iv) Fuel-tank capacity: Adequate for 10Hrs operations (v) Voltage: 230V (vi) Dimensions (l x b x h) : 1016 x 680 x 722 mm or less (vii) Weight : 124Kg Maximum
(k)	UPS	The UPS will draw power from the generator or the raw power inlet, and will power the electronic equipment in and on the vehicle. The UPS power backup shall be for 1Hr. UPS shall be designed to withstand the vibrations during the vehicle movement.
(l)	UPS & Battery Specifications	UPS Specifications: (i) Capacity: 5KVA (ii) Form-factor: 19" rack mount (iii) Management: SNMP (iv) Diagnostic Display: LCD + LED (v) Waveform: Sine Wave UPS Battery Specifications: (i) Type: Sealed Lead-Acid Maintenance-Free (ii) Backup: 01 hr backup bty through minimum possible bty. (iii) Voltage: 12V

17. **Car Navigation System.**

(a)	Car Navigation System. Interactive car navigation system should sync with the mobile and seamlessly make and receive calls. Should have option for rear view camera input option. The maps displayed should be dragable and zoomable, make the map 2D/3D at any angle. It should be powered with All India street level maps. It should take the name of the city/place/location as its input .It should be to change mode from day to night. It should sync with Bluetooth devices. It should be tunable to radio i.e AM and FM and should also have USB and DVD interface.	
Technical Specification.		
(b)	System:	OS: Windows CE 6.0 CPU: Sirf V, 600 MHz Memory: In-built 4GB Flash memory, DDR2 128MB SD card: supports up to 8GB


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(c)	Display: 12.7cm LCD with touch panel or better Pixel: 480 x 272 Pixels Display Orientation :Landscape
(d)	Media function : Movie: . .mp4, .mpg, .Divx_avi, .Xvid_avi Audio: .mp3, .wma, . Picture: . .bmp, .gif, .jpg, .png
(e)	Input / Output : USB 2.0 (5 pin) Support USB car charger
(f)	Power: Input: 100-240 VAC Output: 5V DC, 1.5A Connector: mini USB type adapter
(g)	Dimension : 132 x89 x 12mm or larger
(h)	Net weight : 166 g or less

18. Surveillance Eqpt

<u>Ser No</u>	<u>Specification</u>
(a)	<p><u>Surveillance Sensors Integration</u> As per tasking there is a requirement to provide svl cover in and around the objective/target area with existing surveillance sensors(HHTI, NIKON D-700, Sony PD-170, Mini Rov, UAV) and real time display of svl feeds to the Command and Control Centre for operational assessment by task Force Commander. In addition, there is a requirement to cater for futuristic IP based surveillance sensors so as to dovetail their feeds as and when they are made available.</p> <ul style="list-style-type: none"> • The integrated surveillance solution should cater for real time monitoring of svl sensors, display of svl feeds, archiving of svl feeds, analysis of svl feeds and retrieval of archived feeds. • The solution should support integration with the command and control application run by the rugged laptops, allowing to show location of svl detachments on map. In addition, a suitable touchpad based integrator to communicate with each detachment on existing VHF/UHF radio net. • The integrated surveillance solution should cater for eight analogue feeds and eight IP feeds simultaneously.



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(b)	<p>Video Encoders Video Encoders for converting the analogue video stream from various sensors to an IP stream. The following features are required.</p> <ul style="list-style-type: none"> • Video Encoders to cater for Eight (08) analogue inputs. • Support MPEG4 or H.264 video compression. • Intelligent video capabilities such as video motion detection. • Support multiple video streams simultaneously from each video channel at full frame rate in all resolutions (720x480 in NTSC, 720x576 in PAL). • All video channels to support pan/tilt/zoom control for PTZ and PTZ dome cameras. • Joystick based PTZ Controller to control futuristic PTZ & PTZ dome cameras.
(c)	<p>Network Switch A suitable 16 Port Network Switch to connect the IP encoders and futuristic IP based Cameras.</p>
(d)	<p>Network Video Management Software(NVMS)</p> <ul style="list-style-type: none"> ▪ Network Video Management software (NVMS) to manage the cameras should be supplied. VMS shall support open protocol IP cameras from all major vendors as well as analogue streams from existing surveillance sensors. The software should be supplied with software license registration, software license certificate and instructions for registration. It should be fully compatible with the supplied cameras and work seamlessly for an effective monitoring and management environment. ▪ The VMS shall offer centralized management of all devices, servers and users. ▪ The VMS should manage, store and deliver video. It should support encoding, distributing, managing and archiving video feed. ▪ The VMS should authenticate and manage access to video feeds. It should act as a centralized tool for management of virtual matrixes, cameras, encoders, and viewers, as well as, for viewing network based video. ▪ The viewer application shall allow recipients of the video to browse and playback the exported video without installing separate software on their computers. ▪ The VMS data communications and telecommunications network shall use a suitable transport medium and associated cabling and data transmission infrastructure that will support real-time video display of cameras at the nominated operations centers. ▪ The management server shall allow access to a system manager from where the administrator can configure and manage all servers, cameras and users. ▪ System Monitor shall give actual and historic performance and use


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reports of server performance, storage availability, network usage and camera performance.

- **Multicast Support**

- The system shall support multicasting of video feeds to client workstations in order to conserve network resources. Multicasting should be enabled from the recording servers and not directly from the cameras.

- **Multi-streaming Support**

- The recording server must accept, display and record individual streams of video from each camera that supports it, for example, display a stream in H.264 format and record another stream in MPEG4 format. The intent of this functionality shall be providing independent streams of video from the camera to the server with different resolution, encoding and user defined frame rates.

- **Alarms Support**

- The alarm support shall allow for continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices.

- The alarm support shall provide a real-time overview of alarm status, or technical problems, while allowing for immediate visual verification and troubleshooting.

- **Functionality**

- The client viewer shall provide remote users with a comprehensive suite of features:

- It shall be possible to playback recordings from cameras on the surveillance system, with a selection of advanced navigation tools, including an intuitive timeline browser.

- The system shall allow views to be created which are only accessible to the user, or to groups of users optimized for 4:3, 4:3 Portrait, 16:9 and 16:9 Portrait display ratios.

- It shall be possible to control PTZ cameras.

- It shall be possible to use digital zoom on live as well as recorded video.

- It shall be possible to use sound notifications for attracting attention to detected motion.

- It shall be possible to get quick overview of sequences with detected motion.

- It shall be possible to get quick overviews of alerts.

- It shall be possible to quickly search selected areas of video recording for motion.

- It shall be possible to skip gaps during playback of recordings.

- It shall be possible to use a sequence function that lists thumbnail images representing recorded sequences from an individual camera or all cameras in a view.


- It shall be possible to use a forced playback mode allowing the


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	<p>user to playback recorded video from inside the 'live' mode while viewing 'live' video.</p> <ul style="list-style-type: none"> ▪ The client viewer shall support the use of 3-axis USB joysticks for control of pan, tilt, zoom and auxiliary camera functions. ▪ The operator shall have the ability to use digital zoom where the zooming is performed in the image only on any number of cameras simultaneously. This functionality shall be the default for fixed cameras. The use of digital zoom shall have no affect on recording, or other users. ▪ It should be possible to allow for time synchronized playback of different cameras together in the same video pane. <ul style="list-style-type: none"> ▪ Map Functions <ul style="list-style-type: none"> ▪ The VMS shall support integration with the command and control application run by the rugged laptops, allowing 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. ▪ Remote Client Viewer <ul style="list-style-type: none"> ▪ The web-based remote client viewer shall offer live view of all the cameras, including PTZ control with joystick, fisheye (360 degrees) cameras. The playback function shall give the user concurrent playback of up to 16 recorded videos with date, alert sequence, or time searching. ▪ The system shall support H.264, MPEG-4, ▪ Compression formats for all analog cameras connected to encoders, and all IP cameras connected to the system. ▪ The system shall support dual-streaming cameras and shall support the following compression formats: H.264, MPEG-4 (Part 2) and MJPEG.
(e)	<p>Digital Video Recorder Digital video recorder is required for standalone video recording and streaming from analogue sensors. The DVR should support the following specifications:-</p> <ul style="list-style-type: none"> • Full HD 1080p HDMI video out • Support 16 composite videos inputs @960 x 480 resolution or better. • Touch sensitive front panel • Support recording and playback up to 960 x 480 resolution. • Support 4 Internal HDD. • Support Network bandwidth upto 32Mbps. • Support 16CH audio inputs/1CH audio output.
(f)	<p>Display Mechanism Suitable Qty – 01 x LED 21" TV based display mechanism to project the video in Operator Section.</p>

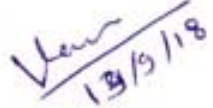
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(g)	Network Attached Storage A suitable Network Attached Storage to store the surveillance feeds for sensors. The NAS should have the capability of 10 TB of Storage or better.
(h)	Video Management Server (Laptop Based) (i) Windows 7 Professional or higher (ii) 14" (1366 * 768) HD Type (TFT) or higher (iii) Intel Core i5-2520M processor or Higher (iv) 4 GB DDR3 SDRAM memory or better (v) Video graphics card with dedicated 512 MB VRAM or more (vi) 500 GB HDD or better (vii) DVD-R/W drive (viii) IEEE 802.11n, Gigabit Ethernet, Bluetooth (ix) 87-key backlit keyboard (x) 10-hour battery life or higher (xi) MIL-STD 810 certified (xii) Should have min 2 USB ports and min one HDMI port. (xiii) Antivirus with 3 Years Subscription
(j)	Wi-Fi based Svl dissemination system and terminal display (Handheld) Equipment. High power Wi-Fi access point to be incorporated to transmit video svl feed (Min 2 km) to handheld terminal devices being used in object area. Terminal display (handheld) Device - Capable of hooking on Wi-Fi access point and access video svl feeds as required in the veh.



