

# CCTV Supervisor Participant Handbook

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# 1. Introduction to Security

**Unit 1.1 - Objective of the Program**

**Unit 1.2 - Private Security Sector**

**Unit 1.3 - Importance of CCTV**

**Unit 1.4 - Role of a CCTV Supervisor**

**Unit 1.5 - Code of Conduct**

## Key Learning Outcomes

**At the end of this module, you will be able to:**

1. Understand the objectives of the program
2. Necessary skills required for a CCTV Supervisor
3. Gain knowledge about security and places where security is needed
4. Overview of private security industry in India
5. Define a CCTV Camera
6. Explain the objectives of CCTV Schemes
7. List down the advantages of using CCTV cameras
8. List down the role and characteristics of CCTV Supervisor
9. Identify the career progression of CCTV Supervisor
10. Understand about the code of practice of a CCTV Supervisor
11. State the meaning of 'confidentiality' for the role of a CCTV Supervisor

## UNIT 1.1: Objective of the Program

### Unit Objectives

**At the end of this unit, you will be able to:**

1. Get introduced to the program
2. Understand the importance of the program

#### 1.1.1 Introduction

A CCTV Supervisor in the Private Security Sector is an important job-role. He/she provides protection against threats and risks through surveillance and early warning. As threat and risks to modern living and businesses multiply, the requirement of CCTV surveillance systems and their operators is also increasing. Nowadays, most of the commercial and industrial deployments are equipped with such systems.

**Brief Job Description:** A CCTV Supervisor needs to know the basics of private security, supervision of security unit operations and spectrum of threats and risks to security and safety. CCTV Supervisors observe designated premises through CCTV systems; pick up early indications of problems pertaining to security and safety and respond appropriately by alerting various agencies.

**Personal Attributes:** CCTV Supervisors should be well-versed with the private security operations and have basic technical aptitude. Proficiency in communication and keen observation would help in thwarting threat and risks to life, property and premises.

**Source:** <http://nqr.gov.in/sites/default/files/QP-CCTV%20Supervisor.pdf>

#### 1.1.2 Objectives of the Program

The objective of the program is to enable you to learn and perform the following:

- a) Monitor a security unit
- b) Supervise CCTV operations to secure premises
- c) Maintain operational performance of CCTV system
- d) Observe health and safety while monitoring security operations
- e) Perform security tasks in accordance with the basic security practices
- f) Conform to rudimentary legal requirements of Private Security Agencies (Regulation) Act – 2005 while undertaking security tasks
- g) Security in commercial deployments
- h) Security in industrial deployments
- i) Positive projection of self and the organisation

## UNIT 1.2: Private Security Sector

### Unit Objectives

**At the end of this unit, you will be able to:**

1. Gain knowledge about security and places where security is needed
2. Discuss about the importance of private security

### 1.2.1 What is Security?

Security is something which provides protection from any harm or accident.

Industrial Security can be explained as a process which helps in creating safe environment by establishing a system that protects the enterprise from any threat or accidents.

**Some of the ways in which a society maintains its security are:**

- a) By maintaining order
- b) By identifying threats and taking precautionary measures
- c) By raising and employing armed forces and police forces

**Some of the places where we need security are:**

- a) Residential areas
- b) Industrial and Commercial areas
- c) Public areas
- d) Infrastructure
- e) Pipeline, refineries, mines, etc.
- f) Protection of self
- g) Events
- h) Movement of cash, bullion and other valuable items
- i) Transport hubs

**Reasons for hiring private security by individuals and organisations are:**

- a) Detection and prevention of crime
- b) Deal with the rising crime in society
- c) Complementing the police services to ensure prevention of crime
- d) Need of dedicated private security by establishments
- e) Protection of people and property



**Things which needs to be protected/ secured:**

- a) People/ individuals
- b) Areas/Premises
- c) Property
- d) Information
- e) Activity/ processes
- f) Environment

**We need protection from:**

- a) Bomb, fire
- b) Theft
- c) Accidents – traffic and industrial
- d) Health and safety hazards - gas leak, chemical spill etc
- e) Natural disasters - earthquakes, floods, rains etc.

