Introduction

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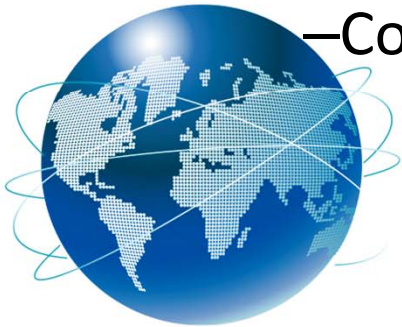   - Young Professional Liaison since2013

Guidelines and Rationale for Physical Security Counter-measure Placement within an Educational Setting

Focus on the principles behind designing a layered system of security counter-measures which can be applied in an educational environment

ADEC Guidelines for Private Schools

- Abu Dhabi Education Council (ADEC) recommend to use IP technologies

- ADEC policy 5210 focuses on Security Video Surveillance System (CCTV) with following in mind:

  –Enhance Security

  –Respect privacy

  –Control access to recordings

Purpose for CCTV

- Promote a safe learning environment.

- Increase personal safety of students, staff and visitors.

- Deter and detect crime, vandalism, unlawful behavior and inappropriate conduct.

- Protect school buildings and their assets.

ADEC Suggested Locations For Cameras

- Promote a safe learning environment.

- All entrances and exits of building and school grounds.

- All walkways and public areas (corridors, stairs, courtyard, sports areas, canteen).

- Learning Resource Center (libraries).

- Student pickup and drop-off areas (private vehicle and bus).

- Security areas and hazardous areas (control room).

- Exterior areas surrounding the school grounds.

- Cameras shall not be installed in classrooms and lavatories.

ADEC Suggested Locations For Cameras

S/N	Location	Observation Criteria	Surveillance Requirements
1	Student Pick up & Drop off	Recognize	Vehicle Number Plate, type and color of vehicle, passenger and overview of surrounding area. Fixed cameras PTZ cameras required for general surveillance
2	Landscape	Detect	Landscape cameras shall cover the school perimeter.
3	Main Entrance & Lobby		
a	Main entrance	Identify	Both entry and exit view Fixed cameras(WDR & IR)
b	Reception lobbies	Recognize	Fixed cameras and PTZ cameras for general surveillance
c	Cashier	Identify	Front view of the customer and transaction. Complete view of the counter with no dead zones. - Fixed cameras

ADEC Suggested Locations For Cameras

4	Other Building Access points		
a	Access points to all school buildings	Recognize	Entry & Exit view - Fixed cameras(WDR & IR)
5	Elevator Lobbies		
a	Elevator lobbies in BOH, FOH and Car park where entry & exit from building is possible	Recognize	People entering and exiting elevators – Fixed cameras
6	Circulation Corridor		
a	Circulation corridor on all floors	Recognize	Fixed cameras
7	Emergency Exit		
a	Emergency exits on all school buildings where entry & exit from building is possible	Identify	Entry or exit view based on the direction of emergency exit Fixed cameras(WDR & IR)

ADEC Suggested Locations For Cameras

8	Staircases		
a	Staircase on all floors	Recognize	
9	Canteen		
a	All canteen entries	Recognize	Fixed cameras
b	Kitchen entry/exits	Recognize	Fixed cameras(WDR & IR)
c	Canteen Dining Area		PTZ camera for general surveillance
d	Food delivery and storage areas	Recognize	Entry View - Fixed cameras
e	Cashier	Recognize	Fixed camera
10	Chemical Labs	Recognize	
11	Auditoriums/Ground / Play areas / Sports Hall /Swimming Pool	Recognize	
12	Entrances to Janitor room/ Wash rooms / Stores	Recognize	
13	Inside school buses	Recognize	Minimum 3 fixed camera (WDR & IR) to cover the whole bus seating area. All video shall be recorded at 4 CIF/6.25 FPS
14	All outdoor cameras		Shall be with IR illuminator (Min.30 Meter)

ADEC Suggested Locations For Monitors

- They shall be installed in the office of the Principal and Vice Principal.

- In security office for the purpose of monitoring the facility outside of school hours and overnight.

- Male security guards shall not have access to viewing CCTV footage of girls' schools during the school day.

ACCESS to Recording

- Principal and Vice Principal are authorized to view and retrieve the recordings.

- CCTV recordings of female students and staff shall be monitored by female Principals and Vice Principals only.

- All other school-based staff members are strictly prohibited from accessing recordings.

ADEC's Suggestions on Recording

- Retained for a period of 180 days at 12-30 FPS.

- System shall support MJPEG/MPEG4/H.264 compressions

- System shall have capacity of 25% expansion

- Redundancy at min. RAID5 with hot standby HDs such as failure of system shall not affect overall system as well as automatic redistribution of cameras

- Record should have camera#, location, date/time stamp

- All systems should be time synchronized such as IDS, Access control, CCTV etc.

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ADEC's Suggestions on Recording

- Retained for a period of 180 days at 12FPS.

- If incident captured in a recording that requires clarification beyond the school level, Cluster Manager shall coordinate with the Executive Director of ADEC

- No copy of any recordings may be shared with any person or entity unless upon a judicial order or by prior written approval of the Executive Director of ADEC School Operations.

- Duplication or distribution of recordings is strictly prohibited and punishable by law . School is responsible to maintain confidentiality of CCTV recordings.

ADEC's Suggestions on Recording

- System must have 3 types of recordings:
  - Motion
  - Continuous
  - Video analytic
- End-user must have access to live footage anywhere in the premises on network.

ADEC's Suggestions on Cameras

- IP camera with H.264 encoding and security features of HTIPS & 802.1x

- Camera must support resolution from CIF to 4CIF/HD

- I-frame rate shall be at least one I-frame once every 1-4 sec.