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 Sh. A.C. Sharma,
 C.C. (Comm), HQ NSG
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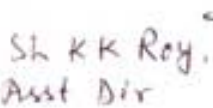

 SG
 Col. S. Velumirangan,
 G.C. Comm Gp



 19/9/18
 HA/TBP
 Sh. Karan Singh,
 AC


 Sh. VK Srivastava,
 AC, H&C RPF



 17/9/18
 Sh. Manoj Singh,
 DC, 95 Bn BSF


 Sh. Rajesh K. K. K.,
 Dy Dir, DCPW


 Sh. KK Roy,
 Asst Dir


 19/9/18
 Sh. Ravindra Meel,
 DC

(Approved/Not Approved)


 DG NSG
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TRIAL DIRECTIVE FOR COMMAND & CONTROL CENTER (MOBILE) VEHICLE BASED

1. Trial of equipment will be conducted by a Board of Officers in the presence of Vendor or representative of Firms to assess the actual performance of the equipment.
2. All parameter / Specifications mentioned in the QRs will be checked by board of officers by ascertaining /verifying following checks.
 - (a) **Physical Checks:** In this category specifications of the equipment will be checked physically as per QRs.
 - (b) **Functional Check:-** The vendors will show all features/ configuration of the equipment to the board of officers during technical evaluation.
 - (c) **Submission of certificates:** - Specification which cannot be checked due to lack of testing facilities/ expertise, a certificate of test shown against each will be provided by vendor/firm during physical trial of the equipment.
3. **Specification of Vehicle**

Sl. No.	Specification	Type of check
(a)	Chassis Wheel Base: Minimum 2650- 3150, 4- wheel drive Kerb Weight (GVW): minimum 1990 Kg and max 6000 Kg Right-hand Drive required Power Steering required Fuel Tank Capacity: Minimum 65 Ltrs Ground Clearance : minimum 200mm	Board will check it physically and Vendor will demonstrate the features to the board of officers.
(b)	Engine Engine Power: 75@3000 RPM or higher Fuel: Diesel Engine Load: The engine shall power the AC only when the vehicle is moving. The engine will not be used to power any equipment in the vehicle. When the Vehicle is stationary, the AC will be powered by the generator.	Board will carry out physical check as well as functional test and vendor will submit certificate to the board of officer.


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(c)	Body	Overall Length : 4655- 5548 mm.	Board will measure size of the body with the help of measuring tapes/scale or as per docu provided.
		Overall Height : 1833- 2725 mm Overall Width : 1860- 2100 mm.	
(d)	Interiors	The body of the vehicle will consist of 2 partitioned internal sections: Driver-Cum-Crew Cabin, Operator Section	Board will check it physically.
(e)		There shall be two doors in the driver-cum-crew cabin.	Board will check it physically.
(f)		The crew cabin shall accommodate and have seating for the driver of the vehicle and 1 crew members.	Board will check it physically.
(g)		The cabin shall be air-conditioned.	Board will check it physically.
(h)		The console in driver's cabin shall also feature a GPS-based tracking system and a GPS-based navigation system.	Board will check it physically/practically and vendor will submit certificate in this regard.
(i)		Standard vehicle fitments like rear-view mirrors (2 nos.), wipers, etc. shall form part of the Driver's Cabin.	Board will check it physically.
(k)		Bumpers should be full-length front and rear bumpers.	Board will check it physically.
(l)		The vehicle battery should be below the vehicle's floor, with proper stowing space.	Board will check it physically.
(m)		The vehicle shall be equipped with Beacon light fitted with powerful hooter.	Board will check it physically.
(n)		The Front windshield of driver's cabin shall feature 5.5 mm. thick laminated glass, of single piece construction.	Board will check it physically.
(o)		There shall be storage space to stow the vehicle's tool-kit and miscellaneous items.	Board will check it physically.
(p)		Exterior lighting shall consist of halogen headlights, parking lights, hazard warning lights, license plate lights, tail, stop, and backup lights. Tail and stoplights shall have red, clear, and amber lenses. Electrical wires for the taillights shall be sealed to protect them from the elements of weather.	Board will carry out physical check as well functional test.


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(q)	The vehicle body will have Three (3) Lights installed on the roof line. In addition two (2) lights will be mounted on the front of the vehicle.	Board will check it physically.
(r)	A set of rear mud flaps shall be installed on the rearward side of each wheel well.	Board will check it physically.
(s)	A medical-kit shall be provided.	Board will check it physically.
(t)	Ground clearance of the vehicle should be 200mm.	Board will check it physically.
(u)	Music system with Wi- Fi/ blue tooth with Aux input facility.	Board will carry out practical check as well as functional test.
(v)	Comfortable siting for the driver, commander and operator when the vehicle is moving with entire equipment.	Board will check it physically.
(w)	Closed waterproof Rack on the upper side of the veh for housing equipment/tools while on the move (e.g Thule Rack).	Board will check it physically.
(x)	Ladder shall be provided for setting the antennas/loading eqpt in the rack.	Board will check it physically.
(y)	Side bumper with foot rest shall be provided to protect the veh	Board will check it physically.
(z)	Entry and exit from the vehicle should not be cumbersome.	Board will check it physically.
(aa)	Adequate no of Power socket shall be provided for charging the eqpt.	Board will check it physically.
(ab)	Additional and appropriate lights inside the vehicle and roof top rack.	Board will check it physically.
(ac)	MFD device shall be provided inside the veh.	Board will check it physically.
(ad)	Rack with shock & vibration mounts for IT equipments.	Board will check it physically and practically.


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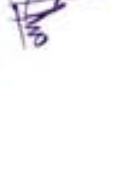

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3(a) The major parts of the system are as under:-


(i)	<p>Roof top fixtures. The roof top of the vehicle shall be strong enough to hold a 01 x VSAT antenna/Docking antenna, 01 x DTH antenna, 03 x UHF antenna, 01 x DSPT antenna/Docking unit/Vehicular antenna, 01 x lightning arrestor and 04 x svt receiver antennas. Water proof storage box is required to keep the eqpt and assy while on move. (eg Thule Rack)</p>	<p>Board will carry out physical check as well functional test and ensure it workability. Firm will produce OEM certificate in this regard and demonstrate the same to the board of officers.</p>
(ii)	<p>Integrated Comn Sylem. Qty 01 x portable ICS is required per vehicle and should be able to interoperate ISDN, PSTN, Satellite Terminal, UHF, VHF, GSM, Mesh Radios and other comn eqpt available at the time of implementation with minimal deployment time and configuration.</p>	<p>Board will carry out physical check as well functional test and ensure it workability. Firm will produce OEM certificate in this regard and demonstrate the same to the board of officers.</p>
(iii)	<p>Ruggedized Wrist Computer. Qty 01 x Ruggedized Wrist Computer is required per veh allowing operator to operate ICS and other comn eqpt and also providing complete freedom to continue with other operator tasks. The eqpt should be rugged and ultra-light weight wrist computer. It should have integrated options like GPS, camera etc. It should operate for approx 4 hours without Bty backup</p>	<p>Board will carry out physical check as well as functional test. Firm will produce OEM technical document and demonstrate the same to the board of officers.</p>
(iv)	<p>Rugged laptop. Qty 01 x Rugged Laptop is required per vehicle for video conferencing/streaming and will be operated by the control centre operatives in the operative section. The laptop will be connected with LAN.</p>	<p>Board will carry out physical check as well as functional test and vendor will demonstrate the same. Will be checked through documents also.</p>
(v)	<p>VSAT Compatibility. Integration of VSAT system provided by NSG for both voice & data as and when provided by NSG.</p>	<p>Board will carry out physical check as well as functional test.</p>
(vi)	<p>Satellite DTH Antenna. Qty 01 x Satellite DTH antenna is required per vehicle to view/monitor news channels and shall be sleek and vehicle roof mounted. The DTH channels should be viewable within the vehicle while on move or when the vehicle is stationary.</p>	<p>Board will carry out physical check as well as functional test. Firm will produce OEM certificate and demonstrate the same to the board of officers..</p>
(vii)	<p>Cabling Sub System. The cabling structure should have built in cable trays for fool-proof cabling arrangement. Concealed ducting needs to be provided in the vehicle body for electrical and network cabling separately.</p>	<p>Board will check it physically and practically.</p>


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(viii)	LED TV. Qty 01 x ceiling mountable LED TV screen required per vehicle for viewing/monitor surveillance feed coming from Ops location during operation. High definition resolution (1920 x1080) LED monitor preferable.	Board will carry out physical check as well as functional test. Firm will produce OEM certificate and demonstrate the same to the board of officers.
(ix)	Wi-Fi Router with 3G Modem Qty 01 x Wi-Fi Router with 3G Modem is required per vehicle for broadband and Wi-Fi connectivity.	Board will carry out physical check as well as functional test.
(x)	Tablet PC with retina display. Qty 01 x I tablet PC with retina display is required per vehicle which works as wireless PC due to its light weight and portability and can be used frequently outside of the vehicle to monitor the svl feed through Wi-Fi.	Board will carry out physical check as well as functional test and vendor will demonstrate the same.
(xi)	LAN Extender Qty 01 x LAN Extender is required per vehicle to extend data or to receive data where distance of source is more than 100 Meters.	Board will carry out physical check as well as functional test.
(xii)	Multi Functional Device (MFD) There is a requirement of 01 x Multi functional device per vehicle (ie printer, scanner, photocopier and Fax) to send/receive messages/data, Fax at the place of incident.	Board will carry out physical check as well as functional test. Firm will produce OEM certificate and demonstrate the same to the board of officers.
(xiii)	Power Sub System. The electrical sub sys in the vehicle shall allow power to be drawn from the generator or shall allow raw power based on availability to minimize use of the gen set. 01 x Portable Petrol gen set 7 KVA, 01 x UPS 5KVA with thr power backup are required in this sub sys.	Board will carry out physical check as well as functional test. Firm will produce OEM certificate and demonstrate the same to the board of officers.
(xiv)	Svl Eqpt. As per tasking there is a requirement to provide 01 x svl cover (ie Surveillance Sensor Integration, Video Encoders, Network switch, NVMS, DVR, Network Attached Storage and Video Management Server) per vehicle for integrating existing svl sensors for real time display of svl feeds to the Task Force Cdr for operational assessment.	Board will carry out physical check as well as functional test. Firm will produce OEM certificate and demonstrate the same to the board of officers.
(xv)	Car Navigation System. Min 7 inch interactive car navigation system. Should sync with the mobile and seamlessly make and receive calls. Should have option for rear view camera input option.	Board will carry out physical check as well as functional test. Firm will demonstrate the same to the board of officers.