### 1.2.2 Private Security Industry in India

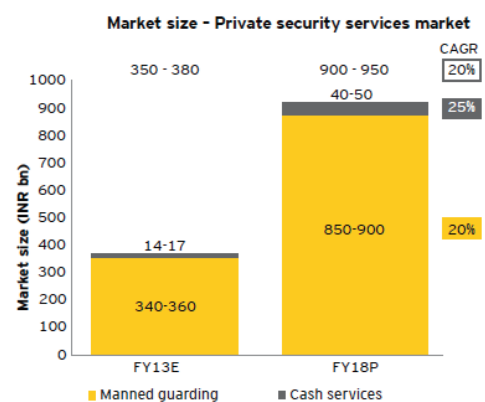
The Private Security Industry in India finds its origins in the early 1970s. Currently, India has the largest CCTV Supervisor-force in the world and this force is employed in various deployments across the country. Despite the high number, the Security Industry in the country is still in its infancy and is growing at high rates. The Private Security Industry in the country is managed by the Private Security Agencies Regulation Act 2005.

The main area of focus by Private Security Sector is of Supervision. Other key services undertaken by this sector are:

- a) VIP (Very Important Person) Protection
- b) Cash Management
- c) ATM Security
- d) Detective Services
- e) Special Event Security

**Key players in India**

Major players in security industry are mentioned in the table given:



Source: FICCI Report on Private Security Industry 2013

Company Name	Revenue (INR Million)	Major Market
G4S	16,569	Pan India
SIS	6,517	Pan India
TOPSGRUP	3,052	West

Checkmate	3,976	West
Peregrine	NA	53 cities
ISS SDB	3,896	South
Sentinels Security	431	North
Securitas and South Focus	1,978	North , West
Brinks Arya	1,751	West
Writer Safe CCTV Supervisor	1,087	Pan India

### 1.2.3 Role of Security

The role of security is to protect the business, people, property, material, information and environment from risks and losses and ensure safe premises and assist the law enforcement agencies. It is therefore an act not a process, or system. Its role, objectives, authority and control must be described carefully.

#### What is security?

- a) Management of risks (crime, fire, accidents, terror and other hazards)
- b) Loss prevention (production, theft, pilferage) by Misuse, Neglect, Damage and Wastage (MNDW)
- c) Personnel security
- d) Security of information (IT, Documents)
- e) Workplace (Departmental) security
- f) Environmental security

There are many career opportunities within the private security industry.

- a) Manned Guarding
- b) CCTV Systems
- c) Door Supervision
- d) Cash and Valuables in Transit
- e) Event Security
- f) Professional Investigators

The main qualities required by operatives in the security industry are:

- a) Punctuality
- b) Sincerity
- c) Honesty
- d) Politeness
- e) Accountability
- f) Communication Skills
- g) Team working Skills

## 1.2.4 General Security Duties

Irrespective of the type of deployment – commercial or industrial, the duties performed by private security personnel remain the same. Some of the important duties are:

- a) Respond to risk and threat: A CCTV Supervisor is the first person to notice a risk or threat. Therefore, an appropriate response is expected from him/ her. Timely response can reduce the effect of the threat.
- b) Control entry and exit: Proper access control to a designated site can reduce many possible risk and threat. A CCTV Supervisor will have to organise access control by deploying available manpower and security equipment properly.
- c) Control traffic and parking: Traffic control and parking management is an important duty due to the large number of vehicle entering or exiting any premises. It is also related to access control. Regulation of traffic and parking can reduce risk and threat considerably.
- d) Check material movement: Loss prevention can be achieved by exercising proper control over material movement. Control over material movement also involves documentation, which a supervisor should be good at.
- e) Surveillance: Premises security comes from good surveillance. Alert CCTV Supervisors, use of equipment such as security lights, binoculars, CCTV camera and sensors and alarms form the basis of any surveillance system.
- f) Report to superiors: On time and regular reporting is expected from every security personnel. It can save major losses. CCTV Supervisor should be proficient in reporting a matter over telephone, radio set, and computer or through written reports.
- g) Basic security registers: Security is a matter of details. Security registers help in post-event investigations. Many registers and documents are maintained by security personnel, especially the supervisor. A CCTV Supervisor should be proficient in writing.
- h) Operate security equipment: No security site is complete without security equipment. Security personnel should be trained to operate such equipment safely and efficiently.
- i) Be vigilant about unauthorised entry of people and vehicle into the venue. Permit entry after verifying the papers.
- j) Check the person, baggage and vehicle for unauthorised substances that may be smuggled into the venue.
- k) Check for weapons and objects which can be used as weapons, which may be taken into the venue.
- l) Respond early to the incidents of hooliganism, arson and riot by summoning help.
- m) Ensure cleanliness of the premise.



