

S.No.	Description of Items (detailed specifications of each enclosed)	Approx Quantity *	Unit Rate Rs.	Total in Rs.
1	High performance, day & night, IR, 18x optical zoom, motion detection, Ethernet interfaced camera with PAN/TILT/ZOOM features including vandal proof housing	8		
2	High performance, day & night, motion detection, Ethernet interfaced camera with varifocal lens including vandal proof housing	4		
3	Managed Giga L2 switch with fibre modules, patch cards etc.	1		
4	Client Workstation with dual VGA graphics card	6		
5, 6	Server with Tape drive as per detailed specs enclosed.	1		
7	32" LCD Monitor with DVI	6		
8	Video Management Software license for minimum 5 users	1		
9	Media Converter (OFC to Ethernet)	1		
10	1 TB External Hard disk	1		
11	OFC-single mode	1000 mts		
12	Supply, laying, fixing and drawing of optical fiber cable, CAT6 cable, through HDPE/PVC pipes along with necessary fixtures, erection of posts, angles etc for cameras	1000 mts		
13	Installation, implementation, configuration, testing and commissioning of each IP camera; integrating the camera with main server and necessary training to the staff			
14	Any other items required for installation and operation of the surveillance system			

\* Tentative quantity, likely to increase or decrease. Please quote for item 11 & 12 on meter basis.

## Terms and Conditions

1. The rates are inclusive of all the present and future applicable taxes and unit rate for each individual item to be quoted
2. Work should be completed within 30 days from the date of issue of letter of acceptance
3. Work should be carried out in consultation with the concerned section.
4. Comprehensive AMC for all items and work should be made available for a minimum period of three years and the firm should provide full support for the entire system for a minimum period of 7 years from the date of successful commissioning
5. The firm shall carry out minor masonry and other decoration works
6. All the above item descriptions are to be read in conjunction with the relevant paras of the technical specification enclosed
7. Integrating the system with the existing network infrastructure in the campus (CMC and SERC)
8. Onsite training, manuals and troubleshooting should be imparted
9. The bidder shall visit the site and understand the requirements fully before quoting their offer. A copy of the campus layout is also enclosed for quick reference
10. The system should support future expansion
11. Tender having counter conditions contrary to our requirements can be vitiated the tender evaluation process and are liable to outright rejection without assigning any reasons
12. Bidder should consider all the necessary accessories needed to attain a complete working condition of the entire system.
13. The camera should have built-in surge and lightning protection
14. All the hardware shall be of reputed make suitable for intended use. Their make and specifications shall be subjected to the approval of the Employer.
15. The technically qualified bidders are required to give a live demonstration before opening the commercial bid.

1. IR Fixed Dome Camera Specifications		Make: Sony/Bosch/ Axis Pelco/Honeywel	Rate quoted
Zoom Ratio	2.7 x optical zoom or better		
Image Device	1/4 Progressive Scan CCD		
True IP Camera	The camera should have 10Base-T/100Base-TX (RJ-45), analog camera with encoder is NOT acceptable.		
Number of effective Pixel	659x494		
Lense Type	Vari-focal zoom lens		
Audio	Bidirectional Audio (Audio in and out ports built in the camera)		
Compression format	Mpeg4/Jpeg Selectable		
Focal Length	3.0mm to 8.0mm		
Gain Control	Auto / Manual		
Audio Compression	G.711 / G.726		
Number of Clients	Jpeg – 20, Mpeg4 – 10		
Ethernet	10 Base-T / 100 Base – TX (RJ-45)		
S/N ratio	50 dB		
Minimum illumination	0.14 lx		
Analog Video Out	BNC X 1, 1.0 vp-p, 75 ohm		
Horizontal TV lines	400 TVL		
I/O Ports	Sensor in X 1, Alarm out X 1		
Exposure Control	Auto Iris Lens / Manual Iris Lens		
White Balance Mode	One Push Auto / ATW / Manual / Daylight		
Image Size	640 X 480, 480 X 360, 384 X 288, 320 X 240, 256 X 192, 160 X 120 (Jpeg/Mpeg4)		
Operating Temperature	-10 to 50 °C		
Storage Temperature	-20 to 60 °C		
Power Requirement	POE / AC 24 V/ DC 12 V		
Mounting	As per the site requirement (Wall / Pole – Supplier has to specify the height of the pole after visiting the site)		
	<ul style="list-style-type: none"> <li>❖ The camera should have inbuilt intelligent motion detection so that background moments of leaves, trees, water etc. is minimized.</li> <li>❖ The camera should provide clear image even in high contrast environments.</li> <li>❖ The camera should be able to raise alarm in case of increase in number of human / vehicle in a predefined area.</li> <li>❖ The camera should be a day / night camera</li> <li>❖ Day / Night feature should be controlled manually or surrounding light conditions.</li> </ul>		