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Roof-top Fixtures.

(a)	The roof-top of the vehicle shall be strong enough to hold a VSAT antenna, a DTH antennas, UHF/VHF antenna, a DSPT antenna and a lightning arrester.	Board will carry out physical check as well functional test and vendor will demonstrate the related equipment.
(b)	Adequate structural support and gaskets with framing will be given for installation of antennas and pneumatic masts on the roof and on the side walls.	Board will check it physically.
(c)	Access to the roof should be through fixed/folding steps from back.	Board will check it physically.
(d)	The vehicle should be mounted with one flood light each on the four sides giving visibility up to 15-20 meters.	Board will check it physically.
(e)	VSAT Antenna There shall be a provision to house VSAT antenna and associated accessories provided by NSG. The antenna should be quickly deployable to make the link operational in a time not exceeding 10 minutes (when mode available). Integration to be done as and when VSAT terminal provided by NSG.	Board will check it physically.
(f)	DTH Antenna A mobile DTH antenna shall be supplied and fitted on the roof of the vehicle, at an appropriate location that does not impede the functioning of the video surveillance camera, VSAT antenna and the UHF/VHF antenna. The antenna will be capable of DTH transmission when the vehicle is on the move, through support for auto-tracking.	Board will carry out physical check as well functional test and vendor will demonstrate the same to the board of officers.



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(g) DSPT Antenna/Docking Unit/Docking Antenna/Vehicular Antenna	Provision to mount one DSPT antenna on the roof of the vehicle, at an appropriate location that does not impede the functioning of the video surveillance cameras, the VSAT antenna, and the VHF/UHF antenna.	Board will carry out physical check as well functional test and vendor will demonstrate the same to the board of officers.
(h) Lightning Arrestor	A lightning arrestor should be provided on top of the vehicle for protecting and equipment/personnel from lightning hazards. This lightning arrestor will be connected to the ground via an earthing cable (minimum 20 metre length) attached to a good quality iron peg of minimum 40 mm. diameter and 500 mm. long.	Board will carry out physical check as well functional test and vendor will demonstrate the same to the board of officers.
(j) UHF/VHF Antennas	The VHF/UHF antenna will be mounted on the roof, in the centre of the vehicle, and positioned at the centre of the breadth of the vehicle.	Board will carry out physical check as well functional test and vendor will demonstrate the same to the board of officers.
(k) Mast	The roof-top masts shall be pneumatic with auto-control. In case of a non-functioning of the pneumatic system, the mast shall be deployed manually. The 4-metre mast will have a nested height not exceeding 1.5 metres and will support a payload of not less than 15 kgs. The mast shall be constructed of an aluminum alloy with a hard anodized surface coating treatment.	Board will carry out physical check as well functional test and vendor will demonstrate the same to the board of officers.



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5. Integrated Communication System.

(a)	Portable Integrated Communication System (ICS) Portable Integrated Tactical Voice Communication System	Board will check all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the connectivity & features of the related equipment.
	(i) Portable ICS – Interfaces (aa) Interface for 3 x Digital UHF Radio Set 25W. (ab) Interface for 2 x Digital UHF Radio Set 5W. (ac) Interface for 1 HF Radio with Whip & Broadband Antenna (ad) Interface for 1 Wireless Mesh Radio. (ae) Interface for 1 VHF Radio. (af) 2 Qty of GSM Mobile Interface. (ag) 1 Qty of Analog PSTN Phone. (ah) 1 Qty of Interface for sat telephone provided by NSG. (aj) 1 Qty E1/PRI. (ak) 2 port minimum FXO/FXS extends up to 200 Mtrs (al) Ethernet for VOIP. (am) ICS should have a operator console. (an) 2 Qty headset and Mike for Cdr	
	(ii) Portable Integrated Tactical Data Communication System (aa) Interface for rugged laptops with in-vehicle LAN over wired Ethernet (ab) Interface for rugged laptops and wrist computers with Wireless Mesh Radio.	Board will check all the parameters mentioned here one by one and ensure its availability and workability.
	(iii) Portable ICS – Basic Features (aa) The system shall be portable and shall be able to interoperate ISDN, PSTN, Satellite Terminal, VHF, UHF, HF, Mesh Radios, GSM & VoIP voice technologies from any OEM or service provider with minimal deployment time and configuration. The seizure of ICS gateways (PSTN line, GSM, VHF, UHF, HF etc) should be possible from any operator radio in the network.	Board will carry out practical check as well as functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the connectivity & features


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(ab) The system proposed shall be 100% redundant in all its components.	of the related equipment.
(ac) The system shall be based on a technologically OPEN platform, which is modular and expandable and has subsystems that interact and are 100% compatible, in order to completely guarantee the required resources.	
(iv) Portable ICS : Radio Over IP Gateway	
(aa) Transports voice (3-wireunbalancedor 4-wire balanced), I/O (PTT & COR) and Data (RS-232) for upto two radio circuits.	Board will carry out practical check as well as functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the connectivity & features of the related equipment.
(ab) Handles Tone Remote Control (TRC) and Local/E&M radio circuits	
(ac) Remote PTT operation controlled by VOX or COR.	
(ad) Use of TCP and Unicast UDP allows operation over standard IP networks.	
(ae) Compatible with many IP-based RTP voice recorders	
(af) Field-selectable voice compression includes PCM (64kbps), ADPCM (16-32 kbps), and GSM (13 kbps).	
(ag) Fully configurable via web browser, including all audio levels.	
(ah) Embedded operating system, and no moving parts. Designed for harsh, unattended radio site environments.	
(aj) Size : Man portable and 19"or less .	
(ak) Operates from 12 Volts DC.	
(al) Vocoder Support: G.711 (64 kbps), G.726 (32-24-16 kbps) & GSM (13 kbps).	
(v) Portable ICS – Communication System	
(aa) The proposed communications subsystem shall be highly reliable (redundant), portable. It shall have a communications History and Statistics event viewer that shall allow its analysis as well as an analysis of system behavior in order to better monitor service quality.	Board will check all the parameters mentioned here one by one and ensure its availability and workability.


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(ab)	The system shall allow the system to be managed remotely through a standard protocol to manage equipment such as SNMP. All equipment shall permit real-time monitoring using commercial tools that follow this protocol, allow systematic or occasional errors.	
(ac)	System shall be composed of a group of Switching Matrix elements (also called communications Gateway), with greater than 99.99% reliability.	
(ad)	It shall have a user maintenance and error message interface. All subsystem component operation, service and maintenance manuals shall be provided.	
(vi)	Portable ICS- Technology	
(aa)	The system shall support Linux and Windows Server operating systems (for servers) and Windows XP, Windows 7 or better.	Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.
(ab)	All signaling traffic over different audio resources shall take place using VoIP and SIP standards, including the radio-type resources and signaling required for conferencing.	
(ac)	The system shall have redundant components (RAID, power supply).	
(ad)	The system shall be capable of receiving remote maintenance.	
(ae)	System elements shall be interchangeable without interruption in system function.	
(af)	The system shall allow the management of one or another type of resource depending on needs.	
(ag)	Various Links between system elements shall be via VoIP.	
(ah)	The implementation of this subsystem shall fully guarantee the scalability of the solutions in all aspects allowing expansion, both in number of lines and in number of resources.	


