

SECTION 6 - SUBSECTION G

SPECIFICATIONS OF THE C&C (COMMAND AND CONTROL SYSTEM)

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1. General

- 1.1 The facility in its entirety includes various systems, each working separately at a different level of automation and including various backup possibilities. The availability and reliability of the systems constitute an indispensable condition for the proper and continuous working of the designated equipment installed in the facility.
- 1.2 The various control systems will give an up-to-date real-time status report of site's systems and vehicle traffic and will caution regarding deviations from routine. The control will operate backup systems and will allow coping with emergency situations (radiation, fire, etc.).
- 1.3 Command and control of the site will be provided mainly by the following Three (3) main systems, each fulfilling a different function:
 - 1.3.1 Radiography Control System (RCS)
 - 1.3.2 Security Systems
 - 1.3.3 LPR
- 1.4 Each one of these systems should function as a stand- alone systems.
- 1.5 The Contractor shall present systems' configuration at the various locations/positions as required at the DR meetings.
- 1.6 Acceptance tests protocol for each system shall be presented by the Contractor for Client's approval.
- 1.7 The subcontractor for the Security and LPR systems and subsystems shall be an Israeli integrations company with proven service and maintenance capabilities.
- 1.8 The Contractor is responsible for the implementation, testing and training as well as the service and maintenance of these systems.

- 1.9 Thunderstorm / Lightning Protection
 - 1.9.1 All supplied equipment will be lightning and surge protected.
 - 1.9.2 The protection will comprise: power sources, electrical sockets, data lines etc.
- 1.10 All equipment will provide continuous operation in no power situations, using UPS and connection to facility generator.
- 1.11 All supplied equipment, designed for outdoor and indoor installation, shall comply with the weather and environmental condition as specified in Section 2 and its operation will not be affected by environmental conditions.
- 1.12 Contractor's proposal shall include a detailed description systems configuration and technical specification, including these regarding computers and servers. Final configurations and systems specifications shall be defined and approved at the DR meetings.
- 1.13 Technical support for all equipment/ software/ applications will be on site. No remote support will be allowed.
- 1.14 The supplied system, including the work stations, shall include all the permits / licenses required for its full operation as well as routine updates as part of the comprehensive service and maintenance. The contractor will insure that the update does not affect the software/ application.

2. Purposes of the Site Control Systems

- 2.1 The purpose of the Command and Control of facility systems is:
 - 2.1.1 To ensure and control site safety
 - 2.1.2 To control vehicle traffic at all stages of the check-ups
 - 2.1.3 To control and efficiently operate the X-ray inspection installation and the manual site
 - 2.1.4 To ensure and control site security (including access control system)
 - 2.1.5 To present at the required workstations the relevant data
 - 2.1.6 To efficiently cope with emergency situations and deviations from the routine by appropriate warnings or/and intelligent operation of backup units, either by automatic or by manual operation
- 2.2 The system will make it possible to locate faults and repair them within pre-defined periods of time.
- 2.3 To serve as a tool of control access to the facility/buildings or rooms and to integrate into the overall safety and security systems of the facility;
- 2.4 To provide an up-to-date status report on the status of all the systems to relevant agencies in the facility.
- 2.5 To serve as a tool for cumulative information, trends and characteristics of the systems in the building, for purposes of analysis of behavior, drawing of conclusions and raising the level of performances and reliability of the system on the basis of "historic" information and locating of failures.
- 2.6 To serve as an objective and reliable tool for analysis of failures, their causes and characteristics, as a basis for the engineering analysis of the faults and an attempt to prevent them in the future by changing of parameters or drawing of operational conclusions.
- 2.7 To serve as an engineering aid for support of the system operation and maintenance;

3. Command and control System (C&C)

- 3.1 The command and Control system comprises of:
 - 3.1.1 Radiographic control system (RCS)
 - 3.1.2 LPR system

4. Radiation control system (RCS)

- 4.1 The RCS deals at the command and control level with the following elements:
 - 4.1.1 Operation of all the safety means of the radiation system
 - 4.1.2 Operation of the X-ray inspection system.
 - 4.1.3 Suspension of X-ray on conclusion of the scanning process.
 - 4.1.4 X – Ray Image acquisition, analyzing process and Image Data base updating.
- 4.2 The X-ray inspection control system shall work in functional integration with the traffic control system (LPR). In addition data transfer from RCS to the LPR will be provided.
- 4.3 The system software shall include all the routines required for sustaining the conditions and proper operation as regards of operation and safety.
- 4.4 The system will contain appropriate backups for operational compliance with very high safety requirements.
- 4.5 At the PDR the Contractor will present, for Client approval, all aspects of control system's operation.

5. License plate recognition (LPR)

5.1 General

5.1.1 The LPR system will be designed to intake incoming vehicles and control their status and location on site.

5.1.2 The LPR system shall be designed to efficiently control the procedures described in Section 3 of this document.

5.1.3 The control systems have the following main tasks:

5.1.3.1 Identify vehicle number.

5.1.3.2 Send the information to the C&C system in order to issue a “driver’s ticket”.

5.1.3.3 Managerial control, providing data to correlate with customs data;

5.1.3.4 The supplied system, including the work stations, shall include all the permits / licenses required for its full operation as well as routine updates as part of the comprehensive service and maintenance. The contractor will insure that the update does not affect the software/ application.

5.2 Purpose of the system

5.2.1 Routing and directing the vehicles.

5.2.1.1 The system will include identification and directing means as specified below:

a. LPR cameras.

b. Driver’s tickets to be given to the drivers (driver’s ticket)

This, in order to allow routing, command and control of all the traffic in the site and throughout the process, from the arrival of the vehicle at the facility gate until its departure.

5.2.2 Correlation with Customs data

5.2.3 Purpose of the system is to display the data of the vehicle at the relevant work stations.

5.2.3.1 The contents of the data shall include the relevant information for implementation of the inspection.

5.2.3.2 It shall be possible to present the screen containing the vehicle data at the relevant workstations deployed in the facility (as specified in Sections 3 and 4).

5.2.3.3 The contractor will consider the need to attribute space in furnishing of the positions in which system equipment will be installed.

5.3 Components of the C&C and subsystems

5.3.1 The control system shall include the following components:

5.3.1.1 Driver's ticket.

5.3.1.2 LPR cameras

5.3.1.3 Cameras (for example: pedestrian wickets, etc)

5.3.1.4 Computer system for management and communication;

5.3.1.5 Auxiliary equipment (cables, kits etc.)

5.3.2 Driver's Ticket (TBD)

5.3.2.1 Driver's ticket, given as part of the procedure, will be made of rigid paper, locally obtainable.

5.3.2.2 The ticket will contain the following information:

- Vehicle ID
- Date and time of arrival
- Number of arrival (the car position in the queue).