2. Day / Night PAN TILT ZOOM Camera specifications		Make: Sony/Bosch/ <b>Axis</b> Pelco/Honeywel	Rate quoted
Zoom Ratio	18 x optical zoom or better		
Image Device	1/4 Exwave HAD CCD		
True IP Camera	The camera should have 10Base-T/100Base-TX (RJ-45), analog camera with encoder is NOT acceptable.		
Pan / Tilt Angle	360 degree endless PAN 180 degree Tilt		
Pan / Tilt Speed	300 degree / sec		
Number of effective Pixel	768x494		
Lense Type	Auto-focus zoom lense		
Audio	Bidirectional Audio (Audio in and out ports built in the camera)		
Compression format	Mpeg4/Jpeg Selectable		
Focal Length	4.1mm to 73.8mm		
Gain Control	Auto / Manual		
Audio Compression	G.711 / G.726		
Number of Clients	Jpeg – 20, Mpeg4 – 10		
Ethernet	10 Base-T / 100 Base – TX (RJ-45)		
S/N ratio	50 dB		
Minimum illumination	0.7 lx color , 0.1 lx b/w		
Analog Video Out	BNC X 1, 1.0 vp-p, 75 ohm		
Horizontal TV lines	470 TVL		
I/O Ports	Sensor in X 2, Alarm out X 2		
Exposure Control	Auto Iris Lens / Manual Iris Lens		
White Balance Mode	One Push Auto / ATW / Manual / Daylight		
Image Size	640 X 480, 480 X 360, 384 X 288, 320 X 240, 256 X 192, 160 X 120 (Jpeg/Mpeg4)		
Operating Temperature	-10 to 50 °C		
Storage Temperature	-20 to 60 °C		
Power Requirement	POE / AC 24 V/ DC 12 V		
	<ul style="list-style-type: none"> <li>❖ The camera should have inbuilt intelligent motion detection so that background moments of leaves, trees, water etc. is minimized.</li> <li>❖ The camera should provide clear image even in high contrast environments.</li> <li>❖ The camera should be able to raise alarm in case of increase in number of human / vehicle in a predefined area.</li> <li>❖ The camera should be a day / night camera and Day / Night feature should be controlled manually or surrounding light conditions.</li> <li>❖ The camera should be capable of having up to 7 unwanted privacy zone masking area to be interlocked with the PAN/Tilt/ZOOM</li> </ul>		

	<b>3. 2SFP L2 SNMP Stacking Giga switch with minimum 8 ports</b>	Make: Cisco / Nortel/ <b>Dlink/Dax</b>	Rate quoted

**Port Density**

2 x SFP bays or 2 x 10/100/1000T ports (RJ-45)  
The switch should come populated with two single mode fiber modules.

**Performance**

Chipset switching capacity 12.8Gbps  
64MB RAM  
16MB Flash Memory  
8,000 MAC address

**Interface support**

10/100-TX RJ-45  
10/100/1000TX RJ-45  
100-FX, 1000-SX, 1000-LX SFP slot  
RS232 DB9 pin, male port

**Management**

Industry Standard CLI  
Web Interface  
Secure encrypted WEB and CLI management  
with SSH v2 and SSL for secure management  
SNMP v3 for management

**General Features**

Single IP address Stack management  
Stacking - up to 6 units  
Backup master  
4Gig Resilient Ring Stacking Architecture  
Across Stack Link Aggregation, Stack VLAN configuration, Stack Port Mirroring, Trunking across stack

**Quality of Services**

8 Priorities assigned to 4 queues  
802.1p for Layer 2 QoS  
DSCP (Diffserv) for Layer 3 QoS  
802.1p to DSCP remarking traffic  
Traffic prioritization using 802.1p, ToS, DSCP fields  
Strict Scheduling and Weighted Round Robin

**Security**

Guest VLAN  
SSHv2 for Telnet management  
SSLv3 for WEB management  
RFC 1492 TACACS+  
RFC 2138 RADIUS Authentication  
IEEE 802.1x Port-based network access control  
Broadcast Storm Control

**General Standards**

802.1d Bridging  
802.3x Backpressure/ Flow Control

**Redundancy Standards**

802.1D Spanning Tree Protocol  
802.1W Rapid Spanning Tree  
802.1s Multiple Spanning Tree  
802.3ad LACP Link Aggregation  
Static port trunk  
IGMP snooping v3