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	<p>(aj) Integration of ISDN-PR/BRI, Analog trunks, GSM, Wireless Mesh Radio, Analog Trunking, Intercom, Public Address and VoIP.</p>	
	<p>(ak) System shall have following call facilities: Call Monitoring (listening to operators), Call Intrusion, multi conferencing, shared listening and transfer.</p>	
	<p>(al) System shall be capable of integrating all the aforementioned resources, even when they belong to different technologies, regardless of whether they are half-duplex and/or full-duplex resources.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
	<p>(am) All system elements shall connect over the IP network.</p>	
	<p>(an) The remote maintenance of the subsystem over the IP network (connectivity shall be supplied from the exterior).</p>	
	<p>(ao) The subsystem to be offered shall fully guarantee the scalability and modularity of all the resource's solutions, allowing for expansion, both in number of lines and in number of operators.</p>	
	<p>(ap) There shall be a recording system that records the operator's last conversations and allows access to these recordings using a simple select and playback interface. This information shall be stored in the system's hard drive and shall allow an operator to recover a conversation he has just had with a caller immediately, without having to access a recording search system.</p>	
	<p>(aq) The bidder shall certify in writing his ability to adapt the hardware and firmware of the Radio Gateways, thus guaranteeing adaptability to the NSG's future requirements and the control necessary to resolve issues.</p>	
	<p>(ar) Proposed Radio Gateways shall have local redundancy, in hot standby configuration, so that both manual and automatic switching from one Gateway to another is possible.</p>	


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(vii) Portable ICS - Communication Module Resources/ Interfaces:		Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.
(aa)	The subsystem to be offered shall include the following resources / interfaces:	
(ab)	Basic analog lines (Lines without limit for incoming and outgoing calls).	
(ac)	Standard Wireless Base Radio (VHF/UHF/HF) channels & Mesh radios. System shall allow listening and transmission by them and shall show each channel's signaling (busy channel, in use, etc.)	
(ad)	It shall have GSM Modem Interface where any local service provider's SIM interface can be inserted.	
(ae)	Should have E1/PRI Interface	
(af)	Should provide interface for FXO/FXS.	
(ag)	Should support VoIP calls these should provide Ethernet interface	
(ah)	Should support interface for DSPT (Satellite Telephony)	
(viii) Portable ICS - Communication Module functionalities/ functionalit for voice communication		
(aa)	The subsystem to be proposed shall have the following functionalities:	
(ab)	Make / Take call.	
(ac)	Hold / Recover call.	
(ad)	Hang up or terminate the call.	
(ae)	Redial.	
(af)	Shared listening with an operator. An operator shall be able to request the help of another operator or personal, so that the latter may listen to the conversation destination and at the same time listen and talk with the original operator to provide him/her with information.	


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<p>(ag) Incoming Calls: System shall provide Audio and visual indication of incoming calls. The caller's number shall be shown on the line (if the network sends the information) along with the time the caller has been waiting to be attended.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(ah) Outgoing calls: Any line shall be used to call as long as the user has authorization to use it and the line is free.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(aj) Call Hold: Shall be automatic (when the operator presses on another resource), or may be activated by pressing the hold button.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(ak) Call Recovery: To recover a call on hold, the operator shall only have to press on the line.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(al) Call Transfer to another operator. It shall be possible to transfer any call to another operator, if available. The call transferred shall be shown to its new owner as a transferred call, and a tone shall advise him that a new call has arrived.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(am) Call Transfer with another line. A call shall be able to be transferred to another active (talking) voice channel.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(an) Call Transfer with radio. It shall be possible to transfer any (GSM or Analog PSTN) call on hold to a half-duplex type (VHF/UHF/HF) resource. In this case, radio transmission and reception shall take place automatically through voice activity.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(ix) Portable ICS - Tactical Communication Module</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(aa) The offered solution should support communication between all the rugged and wrist computers via the wired and wireless networks as required in this document via IP-based protocols.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(ab) The offered solution should have a provision to communicate via a variety of standard local wireless networks (Wireless LAN, cellular, tactical radio, etc.).</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(ac) The field operatives should have a provision to communicate via a variety of commercial or dedicated wide area networks.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>


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<p>(ad) The offered solution should be able to integrate into any IP-based communication according to the specific deployment requirements like- LAN/WAN, Wi-Fi, Tactical Radio, Microwave Links, Commercial Satellite Links, Dedicated satellite links, WiMAX and Cellular Networks.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(ae) The offered solution should maintain an ad-hoc mesh of the data communication nodes. Each mobile unit should try to establish connections with as many other units as possible in order to achieve the maximal flexibility for the information interchange paths</p>	
<p>(af) The offered software solution should interface and abstract a number of communication devices of different technologies.</p>	
<p>(ag) The offered solution should maintain addressing services of nodes with multiple identities (different identities in different networks).</p>	
<p>(ah) The offered solution should automatically select the best communication channel (network) to use, per addressee.</p>	
<p>(aj) The offered solution should acknowledge-and-retry mechanisms, which turns unreliable communication into reliable one.</p>	
<p>(ak) The offered solution should provision automatic relay of information by a 3rd party unit – inside the network or between the networks.</p>	
<p>(al) The offered solution should compress data when applicable for best utilization of the limited bandwidth. Imposing data security for the transmitted information.</p>	


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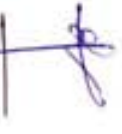

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<p>(am) The offered solution should provide end-to-end encryption of the transferred information using commercial or proprietary mechanisms. The encryption for communication should be based on the AES 128/192/256 standard.</p>	
<p>(x) Portable ICS : Graphical User Interface (GUI) for Telephony.</p>	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.</p>
<p>(aa) System shall graphically show all the active voice channels / lines through an Icon with information on the number of the incoming and outgoing calls.</p>	
<p>(ab) The subsystem shall allow the simultaneous management of multiple communication systems based on different and mutually incompatible technologies, from a unique graphic user interface.</p>	
<p>(ac) This graphic interface shall be designed from its conception to be used from a touch screen. It should also have the capability to be used with a keyboard and mouse from a conventional screen.</p>	
<p>(ad) The design shall be ergonomic and intuitive.</p>	
<p>(ae) The interface shall be based on icons, symbols, avoiding text as much as possible (no language).</p>	
<p>(af) The icons shall be reorganized, shown/hidden, or their size changed at the discretion of the user.</p>	
<p>(ag) The interface shall be personalized to different degrees to show/hide toolbars, change their location or change their functionality.</p>	
<p>(ah) It shall allow the use of advanced functions, such as drop & drag, to perform complex actions (conferences, transfers...).</p>	
<p>(aj) Operators shall thus be allowed to manage telephone and radio communications or other existing systems, such as public address, intercom and message/data transmission, etc. seamlessly.</p>	


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(ak)	Hierarchical directory with the possibility of showing an identifying photo/icon, as well as assigning various numbers to each entry.	
(al)	Each channel / line shall have different colors to represent its following status:	Board will carry out practical check as well
(am)	Out of order.	functional test of all the parameters mentioned
(an)	Free (idle).	here one by one and ensure its availability and
(ao)	Dialing.	workability. Vendor will demonstrate the same to
(ap)	Talking.	the board of officers.
(aq)	On hold.	
(ar)	Being used by another operator.	
(as)	On an Incoming call, the color of the icon shall change along with an acoustic tone. If a predetermined time passes, the color shall change.	
(xi)	Portable ICS : Graphical User Interface (GUI) for Radio	
(aa)	The GUI for Radios shall display following information:	Board will carry out practical check as well
(ab)	(a) Transmission (PTT).	functional test of all the parameters mentioned
(ac)	(b) Remaining transmission time (if configured for that purpose)	here one by one and ensure its availability and
(ad)	(c) Detection of selective calls through tones or sub audio (for radios with serial port control).	workability. Vendor will demonstrate the same to
(ae)	(d) Indication of the channel/group (for radios with serial port control or similar).	the board of officers.
(af)	(e) Scanner active channel indication: (For radios with serial port control or similar).	
(ag)	(f) Group transmission: It shall be possible to select various radio for simultaneous transmission and reception by various channels.	
(ah)	(g) Shows the status of radios integrated with the system by colors:	
(aj)	- Out of order.	


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(ak)	- Free (idle).	
(al)	- Dialing (private calls).	
(am)	- Talking.	
(an)	- On hold.	
(ao)	- Being used by another operator.	
(ap)	- Incoming call (private calls). This color shall go along with an acoustic tone. If a predetermined time elapses, the color shall change.	
(xii)	Portable ICS : Call Conference Features	
(aa)	System shall be able to monitor outside conversations.	Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.
(ab)	System shall support Intrusion in outside call.	
(ac)	System shall be able to create various conference groups.	
(ad)	System shall be able to have a Broadcast conference (multiplexing).	
(ae)	System shall be able to have conference between any type of resource / interface.	
(xiii)	Portable ICS : Recording	
(aa)	A recording system shall exist that records the operator's last conversations and allows access to these recordings using a simple select and playback interface.	Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.
(ab)	This information shall be stored in the system's hard drive and shall allow an operator to recover a conversation he has just had with a caller immediately, without having to access a recording search system.	
(ac)	It shall be possible to configure the maximum number of conversations that this recorder will save. When this number is reached, the oldest shall be deleted.	
(ad)	The operator shall be able to block the recording to remove it from the sequential deletion queue. The operator shall be able to unblock it at any time.	


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	(xiv) <u>Portable ICS : Audio transducers.</u>	Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.
	(aa) The system shall allow one or several transducers to be assigned for the operator.	
	(ab) A transducer may be a headset, a microphone with PTT button, auto amplified speakers, or a handset with PTT button, all with USB.	
	(ac) The operator shall be able to establish as many simultaneous conversations (with transmission and reception audio) as there are transducers.	
	(ad) The operator shall have no limit as to the number of calls he or she may attend and put on hold.	
	(ae) The operator shall have as many active conversations as (s) he has resources / interfaces assigned.	
	(af) The operator shall be able to dynamically assign the transducer to be used to attend a call.	
	(ag) The system shall allow a transducer to be assigned by default to attend a call depending on the resource or type of resource.	
	(ah) The operator shall be able to change the transducers' reception volume.	
	(xv) <u>Portable ICS : system Configuration.</u>	Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will demonstrate the same to the board of officers.
	(aa) It shall possess a tool with the suitable graphic interface that allows resource management (audio lines connected to the system), users (operators, dispatchers and administrators), telephone directory and maintenance functions.	
	(ab) This tool shall have a web interface.	
	(xvi) <u>Portable ICS : Third Party Integration.</u>	Board will carry out practical check as well as functional test and vendor will demonstrate the same.
	(aa) The systems shall allow integration with third-party applications.	