5.3.2.3 Driver's ticket will be a barcode (or similar) type.

5.3.2.4 The tickets will be prepared at the customs workstation at the classification stage (see section 3). The tickets shall be for one-time use and unique for each vehicle.

5.3.2.5 When the vehicle exits the site, the ticket will be (preferably) swallowed at the exit gate or put in a special device.

5.3.3 **Licence Plate Recognition (LPR)**

5.3.3.1 General

Monitoring vehicles traffic into/at and out of the site is based on identifying vehicle's license plate number at the required locations.

5.3.3.2 Operation

5.3.3.2.1 The system shall acquire and recognize license plate number of vehicles.

5.3.3.2.2 The LPR systems (total of about 6) will be installed at the following locations:

- a. Entrance gate.
- b. Pre-inspection parking lot entrance.
- c. Radiography building car entrance.
- d. Manual pit entrance.
- e. Customs parking lot entrance (post-inspection/ pre-clearance parking lot).
- f. Exit gate.

5.3.3.2.3 Reading of the vehicle's license plate shall be of the vehicle's front license plate.

5.3.3.2.4 It should be noted that location of vehicle's license plate varies from one vehicle to other.

5.3.3.2.5 It should be noted that the amount of license plate figures can vary between 5 to 8 figures.

5.3.3.2.6 Dedicated software shall be supplied with the system.

5.3.3.2.7 Response time of vehicle's license plate recognition will not exceed 3 second.

5.3.3.2.8 Detection wire loop in the asphalt (to supply trigger for camera operation) is required.

5.3.3.2.9 Technical requirements:

- Road width: 6 meter.
- Operation distance: up to 15 meter from the vehicle.
- Vehicle speed: 0-80 km/h.
- The system will have at least 4 dry contacts for external equipment operation.

5.4 C&C Computer system

5.4.1 Requierments

5.4.1.1 The system software will be user-friendly and will allow rapid access to every function.

5.4.1.2 It's preferred that the user interface display will be in Hebrew.

5.4.1.3 Access to the system functions will be by authorization (password).

5.4.1.4 The system will be able to alert on mistakes/errors in reading driver's tickets.

5.4.1.5 Communications with other computers will be rapid and will not affect operation of the system in the various work modes.

5.4.1.6 The system will alert on attempts at unauthorized tampering and/or handling of card readers.

5.4.1.7 The system will be planned with a capability for 100% expansion.

5.4.1.8 The system will operate in integration with other systems

5.4.2 C&C display

5.4.2.1 The C&C is a tool to manage, monitor and control vehicles in the facility.

5.4.2.2 The system software has to meet all the above requirements.

5.4.2.3 The interactive map shall display the lists of vehicles currently located at site's areas, for example: pre-radiography parking, the radiography tunnel, pre-clearance parking, manual area, etc. The list shall be created based on the recorded outputs of the LPR cameras located at the various areas and system's interface with the radiography software.

5.4.2.4 At the C&C design Review, the Contractor shall present, for Client's approval, the proposed configuration and specific parameters of the C&C display, including reference to the following:

5.4.2.4.1 Status of each vehicle in the site - shown dynamically on site map background

5.4.2.4.2 Vehicles current status will be displayable to the authorized system operators using C&C workstations, using driver's ticket numbers or license plate number:

5.4.3 **C&C Reports**

5.4.3.1 The supplied system shall include reports generator for the C&C system.

5.4.3.2 The report generator shall provide a variety of reports, including statistical evaluation regarding:

- All events (inspections) for a particular date or during a defined period; (for example: time at site from entry to exit, Number of inspections, etc)
- All events related to a specific system or subject (Radiography/Manual, etc) defined in the system on specific dates or period
- All events of a particular category
- All the activity of the system on specific dates;

5.4.3.3 All site events shall be saved in the memory.

5.4.3.4 Final configuration and search capabilities shall be defined at the design reviews and approved by the Customer.

5.4.3.5 The contractor shall supply a suitable software program for producing history reports from the system, including all the relevant licenses.

5.5 **C&C workstations**

5.5.1 The C&C workstations shall be installed in the following locations.

- At the entrance gate (at the IAA representative station).

- At the radiography station on the ground floor.
- At the radiography station on the 1st floor.
- At the radiography inspection station (2 stations).
- At the re-check station.
- At the arrivals hall customs office.
- At IAA control room.
- At the exit gate.

5.5.2 Specific authorization levels regarding re-routing of vehicles, changing their status or destination shall be defined for each workstation/operator at the DR.

6. SECURITY & C.C.T.V Systems

6.1 General

6.1.1 The security system shall be implemented following the requirements and descriptions in this chapter.

6.1.2 The security and CCTV system shall comprise of the following main subsystems:

- a. C.C.T.V cameras in the radiography tunnel (radiation safety operation).
 - b. C.C.T.V cameras in the site at specific locations (operational reason)
 - c. PTZ cameras in the site
 - d. Security Command & Control system (C&C) to control and operate the alarm and C.C.T.V systems
- 6.1.3 Full integration between the alarm systems and the C.C.T.V system is required, i.e. when alarm occurs an automatic display of the relevant cameras occurs in the control room, including an automatic preset to relevant PTZ cameras.
- 6.1.4 Security Command and Control workstations shall be located at the following rooms:
- 6.1.4.1 Customs office at the arrivals hall.
- 6.1.5 **All** the Security, Access control & CCTV components will be powered supply by UPS source with 1 hour backup time.
- 6.2 CCTV System**
- 6.2.1 General
- 6.2.1.1 The C.C.T.V system will be based on IP technology and will meet all customer IT security requirements.
- 6.2.1.2 A separated communication network will be used for cameras and all security devices.
- 6.2.1.3 Recording
- a. Recording will be 24/7.
 - b. Storage time – at described in the table below.
 - c. Recording quality: high resolution, 25 fps.
- 6.2.1.4 The control system shall be integrated with the security C.C.T.V system in order to give possibilities of viewing and extended command.
- 6.2.1.5 C.C.T.V system workstations, display and operation) shall be installed at:
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- a. Radiography operator (display of Radiography tunnel fixed cameras only)
- b. Customs office at the arrivals hall

6.2.1.6 Priority

- a. Priority of using the system (P/T/Z camera) is according to the order in the previous paragraph.
- b. The security has the highest priority (Above all).