**VLANS**

IEEE 802.1Q VLAN Tagging  
Up to 256 VLANs  
Port-based VLANs  
MAC-based VLANs  
Private VLANs  
GARP VLAN Registration Protocol (GVRP)

**Power Characteristics**

Voltage input 100- 240VAC  
Voltage output 12VDC  
Current 1.5A  
Max Power consumption 54W

**Environmental Specifications**

Operating Temp 0°C to 45°C (32F to 113F)  
Storage Temp -25°C to 70°C (-13F to 158F)  
Relative Humidity 10% to 90% non-condensing

**Electrical/ Mechanical Approvals**

Safety UL 1950 (UL/cUL), EN60950 (TUV)  
EMI FCC Class A, EN55022 Class A,  
VCCI Class A, C-Tick, EN61000-3-2,  
EN61000-3-3  
Immunity EN55024  
RoHS compliant

4.Desktop	Make : HP / DELL / IBM	Rate quoted
<p>Intel Core2 Duo 2.4 GHz or higher, 4 MB Cache, 1066 MHZ FSB</p> <p>160 GB of storage or more (IDE or Better)</p> <p>RAM – 1.0 GB</p> <p>10/100/1000 Ethernet Network Interface Card</p> <p>256 MB Display Adapter ( NVIDIA or ATI ), Dual Display with support for 32" LCD Monitor</p> <p>17 inch LCD Monitor</p> <p>16x DVD RW</p> <p>Windows XP Professional SP2</p> <p>OEM Keyboard and Mouse</p> <p>Onboard Sound Card</p> <p>Miscellaneous : Speaker with Headset, Dust Cover and Mouse Pad</p>		

5.Server	Make : IBM / HP / DELL	Rate quoted
<p><b>Processor</b> : Intel Xeon 3.0 GHz (min) with 1333 Mhz (min)system bus with dual core CPU with 17" TFT Monitor</p> <p><b>No of Dual core Processors:</b> Two</p> <p><b>RAM</b> : 8 GB with ECC DDR SDRAM up-gradable to 32 GB</p> <p><b>Hard drives:</b> Minimum 2 TB (Usable). (SAS), RAID 5 However, storage calculation based on monitoring from cameras ( minimum 4) for 30 days data to be worked out and submitted.</p> <p><b>Monitor, Keyboard, Mouse:</b> 17" TFT Monitor, Windows OS Compatible USB (Preferably same make &amp; colour as CPU box), USB Optical Scroll Mouse (Preferably same make and colour as CPU box)</p> <p><b>I/O Adapters:</b> 10/100/1000 Mbps Ethernet interface card with RJ 45- 2 nos, Ultra320 SCSI adapters with free external port -2 nos</p> <p><b>DVD:</b> 16x DVD +R/+RW</p> <p><b>I/O Interfaces:</b> 1 Serial ; 1 parallel; PS/2 port; 4 USB 2.0 ports</p> <p><b>Backup/Restore:</b> Should be able to take backup to LTO4 Backup drive</p> <p><b>Backup /restore software</b> should cater for System Backup and data backup</p> <p><b>System Manageability and Diagnostics:</b> The system should have following hardware/ software capabilities: Pre-installed OEM's diagnostic tool for hardware diagnostics; System Hardware Management Tool; Rescue and Recovery with Rapid Restore.</p> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li>1. Power Cables</li> <li>2. All drivers on CD media</li> </ol>		

<b>6. External LTO Tape Drive for Servers</b>	Make : HP / IBM / DELL	<b>Rate quoted</b>
Technology : LTO4 based technology No of Drives: 1 no. Capacity per cartridge : Minimum 1.6 TB compressed :800GB native. Transfer Rate : Sustained transfer rate of minimum 120 MB/sec native Indicator : Indicators for write protection, tape in use, data compression and drive cleaning. OS Support : Windows Power: Power : 200 –240 AC , 50 Hz Connectivity : To be connected to Windows server mentioned above		

<b>7. LCD Display-supply and installation</b>	Make: SAMSUNG, PHILLIPS, LG, SONY, TOSHIBA, PANASONIC	<b>Rate quoted</b>
Type LCD Size 32 inches or more Contrast Ratio 5,000:1 or better Brightness min 300cd/m <sup>2</sup> View Angle 170H/V or more Resolution 1680x1050 <b>or higher</b> Response Time 5 ms or less Stand Wall mount & table top, included Power 230V AC Video Cable Sufficient length as per the site Requirement <b>The display unit should work 24/7/365 days</b>		

### **8. Video Management Software Specifications**

1. The IP network-based video management system shall be a Windows-based application software, capable of recording JPEG or MPEG-4 video, or dual JPEG/MPEG-4 streams from a camera, G.711 or G.726 audio, as well as metadata. The system shall also be capable of decoding and displaying in multi-screen or single screen the decoded video streams, and have software based I/O terminal interfaces to accept alarm triggers.
2. The system shall have the ability to display, record, and playback video from cameras located at remote multiple locations over an IP network.