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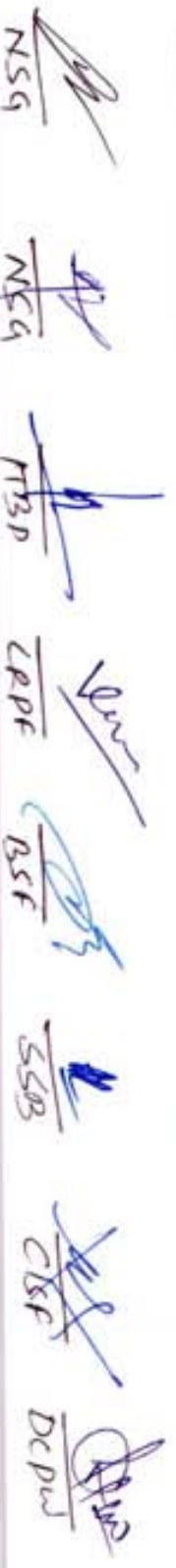

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	(xvii) Portable ICS-History Statistic	
	(aa) It shall have a tool that allows statistical reports on the control center to be generated on the activities of resources and operators over time.	Board will carry out physical check as well as functional test.
	(ab) This tool shall have a web interface.	
	(xviii) Inbuilt dir for dialing of nos/ Phone Book.	

6. Cabling Sub-system.

(a)	The cabling structure should have built-in cable trays for fool-proof cabling arrangement. Concealed ducting needs to be provided in the vehicle body, for electrical and network cabling. The duct panels should be easily accessible by a technician, for maintenance purposes. Wires must be grouped or harnessed where practical. Metal edges through which cables pass shall be protected with non-metallic bushings or grommets. All auxiliary circuits shall be wired separate and distinct from the vehicle chassis circuits. All wiring shall be clipped or otherwise attached at suitable intervals to prevent rubbing or chafing due to wire movement, vibration, etc. All wiring should be copper based and should follow standard colour coding and tags to identify cables. There will be separate structured cabling for electric and communication	Board will carry out physical check, its availability and workability and Vendor will demonstrate the same to the board of officers.
(b)	The vehicle should have electrical cabling to power computer systems, telecommunications equipment, networking equipment, and surveillance equipment.	Board will check it physically.
(c)	Power distribution should be through concealed cabling using metal housing with RFI/EMI filters. The power sockets should be JIS certified and must provide for one spare socket and one utility socket. RFI/EMI suppressor should be provided for each power panel.	Board will carry out practical check as well as functional test and its availability and workability. Vendor will demonstrate the same to the board of officers.











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(d) All electrical equipment shall be electromagnetic radiation suppressed, filtered, or shielded to prevent interference to radio and telemetry equipment.	
(e) Networking All network cabling will terminate on the network switch in equipment rack. Each workstation area should provide for two (2) networking points. Cabling used in the vehicle has to be STP Cat6 Ethernet cable.	Board will carry out practical check as well as functional test and vendor will demonstrate the same to the board of officers.
(f) Cabling and positioning of UHF/HF/Satellite/DTH/VSAT antennas should be appropriate.	Board will check it physically.

7 **Rugged Laptop** The rugged laptop will be operated by the control centre operatives in the operator/ section. The laptop will be connected to the in-vehicle LAN over wired Ethernet.

Ser No.	Specifications	Type of check
(a)	Windows 7 Professional or higher	Board will carry out practical check as well as functional test of all the parameter mentioned here one by one and its availability and workability. Vendor will produce certificate and demonstrate the same to the boars of officers.
(b)	14" (1366 * 768) HD Type (TFT)	
(c)	Intel Core i5-2520M processor or better	
(d)	4 GB DDR3 SDRAM memory or better	
(e)	Video graphics card with dedicated 512 MB VRAM or more	
(f)	500 GB HDD or better	
(g)	DVD-RW drive	
(h)	IEEE 802.11n, Gigabit Ethernet, Bluetooth	
(i)	87-key backlit keyboard	
(k)	10-hour battery life or better	
(l)	MIL-STD 810 certified	
(m)	Should have min 2 USB ports and min one HDMI port.	

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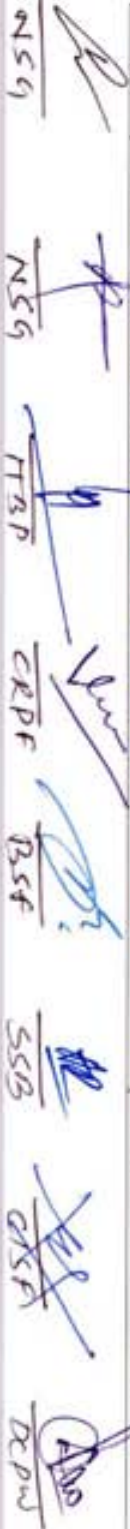
Applications	
(a)	Offered solution should have following basic functionalities: (i) Touch Screen Display HMI (ii) Communication layer (iii) Video Streaming/Video conferencing
(b)	Offered solution should be built using open and modern standards and tools, and should use standard platforms for operation.
(c)	Anti Virus with three yr license.

8. **Satellite DTH Antenna for Live TV on wheels.** This satellite DTH antenna shall be sleek and vehicle roof mounted. This shall enable the live broadcast of the TV channels within the vehicle, while on move or when the vehicle is stationary. The bundled products should include following components:-

- Low-Profile Antenna
- Vehicle Roof Mounting Kit for the vehicle
- IDU (Antenna Control Unit)
- Set-top box from local satellite TV provider

The technical QR for the antenna is mentioned below:

Serial No.	DTH Antenna	Type of check
(a)	Physical: Outdoor Unit Weight shall not be more than 30Kg	Board will measure the weight of the equipment with the help of weighing machine.
(b)	Frequency: Ku-band	Board will check all the parameters mentioned here one by one and ensure its availability and workability and vendor will produce OEM certificate in this regard.
(c)	Support for regional DTH Services shall be available	
(d)	Satellite Acquisition: < 1 Minute, fully automated with Integrated GPS	
(e)	Satellite Re-acquisition: < 10 seconds with integrated gyro	
(f)	Power Consumption shall be 50-60 Watts	BOO will carry out practical check as well as



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		functional test.
(g)	Power Supply : 10-30 VDC	Board will check physical to assess type, make and voltage of battery and it should be as per specification.
<u>Misc</u>		
(a)	Dish TV recharge should be min 1 year.	BOO will carry out physical check as well as functional test during demonstration.

9. **Ruggedized Wrist Computer.** It should be rugged and ultra lightweight wrist computer. It should have integrated options like GPS, camera etc. it should operate for approximately 4 hours without battery backup.

Ser No	Parameter	Specifications	Type of Check
(a)	Features		
	Overview	IP65 certified – Dust and Water resistant Design. Light weight <500g including the battery and excluding the wrist band. 4G LTE multi carrier mobile broadband with satellite GPS. 4-5 Inch display WXGA 1280 x 800 with LED backlighting. Should have facility to operate and control the function of Integrated Communication System (ICS) ie should function as a wireless console . Li-Ion battery 7.2v typical 7100mAh, minimum 6800mAh Password Security Super visor, User Hard Disk Lock. Should be remotely able to wipe the memory on the device (Online mode only) Alert user with sound and /or vibration Wrist computer only boots with relevant application and limited functionality to prevent cognitive overload on operator.	Board will carry out practical check as well as functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.


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(b)	System Configuration	Board will carry out practical check as well as functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.
	OS	Windows 8.1 pro 64 bit (window 7 downgrade option) or higher
	CPU Performance	2.3 GHz or better with 3 MB cache or more
	Storage	8GB SDRAM (DDR3L-1333 MHz) Up to 64GB with optional micro SDXC card 128GB and 256GB solid state drives (SSD) with heaters
		Wi-Fi Bluetooth and Optional Dedicated GPS
		Mil-STD 810 certified
(c)	Warranty	Should have minimum 3 years warranty along with Antivirus for three yrs.

10. **LED TV Screens**

LED TV Screens: Supply, installation, testing & commissioning of ceiling Mountable, full High Definition Resolution (1920x1080) LED Monitor having following technical performance parameters: -		Board will measure the size with measuring scale and rest features mentioned in QRs will be checked practically/ physically one by one and ensure its functionality.
(a)	LED Screen Size: Minimum 21" or higher	
(b)	Resolution : 1920x1080 pixels	
(c)	Brightness : Minimum 450/cd/m ²	
(d)	Contrast Ratio : Minimum 4000:1	
(e)	Should have RS 232C Control Port	
(f)	Input : VGA / DVI / HDMI, RS 232C / RJ45/ USB	



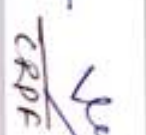
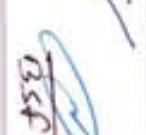