6.2.1.7 Final configuration including workstation’s location will be approved at the design review meetings.

6.2.1.8 Technical requirements from the main devices are detailed below.

6.2.2 **Area of coverage**

The C.C.T.V system will provide area coverage and storage time as follows:

#	Name/Description	level of coverage	Storage Time (days)	Remarks/ Detection capability
1	Entry/Exit gates complex (inside and out)	100%	90	Ability to Identify vehicle LPR
2	Pre-radiography parking lot	100%		Ability to Identify vehicle LPR Ability to identify general activities /movements in the covered area

3	Post-radiography parking lot	100%	30	Ability to Identify vehicle LPR Ability to identify general activities /movements in the covered area
4	X-ray inspection building	100%	10	The entire X-ray inspection process. Ability to identify presence and any movement of any person in the tunnel (including driver's cabin and all area all around the parking vehicle, shielding doors, etc.)
	Entrance to tunnel (before and after entrance doors)		10	
	X-ray tunnel		10	
	Exit from tunnel (before and after exit doors)		10	
5	Pit area	100%	180	Ability to Identify vehicle LPR Ability to identify general activities /movements in the covered area

* Remark: The coverage will be carried out using PTZ commanded cameras and/or fixed cameras as determined by the planner and approved by the customer at the DR.

6.3 Access Control

6.3.1 Access control system in the site will be based on employees' ID and biometric cards.

The system shall be deployed at entrance to some rooms, mainly sensitive rooms as regards of security, safety and/or operational functioning.

6.3.2 Requirements

6.3.2.1 The Contractor shall install Client's approved Access control system at the following site's pedestrians' entrances, buildings' main entrance and some specific areas/ rooms (TBD at the PDR)

6.3.2.2 The system shall be based on Card readers & Biometric readers installed close/at the controlled doors/gates

6.3.2.3 System's software package regarding access control and including all the standard functions, for instance: restriction of entry times, restriction of entry sites, prevention of possibility of reentry, etc. shall be installed at the gate wickets.

6.3.2.4 Access control activity shall not disrupt the operational activity of the traffic routing system.

6.3.2.5 The contractor will install access control equipment at least at the following locations:

- The entrance to the radiography building
- The entrance to inspectors' rooms from the manual search area
- Office building
- Pit area
- Special areas and rooms (TBD)
- Communication room

6.4 Readers

6.4.1 General

6.4.1.1 Readers, part of the C&C system, shall be installed in the following locations at the

6.4.1.2 X-ray inspection building

- LPR - Entrance to X-ray inspection tunnel

- Driver's ticket reader – receptionist/operator's workstation
 - Access control at entrance doors to control room, offices and classified rooms (about 4, locations: TBD) - Employee card reader.
- 6.4.1.3 The reader equipment shall be designed for outdoor installation and their operation will not be affected by environmental conditions.
- 6.4.1.4 The readers will be installed with a level of resolution allowing continuity of command, supervision and control in all areas of the site.
- 6.4.2 **Card Reader & Biometric (access control)**
- 6.4.2.1 The card reader will meet the following requirements:
- 6.4.2.1.1 There will be indicator lights at the entrance showing “Authorized” or “Rejected”.
- 6.4.2.1.2 A buzzer will sound to give an audible indication for “Rejected”.
- 6.4.2.1.3 The lifespan of a reader should be at least 2,000,000 movements.
- 6.4.2.1.4 Minimum working temperature range 0°C - +50°C.
- 6.4.2.1.5 In the event of a failure in communication or in the system server, the card/biometric readers must work completely autonomously (using a local controller), and without any interruption to the entry and control of users. When the communication returns to a normal state, the system tables shall be updated immediately.
- 6.4.2.1.6 The reader will work using power supplied by the buildings controller.
- 6.4.2.1.7 The readers shall be protected by a tamper proof switch so that disassembly of the reader will cause an alarm in the system.
- 6.4.2.2 Every readers/controller shall transmit indications to the system server as follows:
- 6.4.2.2.1 Authorized gate entry;
- 6.4.2.2.2 Manual gate entry (by the internal button);
- 6.4.2.2.3 Attempt to disassemble the reader/server;

- 6.4.2.2.4 Communication error;
- 6.4.2.3 Readers designated for multi-use will include function buttons and an alpha numeric keypad.
- 6.4.2.4 Mechanical characteristics;
 - 6.4.2.4.1 The fitting of the card/biometric readers within the facility will be of the anti-vandal indoor type, suitable for the environmental conditions within the building. Installation of a reader outside the building will be within outdoor weather-proof anti-vandal fittings and must meet both UL-294 and CE standards.

7. Technical Requirements for system components

7.1 General

- 7.1.1 The technical requirements and definitions that appear in this Specification are the minimum required for each system / method separately and all together as a comprehensive system.
- 7.1.2 The technical and operational performance of the subsystems and methods shall not deteriorate over the time and shall not be affected by ambient conditions on site.
- 7.1.3 Contractor's proposal shall include a detailed description of systems components, including technical specification. Final configuration and systems specifications shall be defined and approved at the DR meetings.

7.2 HD IP fix camera, day/night

- 7.2.1 Color network camera
- 7.2.2 Color photography in daylight conditions and monochromatic photography in illuminated night-time conditions, including automatic shift between modes.
- 7.2.3 IR projector for night time.
- 7.2.4 RJ45 connection to Ethernet 10/100base-T.
- 7.2.5 CMOS/CCD 1/3" camera sensor.
- 7.2.6 Progressive scanning.
- 7.2.7 H-264, MPEG-4 video compression
- 7.2.8 Protocol: TCP/IP, ICMP, IGMP, DHCP, HTTP, ARP, RTP, RTSP, RTCP, NTP, UDP unicast, UDP multicast
- 7.2.9 25-30 fps in 3MP resolution.
- 7.2.10 LUX sensitivity 0.1 in color, 0.5 LUX B&W at least (on F1.4 lens)
- 7.2.11 SNR (Signal to noise ratio) at least 50 db
- 7.2.12 Shutter speed 1/1.5 - 1/30,000.
- 7.2.13 Automatic focus

- 7.2.14 At least 50 IRE
- 7.2.15 Dual stream
- 7.2.16 Dry contact in and out
- 7.2.17 Ambient conditions: -10÷+50°C, 90% humidity.
- 7.2.18 Must work in outdoor conditions (IP67)
- 7.2.19 Working voltage: 12/24 VDC Working support on PoE - Power over Ethernet
- 7.2.20 Automatic white balance
- 7.2.21 CS/C mount lens, metal thread.
- 7.2.22 Cost of the camera includes license.
- 7.2.23 The supplied camera must be fully compatible and have an interface for working with an NVR to be supplied.
- 7.2.24 The camera must be made by **AXIS**. The specific model will be approved by the client.