- Indoor camera: Color camera with 20 Lux illumination

- Outdoor camera: Camera with IR cut filter

- Area with variation in lighting condition: WDR cameras (with 120db)

ADEC's Suggestions on Cameras

- Camera/encoder streams shall be streamed as transport RTP/UDP

- VMS shall support multicast streaming

- Camera/encoders shall be synchronized with GPS time

- Analog camera: min. resolution of 540 TVL

- Any camera selection should be depended on observation criteria

ADEC's Suggestions on Observation Criteria

- Four categories of Observation Criteria based on relative size of 1.6m tall person appearing on monitor:
  - Monitor & Control
  - Detect
  - Recognize
  - Identify

ADEC's Suggestions on Monitoring and Control Room

- Operator shall be trained on event response
- Resolution of monitors shall exceed the highest resolutions camera used
- # of monitors will depend on # of cameras and integration with other systems
- Alarms integrations shall alert visually as well as audibly
- Max. 9 camera's view on screen of 17"-21" monitor

ADEC's Suggestions on Lighting

- Max. to min illumination ratio available in the field of view shall be better than 4:1

- IR illuminators shall be provided, where lighting conditions can not be maintained

- Following conditions should be considered before selecting camera, location and lighting:

  - ➢Back lighting
  - ➢Glare
  - ➢Poor/no lighting

ADEC's Suggestions on Transmission

- Design shall support video delivery with min. delay, loss and jitter
- Design shall provide end to end security, limiting unauthorized access
- Shared transmission network is not recommended
- All switches shall have 1+1 redundant power supply and cooling fans
- School is responsible for performance of system:
  - ➢ Network availability
  - ➢ Network security
  - ➢ Bandwidth availability
  - ➢ Maintaining source image quality
  - ➢ Min. Latency (Inline with manufacturer's limit)

ADEC's Suggestions on Network switches/firewall

- VMS shall be compatible with MCC provided IP scheme

- If school uses multicast routing, routing shall be based on PIM-SM

- Core level switches (layer-3) must be redundant in nature with 2 physical core switches

- Four core single mode fiber connectivity from equipment rack for integration to Etisalat POP room

- Firewall shall be default gateway for VMS

ADEC's Suggestions on VMS

- VMS shall have failsafe mode (For automatic NVR switchover)

- VMS shall support multicast streaming (ICD-Interface control document)

- VMS shall allow connection to other systems through WAN/LAN

- VMS shall allow realtime and recorded video stream, in non-encrypted RTP/UDP protocol

- VMS shall support the recommended compressions

ADEC's Suggestions on servers

- Servers shall have failsafe mode (For automatic server switchover)

- Servers load shall not exceed an average of 70%

- Server shall have dual processors, dual powers and min. 1Gbps dual communication uplinks to network

ADEC's Suggestions on Storage

- Storage shall have min. RAID 5 or above configured

- HD shall have min. level of 7200rpm

- Storage shall have dual processors, dual powers and dual network uplinks to NAS/SAN switches

- Min. of 20TB storage

ADEC's Suggestions on Alarm logs

- Alarms logs for all events:

- For cabinet open/close

  - Loss of system communication

  - Loss of camera signal

  - System power down

- 180 days of logs shall be available

ADEC's Suggestions on CCTV installation

- Install on inaccessible height

- Camera on accessible height shall be vandal proof

- Outdoor camera with IP65 rated enclosures, sun shade and cooling mechanism

- All equipments shall be kept in lockable cabinets

ADEC's Suggestions on Power

- CCTV system shall be on additional UPS backup of min. 15mins , provided generator will start within 10mins of power failure

- CCTV system shall be on additional UPS backup of min. 2hrs , if generator are not available or they are not guaranteed in case of power failure

- System shall restart automatically without human interaction

- Power distribution shall be from secured location

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ADEC's Suggestions on Maintenance

- On call response time shall not exceed 2hrs

- Maintain log for all maintenance and stoppage

- Quarterly maintenance shall include:

    ➢Inspection & confirmation on correct operations

    ➢Full system tests to evaluate performance

    ➢Inspection of field devices & cleaning

    ➢Rectification and reporting of any condition

ADEC's Suggestions on Training

- School shall train following:

  ➢Operators on event response

  ➢Maintenance team on maintenance of system

  ➢Two representative on video review, export and system health check

- School shall maintain following credentials:

  ➢Training certificates

  ➢Qualifications

  ➢Past employment history

ADEC's Suggestions on Documentation

- School shall maintain following documentations:

  ➢ Maintenance contract

  ➢ Trade lincense

  ➢ As built drawings

  ➢ Maintenance manuals

  ➢ Operational manuals

  ➢ List of people having access to videos

  ➢ Risk assessment report

  ➢ Site plan with camera icons and identification numbers

ADEC's Suggestions on Signage

- School shall place signage in Arabic and English languages with camera icon stating following:

    "CCTV cameras in operation"

ADEC's recommendations on location, surveillance and observation criteria

- School shall carry out their own risk assessment, before installation

- School shall budget in phases to cover whole building from fences, gates, entrances to all internal areas.

- School may approach approved vendors only

Educational setting

- School shall carry out their own risk assessment, before installation to find the level of countermeasures needed

- Most of the school do not need systems more than:

  - Locks

  - Keypads & electronics locks

  - PAS system

  - CCTV

Educational setting

- School shall find the level of countermeasures needed
  - Detect
  - Deter
  - Deny
  - Destroy

- No system/machine can guarantee 100% security, without focusing on man and method.

- School should find the right balance in their efforts to ensure security.

Thank you.

Please feel free to ask any question.