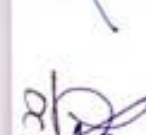
<p>(a) <u>Technical specification</u></p> <p>(i) High-speed ADSL2+ modem built-in</p> <p>(ii) Simultaneous Dual Band WiFi—2.4 & 5 GHz</p> <p>(iii) Memory: 128 MB flash and 128 MB RAM</p> <p>(iv) Five (5) (1 WAN, 4 LAN) Gigabit Ethernet ports</p> <p>(v) Supports Wireless Multimedia (WMM) based QoS</p> <p>(b) <u>Standards</u></p> <p>(i) Two (2) USB 2.0 ports</p> <p>(ii) One (1) ADSL2+ port</p> <p>(iii) IEEE® 802.11 b/g/n 2.4 GHz</p> <p>(iv) IEEE® 802.11 a/n 5.0 GHz</p> <p>(v) Five (5) 10/100/1000 (1 WAN and 4 LAN) Gigabit Ethernet ports with Auto-sensing technology</p> <p>(c) <u>System Requirements</u></p> <p>(i) Broadband Internet service (aa) Broadband Internet service. (ab) Cable or Fiber. Connects to cable modem via Gigabit Ethernet WAN port.</p> <p>(ii) 2.4 or 5.0 GHz 802.11 a/b/g/n specification wireless adapter or Ethernet adapter and cable for each computer.</p> <p>(iii) Microsoft Windows 7, 8, Vista, XP, 2000, Mac OS, UNIX, or Linux.</p> <p>(iv) Microsoft Internet Explorer 5.0, Firefox 2.0 or Safari® 1.4 or higher</p> <p>(v) Use with an N600 Wireless Dual Band USB Adapter (2.4 GHz or 5 GHz) for maximum performance</p> <p>(d) <u>Security</u></p> <p>(i) WiFi Protected Access® (WPA/WPA2—PSK)</p> <p>(ii) Double firewall protection (SPI and NAT firewall)</p> <p>(iii) Denial-of-service (DoS) attack prevention</p> <p>(e) <u>Package Contents</u></p> <p>(i) N750 Wireless Dual Band Gigabit DSL Modem Router</p>	<p>Board will carry out practical check as well functional test of the parameter one by one, vendor will produce certificate in this regards and demonstrate the same to the board of officer.</p> <p>Board will carry out practical check as well functional test of the parameter one by one, vendor will produce certificate in this regards and demonstrate the same to the board of officer.</p> <p>Board will carry out practical check as well functional test of the parameter one by one, vendor will produce certificate in this regards and demonstrate the same to the board of officer.</p> <p>Board of officers will carry out physical check as</p>
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		well as functional test.
(ii)	Stand	Board of officers will check it physically.
(iii)	Ethernet cable	-do-
(iv)	Power adapter	-do-
(v)	Quick install guide	-do-
(f)	Supported protocols	
(i)	Standard IEEE : IEEE 802.11b/g/n	Board will carry out practical check as well functional test and vendor will demonstrate the same to the board of officers.
(g)	Physical Specifications	
(i)	Dimensions: 223 x 153 x 31 mm (L x B x H)	Board will measure the size with standard measuring instrument.
(iii)	Weight: 0.5 kg (1.10 lb)	Board will measure the weight of the equipment with the help of weighing machine.
(h)	Operating conditions	
(i)	Operating Humidity : 10 % - 80 % Non-condensing	Firm will produce certificate of any government authorized laboratory that the modern comply these specification.
(ii)	Temperature : 0 Deg C - 40Deg C	

12. **Tablet PC with Retina Display**

(a) General Features		
(i)	Category : iPad& Tablets	Board will check it physically.
(ii)	Processor : Daul Core or better	Board will carry out practical check as well as functional test.
(b)	Platform	
(i)	Operating System : iOS 11/Android	Board will carry out practical check as well as functional test.
(ii)	Sensors : Three-axis Gyro, Accelerometer, Ambient Light Sensor, Digital Compass	Board will carry out practical check as well as functional test.

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(c) Display		
(i)	Display Type : LED	Board will check it physically and practically.
(ii)	Other Display Features : Multi-Touch display with IPS technology	Board will check it physically.
(iii)	Screen Size : 10 Inches or better	Board will check it physically.
(iv)	Screen Resolution : 2048 x 1536 Pixels or better (300 PPI or better)	Board will carry out practical check as well as functional test.
(d) Camera		
(i)	Primary Camera : Yes, 5 MP or better	Board will check it physically.
(ii)	Secondary Camera : Yes, 1.2 MP or better	Board will check it physically.
(iii)	Other Camera Features : Auto Focus, Geo-tagging, face Detection, Backside Illumination, Tap to Focus, Five-element lens	Board will carry out practical check as well as functional test.
(iv)	Video Recording : Yes	Board will carry out practical check as well as functional test.
(e) Multimedia		
(i)	Supported Audio Formats : AAC, MP3, WAV or latest	Board will carry out practical check as well as functional test and vendor will demonstrate the same to the board of officer.
(ii)	Supported Video Formats : MPEG4, WMV, H.264 or latest	
(f) Memory and Storage		
(i)	Internal Memory Capacity : 32 GB or more	Board will carry out practical check as well as functional test of all parameter and vendor will demonstrate the same to the board of officers.
(ii)	Internet Connectivity	
(iii)	Wifi : Yes	
(iv)	4G/3G or better	
(g) Connectivity		
(i)	Hdmi : No	Board will carry out practical check as well as functional test of all parameter and vendor will demonstrate the same to the board of officers.
(ii)	USB : Yes, Lightning Connector	
(iii)	Bluetooth : Yes, V4 or better	
(iv)	Audio Jack : Yes, 3.5 mm	
(v)	Other Connectivity Features : Stereo, Microphone	

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(h) Battery		Board will carry out physical check as well as practical check parameter and vendor will demonstrate the same to the board of officers.
(i)	Battery Type : Lithium-polymer, 42.5 Watt – hour	
(ii)	Standby Time : 10 Hrs	Board will measure the size with standard measuring instrument.
(j) Dimension		
(i)	Dimensions (lxbxh) : 241.2 x 185.7 x 9.4 mm	Board will measure the weight of the equipment with the help of weighing machine.
(ii)	Weight : <=700 gm	
(k) Other Features		Board will carry out practical check as well as functional test and vendor will demonstrate the same to the board of officers.
(i)	Face Time video calling , playback up to 1080p	

13. LAN Extenders

(a) ATM/EFM Protocol (Software)		Board will carry out practical check as well as functional test of all the parameter one by one. Vender will produce the certificate of OEM and demonstrate the features of the software.
(i)	ATM Adaption Layer Type 5 (AAL 5)	
(ii)	Multiprotocol over AAL5 (RFC 1483/2684 bridged & routed PDU).	
(iii)	Classical IP over ATM (RFC 1577 with MTU = 1500)	
(iv)	Up to 12 PVCs	
(v)	ATM QoS CBR, UBR, VBR, VBR-rt support.	
(vi)	UNI 3.1/4.0 PVC	
(vii)	1610 QAM FS loopback.	Board will carry out practical check as well as functional test and vendor will demonstrate the features to the board of officers..
(b) PPP Support		
(i)	PPP (RFC 1661)	
(ii)	PPP over AAL5 (RFC 2364)	
(iii)	PPP over Ethernet	Board will check it practically during functional test and vendor will produce certificate in this regard and demonstrate the features to the board of
(iv)	User authentication with PAP/CHAP	
(c) Protection		
(i)	Transmission Channel Lightening : 4KV 10/700us, common mode lightning: Level 4	
(ii)	1KV 10/700us, differential mode lightning: Level 1	

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(iii)	Executive Standard : IEC61000-4-5	officers.
(iv)	DHCP server (RFC 2131/2132)	
(d)	Routing Capability	Board will check it practically during functional test and vendor will produce certificate in this regard.
(i)	Support IP/TCP/UDP/ARP/ICMP protocols	
(ii)	IP routing with static routing	
(iii)	Network Address Translation (NAT/PAT)	
(iv)	DNS relay and catching (RFC 1034/1035)	
(e)	Network Management	
(i)	Password protected management and access control list for administration.	Board will check it practically during functional test and vendor will produce certificate in this regard.
(ii)	SNMP management with SNMPv1/SNMPv2c	
(iii)	Software via TFTP server.	
(f)	Hardware LAN Port	
(i)	Standard: IEEE 802/IEEE 802.3u	Board will carry out practical check as well as functional test of all the parameter one by one.
(ii)	Interface IEEE 802.3/802.3u 10/100 Base-T	Vendor will produce the certificate and demonstrate the features of the software.
(iii)	Bridging: IEEE 802.1d transport, self learning.	
(g)	Physical Interfaces	Board will carry out practical check as well as functional test of all the parameter one by one.
(i)	Ethernet: RJ-45, 4 ports, 10/100 Mbps/USB	Vendor will produce the certificate and demonstrate the features of the equipment.
(ii)	DSL: RJ-11, 1 Port.	
(iii)	Console: 1-port for device configuration & management.	
(iv)	Dimension: 130 x 161 x 28.8 mm (l x W x H)	
(v)	Power Supply: External power adaptor 12V DC, 1000 mA	
(h)	Features	
(i)	Efficient IP routing and transparent learning bridge to support broad internet services.	Board will check all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the features to the board of officers.
(ii)	VPN pass through for safeguard protections.	
(iii)	Fully ATM protocol stack implementation over SHDSL	
(iv)	Built-in 4-port 10/100 Mbps Switch.	
(v)	Dying Gasp circuit built-in.	
(vi)	WAN port ping Disable/Enable, URL blocking	