7.3 Lenses for megapixel camera

- 7.3.1 The contractor shall supply lenses consistent with the specifications below. The type and direction of the lens will be defined and approved at the time of installation on the site.
- 7.3.2 Varifocal lens compatible with megapixel cameras.
- 7.3.3 Compatible with 1/4" sensor or equivalent for 1/3" sensor
- 7.3.4 Focal length - 3-10 mm. or 5-50 mm
- 7.3.5 Aperture f/1.6 at least
- 7.3.6 The lens shall be made of polished glass.
- 7.3.7 CS/C mounts with metal thread.

7.4 PTZ – day / night IP camera (X36)

- 7.4.1 Color network camera

- 7.4.2 Color photography in daylight conditions and monochromatic photography in illuminated night-time conditions, including automatic shift between modes.
- 7.4.3 RJ45 connection to Ethernet 10/100base-T.
- 7.4.4 ¼" or 1/3" CMOS/CCD sensor.
- 7.4.5 Progressive scanning
- 7.4.6 H-264, MPEG-4 video compression
- 7.4.7 Protocol: TCP/IP, ICMP, IGMP, DHCP, HTTP, ARP, RTP, RTSP, RTCP, NTP, UDP unicast, UDP multicast
- 7.4.8 25-30 fps in 3MP resolution.
- 7.4.9 LUX sensitivity 0.5 for color, LUX 0.1 for B&W at least (on F1.4 lens)
- 7.4.10 SNR: at least 50 db.
- 7.4.11 Automatic aperture 1/1.5-1/30,000
- 7.4.12 Automatic focus
- 7.4.13 At least 50 IRE
- 7.4.14 Dual stream
- 7.4.15 Dry contact in and out
- 7.4.16 Ambient conditions: -10÷+50°C, 90% humidity.
- 7.4.17 Must work in outdoor conditions (IP-65)
- 7.4.18 Working voltage: 220 VAC
- 7.4.19 Automatic white balance
- 7.4.20 Horizontal tilt angle: 360°, continuous.
- 7.4.21 Vertical tilt angle: +30 ° to -80°.
- 7.4.22 Speed of horizontal tilt: 1-100°/second. Varies according to operation

- 7.4.23 Vertical tilt speed: 1-20°/second. (30°/ second in preset modes), varies according to operation.
- 7.4.24 3.3-119 mm. optical zoom lens (x 36) at least. Refers to ¼" CCD
- 7.4.25 Cost of the camera includes license.
- 7.4.26 The supplied camera must be fully compatible and have an interface for working with an NVR to be supplied.
- 7.4.27 In the X-ray inspection tunnel the camera equipment will be protected against radiation disturbances.
- 7.4.28 The camera must be made by **AXIS**. The specific model will be approved by the client.

7.5 NVR recording / operating switching system

7.5.1 General requirements

- 7.5.1.1 The video management solution will be **Milestone** latest version.
- 7.5.1.2 The contractor will supply a CCTV system with switching, routing and recording capabilities. The system to be supplied will include all the necessary components: server, means of storage, screen, keyboard/keypad, operating measures, software, etc.
- 7.5.1.3 Number of cameras (estimated) - 20
- 7.5.1.4 The video signal to the system shall be transmitted on IP infrastructure. The communication net for cameras/security shall be a separate net.
- 7.5.1.5 The system software program shall be installed on computers with an up-to-date Windows operating system, shall facilitate real-time video surveillance as well as viewing of archived recordings. Different levels of surveillance will be possible, adapted individually to the end user.
- 7.5.1.6 All the video cameras will receive, record, store and route pictures to the system screen and/or accompanying screen.

- 7.5.1.7 The system will facilitate real-time viewing of video sources as well as playback and search simultaneously without any interference between the two activities.
- 7.5.1.8 A password (authorization) mechanism is required to allow the system administrator to define passwords for different users.
- 7.5.1.9 The system shall be operated from a client operating station.
- 7.5.1.10 The system will support the entire range of cameras which are connected to it, including PTZ cameras.
- 7.5.1.11 The system shall be expandable.
- 7.5.1.12 The system to be supplied will include all the permits / licenses required for full operation. Including client licenses for 20 operating stations
- 7.5.2 Technical requirements
- 7.5.2.1 Archive storage will be based on storage on local disks and shall support storage on NAS/SAN/DAS.
- 7.5.2.2 The system must support the updated Windows operating system.
- 7.5.2.3 High-quality recording of color video signals
- 7.5.2.4 Each server will handle 35 cameras (at most).
- 7.5.2.5 Continuous, round-the-clock recording (24/7/365) of all information channels
- 7.5.2.6 Capable of storing data according to the required periods, as specified in clause 6.2.2.
- 7.5.2.7 FIFO-based saving mechanism
- 7.5.2.8 During a synchronized playback from the archive, the user shall be able to simultaneously operate functions such as Fast Forward, Rewind, and jump to specific time points - so that this procedure occurs simultaneously on the video of the cameras on synchronized playback.
- 7.5.2.9 Hebrew interface for surveillance and configuration of the system is required.

- 7.5.2.10 A full back-up of the files must be kept. Category Raid Level 5, recording on N hard drives + back-up drive + system administration drive
- 7.5.2.11 Video signal recording data:
- a. At least 25 frames/second per channel.
 - b. Megapixel camera recording as defined in this specification based on the camera's maximum speed.
 - c. Resolution – at the same level of viewing resolution
 - d. The system shall have an option for defining at least 3 resolution levels: low, moderate, high (4 CIF).
 - e. At least 256 shades of gray. 16 million different colors.
- 7.5.2.12 The system shall be capable of supporting cameras of up to 8 mega pixels.
- 7.5.2.13 USB and SCSI ports for CD-RW ROM support or RW DVD for copying and backing up files
- 7.5.2.14 Standard compression - h264
- 7.5.2.15 The system must support ONVIF for maximum compatibility and flexibility, in favor of interfacing with standard systems in the future.
- 7.5.2.16 The system must support Dual Stream mode for surveillance and recording of different qualities. This capacity will also facilitate choosing the recording quality which will be saved for a longer period.
- 7.5.2.17 All the information channels shall be synchronized, including during reproduction.
- 7.5.2.18 Option to display real-time picture + pre-alarm picture from select cameras
- 7.5.2.19 Option to watch up to 16 channels simultaneously
- 7.5.2.20 Each channel shall contain all the information required for locating and identifying it.
- 7.5.2.21 Common, shared time clock for the entire system
- 7.5.2.22 Ability to fully operate and control PTZ camera system