Fig 1.2.1 Frisking

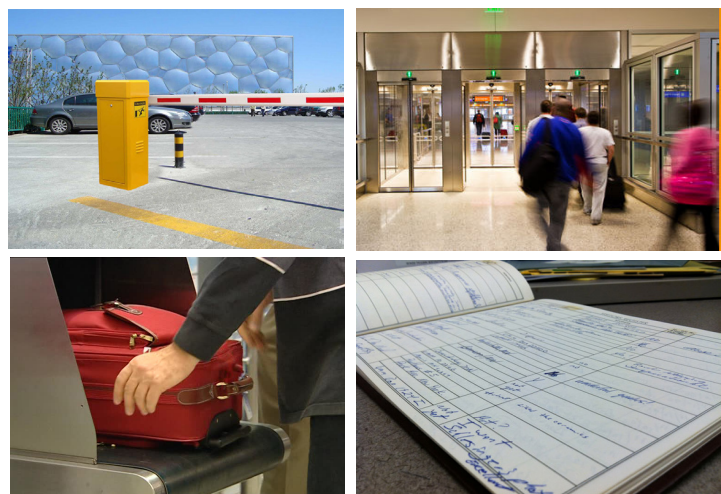


Fig 1.2.2 General securities duties

## UNIT 1.3: Importance of CCTV

### Unit Objectives

**At the end of this unit, you will be able to:**

1. Define a CCTV Camera
2. Explain the objectives of CCTV Schemes
3. List down the advantages of using CCTV cameras

#### 1.3.1 What is CCTV?

The full form of CCTV is closed-circuit television. It is a system which is basically used for monitoring, surveillance and security purpose.

You will find CCTV cameras installed in places like airports, banks, malls, hospitals, hotels, offices etc, in order to keep an eye on wrong does and prevent accidents. It is also used in traffic law enforcement.

#### 1.3.2 What is a CCTV System

CCTV System means the group of CCTV cameras which are installed in a building or premise in order to keep an eye on people who enter or exit the premise.

**Objectives of the CCTV Scheme:** The system involves a fixed number of cameras situated around the site externally basically for the purpose of enhancing building security and creating mindfulness among the people there. CCTV surveillance at a place is for:

- a) Protecting the building and assets including people
- b) Reducing the fear of crime
- c) Reducing the risk of anti-social behaviour (including theft and vandalism)
- d) Helping the police in detecting crime
- e) Helping in identifying, apprehending and prosecuting offenders

#### 1.3.3 Advantages of Using CCTV Cameras

- a) It helps in preventing crime and gives you peace of mind and makes you feel secure.
- b) Cameras which are installed at strategic places help in gathering evidences and proving your point, it is basically helpful in dealing with legal scenarios
- c) It helps in making correct and fair decisions
- d) If the CCTV camera is installed at your home or office you are able to keep a record of things taking place in your absence.
- e) It helps in maintaining a safe working environment

## UNIT 1.4: Role of a CCTV Supervisor

### Unit Objectives

**At the end of this unit, you will be able to:**

1. List down the role and characteristics of CCTV Supervisor
2. Identify the career progression of CCTV Supervisor

#### 1.4.1 Introduction

The job role of a CCTV supervisor may appear to be quiet simple but it is not so, it is a job which involves high degree of pressure as you need to be attentive and focused all the time.

The CCTV Supervisor must possess internal skills rather than external skills. He need to be vigilant or alert all the time, for example, if he sees any unknown person entering the premise he has to be quick enough to decide what action to take.

Due to increasing rate terror, crime, theft etc. the demand for CCTV Supervisor has increased. Therefore it is very important to understand the characteristics which a person must possess in order to be a CCTV Supervisor.

#### 1.4.2 Responsibilities of a CCTV Supervisor

- a) Monitor the security of premises under supervision with CCTV.
- b) Planning and organising daily/shift routines and activities.
- c) Maintains a safe operating environment with regard to Health & Safety responsibilities.
- d) Acting as a point of contact between Control Room officers and management, on welfare and disciplinary issues.
- e) To remain alert at all times in the maintenance of the Control Rooms integrity and in the protection of its assets.
- f) Ensures Control Room is maintained in a state of continual operational readiness.
- g) Contact the senior manager or police as necessary.
- h) Carry out additional duties as required during emergencies.
- i) Monitoring of various alarm systems and carrying our appropriate procedures.
- j) Maintains Control Room logbook.