The system shall support the following recording modes: manual, schedule based, alarm, and event (or activity). Additionally, the system shall support rule or filter based triggered recording when used with Camera cameras that support intelligent motion detection or object detection

3. The system shall have a "Camera Auto Registration" function. This function shall allow the user to automatically set the following:
  - a) Detect all IP cameras or video servers (encoders) installed on the same network segment automatically.
  - b) Detect camera type.
  - c) Assign IP address to cameras.
  - d) Register the cameras to the system.
  - e) Generate appropriate monitoring layout based on number of registered cameras.
  
4. The system shall also have a quick recording configuration capability with a simple wizard. The function shall help automatically set the following:
  - a) Allow the user to select either schedule recording or alarm recording
  - b) If schedule recording is selected, user inputs the total number of days to store recorded video (up to 365 days), and the system shall automatically begin recording video with the most appropriate frame rate.
  - c) Frame rate shall be calculated based on available storage, number of cameras, 24/7 recording, VGA resolution on IP cameras, MPEG-4 compression, at 50% picture quality.
  - d) If alarm recording is selected, the system shall automatically begin recording video using the most appropriate parameters for alarm recording. When using the automatic alarm wizard, the maximum number of cameras that can be automatically configured shall be 24 cameras.
  - e) Parameters settings shall be based on VGA resolution on IP cameras, MPEG-4 compression, and 10 fps at 80% picture quality.
  - f) Alarms shall be based on VMD (camera) as default and if the camera does not have motion detection capability, then VMD of the system shall be used.
  
5. Parameters that were set with the wizard shall be capable of being changed manually.
  
6. The operator with proper rights shall be able to manually record video by clicking the REC button on the GUI or configure record settings manually without using the wizard.
  
7. Pre- and Post-alarm duration shall be configurable for all event or alarm based recording.

8. The system shall be capable of simultaneous local and remote viewing, playing back, recording, and exporting video.
9. The system shall support simultaneous Video and Audio export. Video files shall be in Camera CAM file format and audio shall be in Camera AUD file format. The Media File Player application can be exported with the video and audio files so that video/audio can be played back from a Windows® PC without installing any application software.
10. The system shall have the capability to use any of the following as a trigger to perform a given action:
  - a) Sensor Input trigger to the camera
  - b) Camera based Video Motion Detection (VMD) trigger
  - c) Recorder (system) based VMD
  - d) Video Motion Filters (VMF): Appearance, Disappearance, Existing, Capacity, Passing, and Unattended/Removed. VMF shall work in conjunction with the camera's motion and object detection capabilities.

Using any of the above triggers or manually via the GUI, the following actions shall be capable of being initiated:

- a) Camera Action
    - Preset - Change camera's preset position
    - Tour - Start camera's tour
    - Output - Change camera's output state
  - b) I/O Device Action
    - Output - Change logical output state of Barix Barionet,
  - c) System Action
    - E-mail - Send an E-mail with/without an image to a registered SMTP client address
    - Change Layout - Change layout on a sever
    - Beep – Sound a 'Beep' on a server
  - d) Client Action
    - Change Layout - Change layout on a client
    - Beep – Sound a 'Beep' on a client
  - e) Alarm Notification Alarm Notification
11. The system shall have three types of searches on the main GUI:
    - a) Date/Time – This can be performed on a selected camera or all monitored cameras.
    - b) Quick Playback – Playback start point is user configurable with the default setting being 5 seconds.
    - c) Alarm history – A list of alarm events is displayed at the bottom of the GUI. When an alarm event is clicked, it is played back in the active window.
  12. The system shall also have a detailed search capability providing the operator with a 'Search' GUI that allows two separate types of searches, Normal and Object:
    - a) Normal search allows multiple cameras to be searched simultaneously. Search images of up to nine cameras can be displayed in the playback pane.

b) Object search allows only a single camera to be searched and the searched images are displayed in the playback pane.

13. The system shall support simultaneous search and playback of at least six (6) cameras for normal search operations. For 'Normal' searches the system shall allow the operator to enter a date/time range, select multiple cameras, and select any combination of the recording type (Schedule, Manual, Alarm, and/or Event). The search results will be displayed in the pane at the bottom of the GUI in a timeline. The timeline view can be changed to a list view. Cameras that are on the timeline or events that are listed in the list view can be selected and the images associated with the search results shall be displayed in the playback pane.