- 7.5.2.23 Option to set up input for each video channel at the following levels:
- a. Brightness
 - b. Contrast
 - c. Color
- 7.5.2.24 Input identification – the system shall contain a mechanism for integrating text at each entry with the following features:
- a. Option to combine letters and numbers
 - b. 16 characters per channel
 - c. Hebrew font (preferable)
 - d. Option to set dark background
- 7.5.2.25 Option to save recorded files/ segments for a longer period by downloading to a disk/DVD
- 7.5.2.26 Alarm input for each channel to allow changes in the recording parameters.
- 7.5.2.27 Outlet connections to the network – the system shall have an outlet that hooks up with the TCP / IP network.
- 7.5.2.28 The system will contain a password mechanism to prevent an operator from changing the system setup and to prevent unauthorized operators from deleting files.
- 7.5.3 Operation of the recording system
- 7.5.3.1 Operation of the recording system, surveillance, file download, etc. shall under no circumstances interfere with the system's recording operation.
- 7.5.3.2 On-going control and operation of the recording system shall take place from a designated position on the recording system.
- 7.5.3.3 All system operations will be accompanied by feedback to the operator regarding the nature of the operation he is performing, the on-screen display mechanism, or equivalent.
- 7.5.3.4 The system's interface should be user friendly and will be operated by means of icons or by operating menus, etc.

- 7.5.3.5 The operating screen will be based on a map of the site and shall include all elements relevant for icon-based operation, such as: cameras in the area under surveillance, etc.
- 7.5.3.6 It must be possible to position and place the icons that appear on the screen spatially, as necessary. For example: the icon for a camera in the corridor shall also indicate its filming direction.
- 7.5.3.7 Each icon will contain its relevant information. Each icon will have an information table with its operating options. The table will contain information such as: name of the camera, its location, filming data, etc. The information table will be operated by right-clicking on the mouse.
- 7.5.3.8 The operator shall be able to playback files saved on the hard drive at any time without this affecting the recording process. Response time from making the request until the playback commences shall be no more than 3 seconds.
- 7.5.3.9 The following shall be possible when the video signal is played back:
- a. Zoom-in on the picture.
 - b. Freeze the picture.
 - c. Fast forward and rewind
 - d. Control over color, contrast and luminance.
 - e. Simultaneous display of several synchronized pictures.
- 7.5.4 Requirements for operation of cameras
- 7.5.4.1 The system shall control the PTZ cameras and zoom lenses.
- 7.5.4.2 Full control of all directions: up, down, left, right.
- 7.5.4.3 Full control of focus and zoom
- 7.5.4.4 Operation by means of a joystick
- 7.5.4.5 Capable of issuing a command for RS-485 cameras or corresponding
- 7.5.5 Support on VMD and analytics:

- 7.5.5.1 The system will interface with advanced end products for VMD and analytics, such as IOI, Agent VI, and others. The supplier must present existing interfaces.
- 7.5.5.2 The system shall facilitate the integration of end equipment for analytics and a concentration of analytic scenarios so as to create events in the system and generate alerts.
- 7.5.5.3 The terminal operator shall be able to "arm" and "disarm" the analytics mechanism on the terminal equipment via a surveillance program interface.
- 7.5.5.4 The surveillance interface shall display analytics scenarios in real time, including an option to display the tracking of an object, mark its movement, indicate the trail, etc.
- 7.5.5.5 The administrator interface shall enable, at least, the following actions:
- a. Definition of IP addresses and parameters for cameras, compressors, and de-compressors
 - b. Definition of parameters for video bandwidth
 - c. Full management of access authorizations and passwords
 - d. Timing of archive storage for each camera
 - e. Number of days during which video recordings from cameras shall be saved.
 - f. Duration of storage before and after an event (per camera)
 - g. Parameters of recorded video data or live data (per camera)
 - h. Network (multicast communications, multicast communications via server or UDP protocol per camera).
 - i. Definition of activities based on system events.
 - j. Definition of photography sites and groups of cameras on the site.
- 7.5.6 Production
- 7.5.6.1 The system shall provide the user with all the measures required to retrieve and save files on a disk / DVD, flash drive, external HD.

7.5.6.2 The control station shall contain all the equipment (burner, converter, etc.), software and apparatus required for proper operation.

7.5.6.3 The contractor will provide software packages that enable all the files saved on disk to be played on a PC, up to a quantity of 10 units.

7.6 Security Command & Control

7.6.1 General

The security systems Command and Control (C&C) system shall coordinate, display, handle and operate the following:

7.6.1.1 Receive, display and handle alarms from the entire range of detectors and sensors in the system.

7.6.1.2 Control and operate the system's CCTV cameras.

7.6.1.3 Be able to operate processes interfacing with the system, consistent with the capability of involving processes, for example: intercom, activate equipment, access control, etc.

7.6.1.4 Playback of the CCTV recording system, production of reports according to various cross sections as well as an "event portfolio" producing as per operator's instructions.

7.6.1.5 The supplied system, including the work stations, shall include all the permits / licenses required for its full operation as well as routine updates as part of the comprehensive service and maintenance.

7.6.1.6 Contractor's proposal shall include a detailed description system configuration, including computers and servers technical specification. Final configuration shall be defined and approved at the DR meetings.

7.6.2 C&C workstation Configuration

7.6.2.1 The computers and systems that require memory must be supported by a UPS system as per the requirements in this specification.

7.6.2.2 The operating workstations shall be PC based and shall include all designated software programs required for operation, control, maintenance, calibration, etc. only.