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DDM

(a) <u>Technical Specification</u>	
(i) Functions	: Print, copy, scan, fax, web
(ii) Print speed (letter/A4)	: Up to 19 ppm black, up to 14.5 ppm color
(iii) Control panel	: 2.65-inch (6.75 cm) color touch screen
(iv) Print input capacity	: 250 or higher
(v) ADF input capacity	: 35
(vi) Mobile printing capability	: HP ePrint, Apple AirPrint™, HP wireless direct printing
(vii) Scan Speed	: Up to 6 ipm (200 ppi, b&w), up to 6 ipm (200 ppi, color)
(viii) Scan size maximum Flatbed	: 8.5 x 11 in; ADF: 8.5 x 14 in
(ix) Scan Resolution	: Hardware: Up to 1200 x 1200 dpi Optical: Up to 1200 dpi
(x) Scan Input Modes	: Front-panel scan, copy, fax, or from software
(xi) Copy speed	: Up to 13 cpm black, Up to 11 cpm color
(xii) Copy Resolution	: Black (text and graphics): Up to 600 dpi; Color (text and graphics): Up to 600 dpi
(xiii) Max No of Copies	: Up to 99 copies
(xiv) Fax Speed	: 4 sec per page
(xv) Fax Resolution	: Black(standard): 203 x 98 dpi; Black and White(fine): 203 x 196 dpi, 256 levels of gray
(xvi) Standard Connectivity	: 1 USB 2.0; 1 Host USB; 1 Ethernet; 1 Wireless 802.11b/g/n; 2 RJ-11 modem ports
(xvii) Network capabilities	: Standard (built-in Ethernet, WiFi 802.11b/g/n)
(xviii) Memory/Processor speed	: 128 MB/600 MHz
(xix) Duty cycle (monthly)	: Up to 5,000 pages;
(xx) Input	: 250-sheet input tray; Optional 250-sheet input tray
(xxi) Output	: 150-sheet output tray
Board will carry out physical check, practical check and functional test of all the parameter mentioned here one by one of the equipment. Vendor will produce certificate of OEM and demonstrate the features of the related equipment to the board of officers.	
Board of officers will check it practically.	
Board of officers will check it practically.	



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(xxii)	Input voltage: 100 to 240 VAC (+/- 10%), 50/60 Hz:	Board will carry out practical check as well as functional test. Firm will produce OEM certificate and demonstrate the same.
(xxiii)	Software : HP Printer Software, Google Toolbar, HP Update.	Board of officers will check it practically and vendor will produce certificate of any Govt authorized laboratory and demonstrate the features to the board of officers.
(xxiv)	Operating System : Windows 8, 1, Windows 8, Windows 7, Windows Vista, or higher (32-bit only); Mac OS X v 10.6, v 10.7, v 10.8 or v 10.9; Linux.	
(xxv)	Security management : Device firewall configuration; Control panel lock; Password protect EWS, SSL/TLS (HTTPS)	Board of officers will check it practically.
(xxvi)	Power consumption: 35 watts (Maximum), 0.15 watts (Manual-Off), 6.80 watts.	
(xxvii)	Dimensions (W x D x H) : 19.7 x 18.5 x 11.8 in with duplexer installed, output tray folded up	Board will measure dimension with the help of measuring tape.
(xxviii)	Weight : Not more than 15 Kg with duplexer	Board will measure weight with the help of weighing machine.
(b)	Features	Board will carry out physical check, practical check and functional test of all the parameter mentioned here one by one of the equipment. Vendor will demonstrate the features to the board of officers.
(i)	Easy access USB port to print from and save scans to a flash drive	
(ii)	Plate glass color scanner handles up to 8.5 x 14 in (215 x 355 mm) 4 paper	
(iii)	150-sheet output tray	
	250-sheet input tray	
(iv)	2nd 250-sheet paper tray ³	
(v)	Automatic two-sided printing	
(vi)	600 MHz processor, 128 MB RAM	
(vii)	Integrated 802.11b/g/n wireless networking	
(viii)	RJ-11 fax modem ports (2)	
(ix)	Ethernet network port for easy sharing	
(x)	Hi-Speed USB 2.0 printing port	
(xi)	Power connection	


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(a) <u>Technical Specifications</u>	Board will carry out physical check, practical check and functional test of all the parameter mentioned here one by one of the equipment. Firm will produce OEM certificate in this regards and demonstrate the features to the board of officers.
(i) Lens high Quality 3P lens	
(ii) Built In Microphone	
(iii) 6 white LED indication lights for night view	
(iv) Manual Control Button for LCDs	
(v) Suitable for both laptop and desktop	
(vi) Zoom function with four choices for the zoom (1x, 2x, 3x & 4x)	
(vii) With 16 sorts of photo frame & mosaises image effect with driver	
(viii) Automatic exposure control, Auto White balance	
(ix) Interface : USB 2.0 High-Speed (UVC)	
(x) Frame rate : With VGA (640x480) format rate upto 30fps	
(xi) Valid Pixels: 20 Megapixels with driver	
(b) <u>System Requirements</u>	
(i) Pentium II 350 MHz CPU or advanced	
(ii) One free USB port	
(iii) 32 MB RAM Or Advanced	
(iv) At least 50MB hard Disk Space available	
(v) 16 bit VGA card, sound card	
(vi) USB interface / CD-ROM drive / VGA monitor	
(c) <u>Features</u>	
(i) In built Microphones	
(ii) Interpolated in 40 Mega pixels	
(iii) In driver, have 16 kinds of photo frames	
(iv) Zoom function (1x, 2x, 3x, 4x)	
(v) Game function	
(vi) Night Vision	
(d) Warranty : 1 Year Manufacturer Warranty	


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16. Power Sub-system.

(a) The electrical sub-system in the vehicle shall allow power to be drawn from the generator or shall allow raw power, based on availability, to minimize use of the Gen Set.	Board will carry out practical check as well functional test and vendor will demonstrate the same to the board of officers.
(b) MCBs, change-over switches, and other equipment should be installed to make possible operation of electrical devices in the vehicle either from generator-operated power or mains commercial power. There shall be an easily deployable power cable arrangement, using a 50-metre power-cable spool, to draw power from an external (outside the vehicle) raw power outlet.	Board will check it physically.
(c) The generator will be situated at the rear of the vehicle. It will be accessible only from the outside of the vehicle thru a rear or side door.	Board will check it physically.
(d) The vehicle will be well ventilated and acoustically padded, to ensure that fuel fumes and the noise/vibration/heat of the generator do not disturb the occupants of the vehicle.	Board will carry out practical check as well as functional test and vendor will demonstrate the same to the board of officers.
(e) The generator will house a compact size reputed make 7 KVA capacity generator with a fuel tank adequate to power the equipment for 10 Hrs.	Board will carry out physical check as well as functional test.
(f) The Batteries for UPS shall also be accommodated in this vehicle. The vehicle shall be well ventilated to ensure that battery fumes and the heat of the batteries do not disturb the occupants of the vehicle.	Board will carry out practical check as well as functional test and vendor will demonstrate the same to the board of officers.
(g) This vehicle shall be able to accommodate SMF batteries to have the power backup up to 1Hr with min bty that can be accommodated in space available.	Board will carry out physical check as well as functional test.


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(h) Petrol Generator (Portable)	The generator will power the electronic equipment and will power the AC when the vehicle is stationary. The power to the electronic equipment will be through the UPS.	Board will carry out practical check as well as functional test.
(j) Generator Specifications	<p>Generator Specifications:</p> <p>(i) Capacity: 7</p> <p>(ii) No of cylinders: 1</p> <p>(iii) Cooling System: Air Cooled</p> <p>(iv) Fuel-tank capacity: Adequate for 10Hrs operations</p> <p>(v) Voltage: 230V</p> <p>(vi) Dimensions (l x b x h) : 1016 x 680 x 722 mm or less</p> <p>(vii) Weight : 124Kg Maximum</p>	Board will carry out physical check as well as functional test of all the parameter mentioned here one by one and vendor will demonstrate the same to the board of officers.
(k) UPS	The UPS will draw power from the generator or the raw power inlet, and will power the electronic equipment in and on the vehicle. The UPS power backup shall be for 1Hr. UPS shall be designed to withstand the vibrations during the vehicle movement.	Board will carry out physical check as well as functional test of all the parameter mentioned here one by one and vendor will demonstrate the same to the board of officers.
(l) UPS & Battery Specifications	<p>UPS Specifications:</p> <p>(i) Capacity: 5KVA</p> <p>(ii) Form-factor: 19" rack mount</p> <p>(iii) Management: SNMP</p> <p>(iv) Diagnostic Display: LCD + LED</p> <p>(v) Waveform: Sine Wave</p> <p>UPS Battery Specifications:</p> <p>(i) Type: Sealed Lead-Acid Maintenance-Free</p> <p>(ii) Rating: 100AH, 01 hr backup bty</p> <p>(iii) Voltage: 12V</p>	Board will carry out physical check as well as functional test of all the parameter mentioned here one by one and vendor will demonstrate the same to the board of officers.



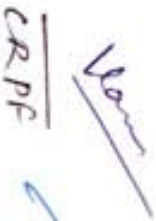
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17. Car Navigation System.