14. For 'Object' searches, the system shall allow the operator to enter a date/time range, select a single camera, and select a type of Post VMF or Post VMD search.

15. To export video, the system shall allow the operator to select an IN point and OUT point on the timeline and click the Export button on the playback control pane. Video within the specified range will be exported. Exporting video from multiple cameras within the selected range is possible. The system shall also provide the ability to export multiple events from the list view.

16. The system shall support Pan/Tilt/Zoom controls over TCP/IP.

17. The system, via mouse and keyboard, shall be able to auto center any on-screen PTZ stream or drag-and- zoom on a specific area. The system shall also support 3<sup>rd</sup> party joystick for variable PTZ control.

18. The system shall allow the operator to register pan/tilt/zoom (PTZ) camera presets and the ability to recall such presets. Presets shall be stored on the camera/encoder. The system shall support the maximum number of presets that the camera allows.

19. The system shall have the capability to provide camera tours on a demand basis from the main GUI or by using an alarm trigger.

20. The system shall have a capability to create multi-camera viewing layouts by defining number of rows and columns.

21. The system shall support the import and export of site layout images in BITMAP and JPEG file formats.

22. The system shall be capable of locking the monitoring window to prevent changes.

23. The system shall support both the Intelligent Motion Detection (IMD) and intelligent Object Detection (IOD) functions of the camera. The IMD function shall be capable of triggering an alarm by using an advanced Camera algorithm, which shall minimize false alarms caused by noise and repetitive motion patterns. The IOD function shall be capable of detecting an object which has been taken away or left behind. These functions shall be mutually exclusive for each camera.

24. The system shall have the following 6 Video Motion Filters (VMF):
  - a. **Appearance filter:** detects objects that match the detection criteria for objects entering into a user defined area.
  - b. **Disappearance filter:** detects objects that match the detection criteria for objects exiting a predefined area.
  - c. **Existing filter (Loitering filter):** detects an object that stays within a defined area longer than the set limit.
  - d. **Capacity filter:** Triggers an alert when the number of detected objects meets or exceeds the detection criteria for object number within the configured area.
  - e. **Passing filter or virtual borders:** detects objects crossing the set virtual borderline, going in both directions or a specified direction.
  - f. **Unattended/Removed:** detects objects that are left unattended or removed by comparing the retained background video data and live video data.
25. The system shall be capable of applying up to three filters in parallel such that violation on any one filter shall cause an alarm.
26. The system shall be capable of applying up to three filters on a scene in a sequence or cascade fashion, whereby an alarm will only be triggered based upon events that violate the rules or filters one at a time in predefined order.
27. The system shall have the capability of supporting servers with two (2) video outputs for monitors. Monitor 1 shall be the main monitor window. Monitor 2 shall be capable of showing the same view as the Monitor 1 output, or used as a Hot-Spot monitor. On the second monitor, selected images or images from cameras triggered via sensor input or motion detection shall be displayed in the monitor window sequentially. The user or integrator shall be responsible to provide the necessary computer hardware to support this function.
28. The system shall be capable of accessing a proxy server to connect cameras located outside the network. The IP address and port number of the proxy server shall be configurable.
29. The system shall provide email notification when the system finds any video loss caused by a network interruption.
30. The system shall include support for Remote Configuration and Management Software to allow a user to remotely configure the server system, view live images, play back and search the desired recorded images.

## **Vandal Resistant Housing Specifications**

Outdoor dome, UV protected  
Strong cast aluminum top and trim ring  
Rugged polycarbonate lower dome  
Thermostatically controlled heaters  
24 Hour fan operation for effective heating and condensation protection  
Optically correct, clear or tinted lower dome  
(Enclosure protection: IP66, Outdoor Pendant with heater & Blower)

## **Hardware for Connectivity to existing LAN system**

All the hardware and items for connectivity to existing LAN system and mounting of cameras shall be in scope of the Contractor.

Media Converter : 10/100/1000 Mbps speed with Single mode Optical Fiber.  
Power Cable : 2 X 1.5 mm ISI mark copper cable, PVC insulated,  
Cat6 cable : CAT6 cable for connecting camera and CAS panel to LAN points.  
Drop Wire : 2 wire copper telephone cable of ISI standard,  
PVC Conduit : 25 mm Diameter, It will be supplied with all clamps, clamp screw etc.  
Fiber patch cards : For connectivity of media converter to optical fiber

All outdoor cabling should be under ground with minimum 3 ft depth with cables running in HDPE, road cuttings with GI pipes.