- 7.6.2.3 The workstations shall contain processes for connecting at least 4 screens. It must be possible to use all the software programs described in this chapter on all the screens.
- 7.6.2.4 The designated software programs in the C&C system shall operate through the Windows operating system, in Hebrew. The contractor's proposal shall specify the proposed programs.
- 7.6.2.5 The C&C system must be capable of handling and managing at least 20 CCTV displays concurrently.
- 7.6.2.6 The supplied computers shall comply with the requirements listed in this specification. The computers shall have internal and external memory components that are adequate for their function and for the number of messages that must be kept in the database. All data shall be collected using the FIFO method. The computer hardware that is supplied must be the most up-to-date available at the time of supply.
- 7.6.2.7 The system printer shall be connected to the system server (directly or via the network). Data or reports shall be printed per request.
- 7.6.3 System main features and requirements:
- 7.6.3.1 The C&C software shall include a diagram/aerial photograph/map of the site and be capable of zooming in on the diagrams on a larger, more detailed scale.
- 7.6.3.2 Icons shall appear on the diagram clearly describing the systems/processes/equipment installed on site and their status – active and in working order, shut-down, alarm, out of order, etc.
- 7.6.3.3 It shall be possible to define a detailed treatment process for an alarm /special event in the system, as follows:
- a. Definition of which of the system workstations the event will be displayed
 - b. Definition of the chain of response required.
 - c. Definition of which processes are to be activated (automatically) when an event occurs;

- 7.6.3.4 When an event occurs, the system shall automatically display pictures that are relevant to that event, including real time pictures from the relevant camera/s and a pre-alarm picture, respectively.
- 7.6.3.5 All text information in the system: Data, menus, operating instructions, help screens, shall be in Hebrew.
- 7.6.3.6 Each detector's work mode (ready/neutralized) shall be defined separately. The status of each detector shall be clearly displayed on the site map.
- 7.6.3.7 Each detector shall have an accompanying text box, mouse activated. The text box shall contain a brief description of the relevant component.
- 7.6.3.8 The system shall comprise of a main and a secondary workstation. The system shall provide flexibility regarding the definition of display, operation and treatment preferences between the different stations, including definition of which workstations handle a particular event and which workstations are prioritized in activating processes, for example: control of PTZ cameras.
- 7.6.3.9 When several events must be dealt with simultaneously, the following will be performed:
- 7.6.3.9.1 The initial alarm automatically zooms-in on a map of the area of the event and displays a line in the table of alerts.
- 7.6.3.9.2 The alert immediately displays a set of cameras according to the definition.
- 7.6.3.9.3 The second alarm displays another line in the line of alerts.
- 7.6.3.9.4 The second alarm generates a display of another set of cameras, provided that there is a free screen/space available for the display. If there is no available screen/space, generation of the pictures will wait.
- 7.6.3.10 When the event has been dealt with and a screen/space becomes available to display the cameras, the cameras waiting in line will automatically generate their display.
- 7.6.4 CCTV operation
- 7.6.4.1 Operation shall be simple and user friendly. The operator shall operate the CCTV system from the system screen and main alarm display.

- 7.6.4.2 Operation shall be by means of icons or operating menus, etc.
- 7.6.4.3 The operation shall be based on a map of the site and shall include all elements relevant for icon-based operation, such as: cameras in the area under surveillance, alarms, etc.
- 7.6.5 Interfaces with related systems:
- 7.6.5.1 Interface with related systems (alarms, CCTV, access control, etc.) shall be based on a detailed protocol between this system and the C&C system.
- 7.6.5.2 Interfacing with the C&C system will facilitate:
- a. Automatic generation of a picture depending on the event
 - b. Full operation of the CCTV system as described in this chapter.
 - c. Full investigation of the recordings database
 - d. An option to download/ copy (burn) files.
- 7.6.6 Indication, operation and control
- 7.6.6.1 At Systems Design Review the Contractor shall present for Client approval system's configuration, specifically referring to the following items:
- 7.6.6.1.1 Display and basic operation
- 7.6.6.1.1.1 The system's display shall be based on an aerial photograph / map of the site and shall include indications. The scale of the site will be emphasized on the drawing and each section will be marked on it separately. Icons will be defined for the alarm system as well as detectors and processes on the site, and the surveillance zones for the CCTV cameras will also be defined.
- 7.6.6.1.1.2 All events shall be saved.
- 7.6.6.1.1.3 The system shall include reports production
- 7.6.6.1.1.4 Sensitivity of the different system sensors/detectors will be adjusted and calibrated from the C&C station. The system manager (security officer) shall have an access code to perform this action.

7.6.6.1.2 Indication

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- a. Audio indication
- b. Visual indication: displayed icon on site's map, changing colors/event status and category, fixed or flashing display, etc.
- c. Close-up capabilities - displaying detailed maps/drawings of alarm area. The contractor shall submit a diagram of the display and the various drawings that appear in the close ups for the client's approval.
- d. Text display
- e. The number of messages in the system
- f. The wording of the messages shall be coordinated with and approved by the client.

7.6.6.1.3 Operation method (icons, mouse, keys, etc)

7.6.6.1.4 Alarm mode operation

7.6.6.1.5 Indication and operation in frequent malfunction situations

7.6.6.1.6 Reports

The system shall include printed and on-screen reports, referring, at least to:

- Events on a particular date or during a defined period
- All events from a specific system or section/zone or from several sections/zones defined in the system on specific dates.
- All events of a particular category – such as all the alarms, all the OFF/ON messages, etc. (on specific dates)
- All the activity and programming at the control center on specific dates.
- Shift between day/night modes.

Final configuration shall be defined at the DR.

7.6.6.1.7 Access Control

The system shall have several safety access levels that allow/disable various operations and programming, consistent with the user's security level and function:

- a. Level 1 – operator level
- b. Level 2 – superior's level.
- c. Level 3 – technician level.
- d. Level 4 – manager's level, security officer.

Each level operation's shall be defined at the DR meetings.

7.6.7 Client Computer configuration

7.6.7.1 Contractor's supplied computer/server shall be adequate to fulfill the operational requirements of the system. The proposed configuration shall be presented for approval at the DR meeting.

7.6.7.2 Following is the minimal basic configuration (for reference only):

7.6.7.2.1 Motherboard – Intel ATX, most up-to-date version, Intel Pentium Dual Core processor (including Intel warranty certificate), with a frequency of at least 3 GHz An Intel active cooling kit shall be installed on the processor. The motherboard shall include installed memory of at least 2 MB. The board shall contain an integral sound card.

7.6.7.2.2 The 2 GB DD R2 motherboard shall include (at least) integrated controllers, as specified below:

- a. Controllers for EDI hard drive, with a PCI interface.
- b. ATX MIDI tower case compatible with the motherboard, with available space for two additional 5" devices at least. The case must be safe and fitted with an extra fan in addition to the one supplied by the contractor. The case and supplier must appear on Intel's recommended list.
- c. SATA 500 GB hard drive at least.
- d. Hebrew/English engraved keyboard with 104 keys (known brand) connected without an adaptor.