(a) Car Navigation System. Interactive car navigation system should sync with the mobile and seamlessly make and receive calls. Should have option for rear view camera input option. The maps displayed should be draggable and zoomable, make the map 2D/3D at any angle. It should be powered with All India street level maps. It should take the name of the city/place/location as its input .It should be to change mode from day to night. It should sync with Bluetooth devices. It should be tunable to radio i.e AM and FM and should also have USB and DVD interface.	Board will carry out physical check as well as functional test. Firm will demonstrate the same to the board of officers.
Technical Specification.	
(a) System: OS: Windows CE 6.0 CPU: Sif V, 600 MHz Memory: In-built 4GB Flash memory, DDR2 128MB SD card: supports up to 8GB	
(b) Display: 12.7cm LCD with touch panel Pixel: 480 x 272 Pixels Display Orientation : Landscape	
(c) Media function : Movie: . . .mp4, .mpg, .Divx_avi, .Xvid_avi Audio: .mp3, .wma, . Picture: . . .bmp, .gif, .jpg, .png	
(d) Input / Output : USB 2.0 (5 pin) Support USB car charger	
(e) Power: Input: 100-240 VAC Output: 5V DC, 1.5A Connector: mini USB type adapter	
(f) Dimension : 132 x89 x 12mm or higher	
(g) Net weight : 166 g or less	

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<u>Ser No</u>	<u>Specification</u>	<u>Type of Check</u>
(a)	<p>Surveillance Sensors Integration As per tasking there is a requirement to provide svl cover in and around the objective/target area with existing surveillance sensors(HHTI, NIKON D-700, Sony PD-170, Mini Rov, UAV) and real time display of svl feeds to the Command and Control Centre for operational assessment by task Force Commander. In addition, there is a requirement to cater for futuristic IP based surveillance sensors so as to dovetail their feeds as and when they are made available.</p> <ul style="list-style-type: none"> • The integrated surveillance solution should cater for real time monitoring of svl sensors, display of svl feeds, archiving of svl feeds, analysis of svl feeds and retrieval of archived feeds. • The solution should support integration with the command and control application run by the rugged laptops, allowing to show location of svl detachments on map. In addition, a suitable touchpad based integrator to communicate with each detachment on existing VHF/UHF radio net. • The integrated surveillance solution should cater for eight analogue feeds and eight IP feeds simultaneously. 	<p>Board will carry out practical check as well as functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regards and demonstrate the same.</p>
(b)	<p>Video Encoders Video Encoders for converting the analogue video stream from various sensors to an IP stream. The following features are required.</p> <ul style="list-style-type: none"> • Video Encoders to cater for Eight (08) analogue inputs. • Support MPEG4 or H.264 video compression. 	<p>Board will carry out practical check as well as functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regards and demonstrate the same.</p>

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	<ul style="list-style-type: none"> • Intelligent video capabilities such as video motion detection. • Support multiple video streams simultaneously from each video channel at full frame rate in all resolutions (720x480 in NTSC, 720x576 in PAL). • All video channels to support pan/tilt/zoom control for PTZ and PTZ dome cameras. • Joystick based PTZ Controller to control futuristic PTZ & PTZ dome cameras.
(c)	<p>Network Switch A suitable 16 Port Network Switch to connect the IP encoders and futuristic IP based Cameras.</p>
(d)	<p>Network Video Management Software(NVMS)</p> <ul style="list-style-type: none"> • Network Video Management software (NVMS) to manage the cameras should be supplied. VMS shall support open protocol IP cameras from all major vendors as well as analogue streams from existing surveillance sensors. The software should be supplied with software license registration, software license certificate and instructions for registration. It should be fully compatible with the supplied cameras and work seamlessly for an effective monitoring and management environment. • The VMS shall offer centralized management of all devices, servers and users. • The VMS should manage, store and deliver video. It should support encoding, distributing, managing and archiving video feed. • The VMS should authenticate and manage access to video feeds. It should act as a centralized tool for management of virtual matrixes, cameras, encoders, and viewers, as well as, for viewing network based video. • The viewer application shall allow recipients of the video to browse and playback the exported video without installing separate software on their computers.

Board will carry out physical check as well as practical test.

Vendor will produce certificate of OEM or will provide certificate from any Govt authorized laboratory about the software sources and IP rights for the software. The vendor/rep of firm will demonstrate the features to the board of officers. To check the authenticity of the software.

Board will check all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.

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<ul style="list-style-type: none"> ▪ The VMS data communications and telecommunications network shall use a suitable transport medium and associated cabling and data transmission infrastructure that will support real-time video display of cameras at the nominated operations centers. ▪ The management server shall allow access to a system manager from where the administrator can configure and manage all servers, cameras and users. ▪ System Monitor shall give actual and historic performance and use reports of server performance, storage availability, network usage and camera performance. ▪ Multicast Support <ul style="list-style-type: none"> ▪ The system shall support multicasting of video feeds to client workstations in order to conserve network resources. Multicasting should be enabled from the recording servers and not directly from the cameras. ▪ Multi-streaming Support <ul style="list-style-type: none"> ▪ The recording server must accept, display and record individual streams of video from each camera that supports ▪ Alarms Support <ul style="list-style-type: none"> ▪ The alarm support shall allow for continuous monitoring of the operational status and event-triggered alarms from servers, cameras and other devices. 	<p>Board will check all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.</p>
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<ul style="list-style-type: none"> ▪ The alarm support shall provide a real-time overview of alarm status, or technical problems, while allowing for immediate visual verification and troubleshooting. <p>Functionality</p> <ul style="list-style-type: none"> ▪ The client viewer shall provide remote users with a comprehensive suite of features: <ul style="list-style-type: none"> ▪ It shall be possible to playback recordings from cameras on the surveillance system, with a selection of advanced navigation tools, including an intuitive timeline browser. ▪ The system shall allow views to be created which are only accessible to the user, or to groups of users optimized for 4:3, 4:3 Portrait, 16:9 and 16:9 Portrait display ratios. ▪ It shall be possible to control PTZ cameras. ▪ It shall be possible to use digital zoom on live as well as recorded video. ▪ It shall be possible to use sound notifications for attracting attention to detected motion. ▪ It shall be possible to get quick overview of sequences with detected motion. ▪ It shall be possible to get quick overviews of alerts. ▪ It shall be possible to quickly search selected areas of video recording for motion. ▪ It shall be possible to skip gaps during playback of recordings. ▪ It shall be possible to use a sequence function that lists thumbnail images representing recorded sequences from an individual camera or all cameras in a view. ▪ It shall be possible to use a forced playback mode allowing the user to playback recorded video from inside the 'live' mode while viewing 'live' video. ▪ The client viewer shall support the use of 3-axis USB joysticks for control of pan, tilt, zoom and auxiliary camera 		<p>Board will check all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the same.</p>	
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<p>(e)</p>	<p>Digital Video Recorder Digital video recorder is required for standalone video recording and streaming from analogue sensors. The DVR should support the following specifications:-</p> <ul style="list-style-type: none"> ▪ view of all the cameras, including PTZ control with joystick, fisheye (360 degrees) cameras. The playback function shall give the user concurrent playback of up to 16 recorded videos with date, alert sequence, or time searching. ▪ The system shall support H.264, MPEG-4, compression formats for all analog cameras connected to encoders, and all IP cameras connected to the system. ▪ The system shall support dual-streaming cameras and shall support the following compression formats: H.264, MPEG-4 (Part 2) and MJPEG. 	<p>Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and</p>
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	<ul style="list-style-type: none"> • Full HD 1080p HDMI video out • Support 16 composite videos inputs @960 x 480 resolution or better. • Touch sensitive front panel • Support recording and playback up to 960 x 480 resolution. • Support 4 Internal HDD. • Support Network bandwidth upto 32Mbps. • Support 16CH audio inputs/1CH audio output. 	workability. Vendor will produce certificate in this regard and demonstrate the features of the related equipment to the board of officers.
(f)	<p>Display Mechanism Suitable Qty – 01 x LED 21" TV based display mechanism to project the video in Operator Section.</p>	Board will carry out physical check as well as functional test of the parameter and vendor will demonstrate the same to the board of officers.
(g)	<p>Network Attached Storage A suitable Network Attached Storage to store the surveillance feeds for sensors. The NAS should have the capability of 10 TB of Storage.</p>	Board will carry out practical check as well functional test and vendor will demonstrate the features of the related storage.
(h)	<p>Video Management Server (Laptop Based)</p> <ul style="list-style-type: none"> • Windows 7 Professional or higher • 14" (1366 * 768) HD Type (TFT) or higher • Intel Core i5-2520M processor or Higher • 4 GB DDR3 SDRAM memory or better • Video graphics card with dedicated 512 MB VRAM • 500 GB HDD or better • DVD-RW drive • IEEE 802.11n, Gigabit Ethernet, Bluetooth • 87-key backlit keyboard • 10-hour battery life or better • MIL-STD 810 certified • Should have min 2 USB ports and min one HDMI port. • Antivirus with 3 Years Subscription 	Board will carry out practical check as well functional test of all the parameters mentioned here one by one and ensure its availability and workability. Vendor will produce certificate in this regard and demonstrate the features of the related equipment to the board of officers.
(i)	<p>Wi-Fi based Svl dissemination system and terminal display (Handheld) Equipment. High power Wi-Fi access point to be incorporated to transmit video svl feed</p>	Board will carry out practical check as well as functional test and vendor will demonstrate the

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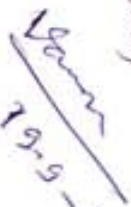
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<p>(Min 2 km) to handheld terminal devices being used in object area.</p> <p>Terminal display (handheld) Device - Capable of hooking on Wi-Fi access point and access video svl feeds as required in the veh.</p>	<p>Board will carry out practical check as well as functional test of all the parameters and vendor will demonstrate the same to the board of officers..</p>
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Sh. P. C. Sharma, NSG,
 G.C. (Comm)
 26/9/18


 26/9/18

Sh. V. K. Srivastava, HR CRPF,
 AC


Col. S. Velmurugan, NSG,
 G.C., Comm. Cp.

Sh. Sharan Singh, DC, 95 Bn BSF

27/9/18

Sh. K. K. Roy, Asst Dir, S S B
 19/9/18

~~Sh. Ravindra Mehta, DC~~
 19/9/18


Sh. Karan Singh, HR 176P,
 AC
 19/9/18

Sh. Rajesh Kumar, DC PW,
 Asst Dir



(Approved/Not Approved)


 DG, NSG
 27/9/18