- e. Mouse, including literature, drivers, and a mouse pad.
 - f. PCI Express 512 MB graphic card
- 7.6.8 The contractor shall undertake to install revised versions of the alarm system for at least 7 years from receipt of the system
- 7.7 Security requirements for computer systems
- 7.7.1 The security systems for the site and control rooms will be administered using a domain controller (DC) server and backup server, which include a Windows updated operating system, including client licenses for all the computers.
- 7.7.2 The security system will include the following modules:
- 7.7.2.1 Applications control module, for applications approved by the system administrator.
- 7.7.2.2 Device control module for integral and portable devices
- 7.7.3 Basic requirements for the applications control module:
- 7.7.3.1 Only approved applications may be used.
- 7.7.3.2 Option for fast access to applications, without the need to reboot the computer or exit the system.
- 7.7.3.3 Ability to change access authorizations on the spot.
- 7.7.3.4 Ability to copy a current list of authorizations onto external magnetic media for backup and continuous protection.
- 7.7.3.5 Ability to keep a record of and document user requests to operate approved and non-approved applications.
- 7.7.3.6 System administrator activity must be recorded and documented.
- 7.7.3.7 Ability to establish a standard system response if a non-approved application is used - operation or blocking.
- 7.7.4 Requirements in principle for the device control module:
- 7.7.4.1 The operating system shall be protected by means of an access control system which restricts user access to devices and system components.

- 7.7.4.2 The system must provide protection against viruses, Trojan horses, worms, and unknown monitoring programs (illegal or unauthorized) in the system.
- 7.7.4.3 The system will provide command and control over the transfer of data to devices authorized by the system administrator by receipt of a copied file name or full copy of that file when memory content is copied.
- 7.7.4.4 Following is a description of the key properties and specifications required:
- a. Ability to manage a list of authorizations (passwords) for each user and group of users
 - b. Ability to define special passwords for a specific computer or device
 - c. Prevent use of unauthorized devices and those with which the system is unfamiliar.
 - d. Ability to use approved devices for operation only.
 - e. The system should be able to provide a special ID number for each device.
 - f. Ability to provide access, reading and/or writing.
 - g. Ability to time access to a particular device in advance and for a given time.
 - h. Ability to provide temporary access to a specific device.
 - i. Ability to create a library of DVDs/CDs and passwords for users or groups of users.
 - j. Ability to create lists of portable media with special ID numbers and user passwords.
 - k. Option for each user to use portable media by means of encrypted systems.
 - l. Update list of authorized file signatures for each log-in to the system.
 - m. Ability to change access authorizations immediately.

- n. Ability to backup the current list of passwords on a desktop or laptop which is not connected to the network, thus providing continuous protection. The file will be updated when the computer is reconnected to the network.
- o. Ability to limit the quantity of data which is copied from a particular computer (or network) onto a PSD (portable media or disk).
- p. Support is to be provided for the following devices:
 - Hard drives
 - Biometric devices
 - Modems
 - Wireless network cards
 - Digital cameras
 - DVD/CD burners/players
 - Scanners
 - Flash drives
 - USB printers
- q. Support is to be provided for the following devices:
 - USB
 - LPT
 - Fire Wire
 - Blue tooth

- Wi-Fi
- IrDA
- PCMCIA
- COM
- IDE
- S-ATA

7.7.5 Security System Server– minimum configuration:

7.7.5.1 The server will be HP DL 360 G7 or equivalent.

7.7.5.2 Processor Core: Dual and Quad

7.7.5.3 Processor Cache: 5500 series 4 MB to 8 MB Level 2 Cache depending on processor

7.7.5.4 Processor speed: 2.93 GHz

7.7.5.5 Front Side Bus Speed 800 to 1333 MHz.

7.7.5.6 Memory Type: PC3-10600R Registered (DDR3) Memory or PC3-10600E Un buffered (DDR3) Memory.

7.7.5.7 Standard Memory

Performance Model: 12 GB (6 x 2 GB) DDR3-1333 MHz

Registered Memory

Base Model: 6 GB (3 x 2 GB) DDR3-1333 MHz Registered

Memory

Entry Model: 4 GB (2 x 2 GB) DDR3-1333 MHz Registered

Memory

Efficiency Model: 4 GB (2 x 2 GB) DDR3-1333 MHz Un buffered

Memory

7.7.5.8 Memory 144 GB Registered Memory (48 GB Un buffered Memory)

- 7.7.5.9 Memory Slots 18 DIMMs
- 7.7.6 Security system WS - Minimal Configuration
 - 7.7.6.1 Chip set motherboard X58.
 - 7.7.6.2 Intel Core I7 2.66 GHz processor, an Intel active cooling kit must be assembled on the processor. The motherboard shall include installed memory of at least 2 MB.
 - 7.7.6.3 8 GB RAM, DDR3 1600
 - 7.7.6.4 Sound card.
 - 7.7.6.5 Network card 10/100/1000
 - 7.7.6.6 Controllers for EDI hard drive, with a PCI interface.
 - 7.7.6.7 4 USB ports.
 - 7.7.6.8 DVD SATA burner at least.
 - 7.7.6.9 ATX MIDI tower case compatible with the motherboard, with available space for two additional 5" devices at least. The case must be safe and fitted with an extra fan in addition to the one supplied by the contractor. The case and supplier must appear on Intel's recommended list.
 - 7.7.6.10 500 GB SATA hard drive at least.
 - 7.7.6.11 Hebrew/English engraved keyboard with 104 keys (known brand) connected without an adaptor.
 - 7.7.6.12 ATI or NVIDIA GeForce 1 GB screen card, including HDMI connector;
 - 7.7.6.13 WIN 7 operating system, 64 BIT.
 - 7.7.6.14 The contractor shall install the updated versions of the system software, for at least 7 years from system acceptance. Upgrading of the versions is part of the comprehensive service and maintenance contract.

Note: Contractor's proposed configuration will be examined for approval or a revised version will be supplied in coordination with the contractor.

7.8 Access control system (ACS).

- 7.8.1 An ACS shall be provided to ensure that access to the site, important, sensitive or non-public areas is limited to those that have the authority to enter.
- 7.8.2 Estimate number of controlled doors – 10. An exact amount and locations to be fixed in the D.R
- 7.8.3 Access by authorized pedestrians shall be by cards and photo ID.
- 7.8.4 The system shall provide additional security by enforcing time rules, raising alarms in the event of an unauthorized attempt to gain access, and by recording all access movements, in and out, for analysis in the event of later discovery of a security breach. The system shall include the provision to issue new ID cards and register them on the ACS data base as well as to delete cards that have been stolen or lost.
- 7.8.5 The system shall be with the following basic features:
 - 7.8.5.1 Fully configurable access security levels, time zones and door groups thus enabling the system to be configured to control that has access to which area and during what time periods they may gain access to those areas.
 - 7.8.5.2 The system shall be designed to manage a minimum of 50 doors or gates and 1,000 users.
- 7.8.6 The system shall incorporate a number of additional features including:
 - 7.8.6.1 Reading in and out of staff at all perimeter access points and/or other designated access positions.
 - 7.8.6.2 Anti-tailgating to prevent persons failing to individually request/register access.
 - 7.8.6.3 Anti Pass Back.
 - 7.8.6.4 Invalid access card detection.

7.8.6.5 Insecure door/forced alarm indication, both remotely and at the controlled door.

7.8.7 **Access control Card (with Picture).**

Default: Customs employee's card.

For use of additional authorized personnel note the following:

7.8.7.1 Works with proximity technology

7.8.7.2 Reading distance will be 5 – 15 cm.

7.8.7.3 The card will meet all implemented international standards for cards of this type from the electronic and the durability points of view, the size and the physical data.

7.8.7.4 The card will be a dual card (proximity and magnetic).

7.8.7.5 Material: PVC.

7.8.7.6 Size: 5.4 X 8.67 X 0.084 cm.

7.8.7.7 Without a battery.

7.8.7.8 The lifespan of the card under normal use should be 5 years.

7.8.7.9 The card should be printable using normal Dye Sublimation systems from both the aspect of the magnetic material and the aspect of the edge of the card which must be de-burred.

7.8.7.10 Coding of the card will be done by the customer. The contractor will supply suitable equipment.

7.8.7.11 The printing on the card will include:

7.8.7.11.1 Customer logo.

7.8.7.11.2 Employee information.

7.8.7.11.3 Photograph.

7.8.7.12 The information contained within the card will include at least:

7.8.7.13 Employee Name.

7.8.7.14 Employee Number.

7.8.7.15 Company Name.

7.8.7.16 Card Number.

7.8.8 **Card Reader**

7.8.8.1 The Contractor is required to supply, install and deploy proximity readers.

7.8.8.2 Power supplies for the card readers will be included in the price of the reader. The reader will be able to read all smart cards that will be in the system.

7.8.8.3 The card reader will meet the following electrical requirements:

7.8.8.3.1 There will be indicator lights at the entrance showing "Authorized" or "Rejected".

7.8.8.3.2 A buzzer will sound to give an audible indication for "Rejected".

7.8.8.3.3 The lifespan of a reader should be at least 2,000,000 movements.

7.8.8.3.4 Minimum working temperature range 0°C - +50°C.

7.8.8.3.5 In the event of a failure in communication or in the system server, the card readers must work completely autonomously (using a local controller), and without any interruption to the entry and control

of users. When the communication returns to a normal state, the system tables must be updated immediately.

7.8.8.3.6 The reader will work using power supplied by the building's controller.

7.8.8.3.7 The readers will be protected by a tamper proof switch so that disassembly of the reader will cause an alarm in the system.

7.8.8.4 Every reader/building controller will transmit indications to the system server as follows:

7.8.8.4.1 Authorized entry.

7.8.8.4.2 Manual entry (by the internal button).

7.8.8.4.3 Attempt to disassemble the reader/server.

7.8.8.4.4 Communication error.

7.8.8.5 Readers designated for multi-use will include function buttons and an alpha numeric keypad.

7.8.8.6 Mechanical characteristics.

7.8.8.6.1 The fitting of the card readers within the facility will be of the anti-vandal indoor type, suitable for the environmental conditions within the building. Installation of a reader outside the building will be within outdoor weather-proof anti-vandal fittings and must meet both UL-294 and CE standards.

7.8.9 **Biometric Reader.**

7.8.9.1 Based on fingerprint recognition.

7.8.9.2 Operate in two modes

- 7.8.9.2.1 "One to one" mode.
- 7.8.9.2.2 "One too many" mode.
- 7.8.9.2.3 Possibility to switch between the tow modes.
- 7.8.9.3 Optical recognition – 500 DPI.
- 7.8.9.4 False acceptance – better than 0.01%.
- 7.8.9.5 False rejection – better than 0.01%.
- 7.8.9.6 Recognition time – less than 1 sec.
- 7.8.9.7 Rugged plastic or metal case.
- 7.8.9.8 Indoor/Outdoor operation.
- 7.8.9.9 MTBF – better than 1,000,000 operations.
- 7.8.10 **Controller**
- 7.8.10.1 The controller is the computer interface that will be installed in the building to coordinate between the card readers and the system server/computer and will give local permissions for opening the required door. The controller will include in its memory an updated list of all people authorized to enter and this list will be updated by the system server. The controller will have an autonomous role and will allow regular operation even if the communication with the server falls or is interrupted. The controller will be connected to the electrical network by a power plug and to the communication network by an RJ45 plug.
- 7.8.10.2 The controller will be able to identify 20,000 records of people authorized to enter.

- 7.8.10.3 The controller will be able to serve all the readers within the area in which it is installed.
- 7.8.10.4 The communication protocol between the controller and the system server will be TCP/IP.
- 7.8.10.5 The controller will be installed in close proximity to a communication cabinet/box located in the building. The exact location for the installation of the building controller will be decided by the customer at the appropriate stage of installation planning.
- 7.8.10.6 The controllers will be installed within a metal box.
- 7.8.10.7 The controller will be fitted out in a humidity-proof sealed box suitable for indoors.
- 7.8.10.8 Minimum hardware requirements for the controller are:
 - 7.8.10.8.1 The controller will include between 8 – 12 RS 232 input ports, 1 10 Base (BNC) and 1 10 Base T output ports (RJ45).
 - 7.8.10.8.2 The controller will include at least 4 logical outputs of the 'dry contact' type which are required for the operation of the electric locks and local indicators for authorization/denial of entry and operation of the buzzer.
 - 7.8.10.8.3 The controller should have at least 10Mb RAM.
 - 7.8.10.8.4 The controller should have at least 512Kb of flash ROM.
 - 7.8.10.8.5 The size of the controller memory which identifies the requests from the readers should be sufficient for 20,000 user names and 5,000 operations. The controller memory must be backed up by a battery to provide at least 12 hours of operation.

7.9 SysLog server

- 7.9.1 The server will collect all active equipment, workstation, servers and applications logs.
- 7.9.2 The logs will be saved for a period of at least 6 months.
- 7.9.3 The server will include software and hardware (server, screen, keyboard, mouse).
- 7.9.4 Detailed design will be made with the selected contractor.