#### 1.4.3 Characteristics of CCTV Supervisor

- a) CCTV Supervisor must possess problem solving and decision making skills.
- b) He must stay focused and alert all the time as he has to monitor multiple screens and people who are entering and leaving premise.

- c) He needs to have a good understanding of body language so that he can identify people who can create trouble and stop that trouble from taking place.
- d) He must be a alert/ vigilant so that he can respond to emergencies quickly.
- e) He must be physically and mentally fit so that he can work under pressure.
- f) He must possess good staff management skills which involves appropriate staffing of control room (It must not be over crowded), effective working of operators, and setting appropriate break times for operators.
- g) He must be well aware about the equipment used in control room and how each one works i.e he must have operational knowledge of the CCTV system
- h) He must possess good communication skills as he will have to deal with multiple agencies.
- i) CCTV Supervisor must perform camera patrolling on regular basis so that he becomes aware about the site and identify if there is any problem.
- j) He must be aware about the thing which he must focus on while performing patrolling.
- k) Give below is the table which tells about the things which he should focus on and things which he should avoid focusing on while performing patrolling.

What to see?	What not to see?
A person who continuously moves in and out of the premise or is showing any suspicious behaviour	Do not just focus on ladies
A person who suddenly runs out of the premise	Do not focus on girls and boys who are gossiping
A dark area where there is no mobility as these areas are prone to theft and assault	
Place where an easy gateway is possible	

### 1.4.4 Career Progression of a CCTV Supervisor

There are three main roles within the CCTV team are:



## UNIT 1.5: Code of Conduct

### Unit Objectives

**At the end of this unit, you will be able to:**

1. Understand about the code of conduct of a CCTV Supervisor
2. State the meaning of 'confidentiality' for the role of a CCTV Supervisor

### 1.5.1 Introduction

The CCTV team should always be professional and keep themselves well groomed. Given below are the ways in which one can keep himself/herself well groomed and possess a professional attitude.

#### 1) **Personal Grooming**

- a) Make sure you are well groomed (short, well cut hair and nails) at all times
- b) Wear clean neat and well ironed uniform as per the organisation guidelines
- c) Do not smoke or drink while on duty
- d) Follow a healthy and hygienic (daily brush and bath) lifestyle
- e) Be professional and courteous in all your interactions whether with the team or external agencies.

#### 2) **Professional attitude and skills**

- a) Be fair and do not discriminate.
- b) Be professional and courteous in your duties.
- c) Behave with personal integrity and understanding.
- d) Use moderate language which is not defamatory or abusive.
- e) Be fit for work and remain alert at all times.
- f) Do not ask for or accept bribes or other consideration from any person.
- g) Do not drink alcohol or un-prescribed drugs while on duty.
- h) Do not get unauthorised equipment in to the control room nor remove anything from the control room without permission.
- i) Always comply with the employer's policies, procedures and objectives.

CCTV systems have been used to tackle crime and make public spaces safer. CCTV is a powerful tool in the area of security, but it is also easy to misuse if the camera are not used properly.

Trust is an essential part of a CCTV scheme as people who are being monitored must believe that:

- a) The cameras will be used only for that purpose for which they were installed.
- b) The images will be accessed only by authorized persons.
- c) Any recording or image that is captured will be securely stored kept for only as long as necessary

Using cameras in the correct manner includes:

- a) Make sure the cameras are positioned in such a way that they do not intrude on the privacy of any individuals. For example they should not look through bathrooms, windows etc.
- b) Make sure that there are no cameras installed in the trial rooms.
- c) Make sure people are aware of the CCTV. You can put signs clearly that CCTV cameras are operating in this area.
- d) Before using the CCTV images make sure that they are accurate complete and not misleading.
- e) Do not share the images you collect with the CCTV camera for any other purpose than for the original purpose.
- f) Protect your CCTV images from loss or unauthorised access and use.
- g) Keep the CCTV images for a specified time only. The time should not be longer than what is necessary for your purpose.
- h) Make sure that the control room is accessible to authorise staff only.

Confidentiality is very important in CCTV operations. As a CCTV supervisor you have access to a lot of data and personal information about people. A strict code of conduct is a must.

- a) Keep all the information confidential
- b) Secure the data and system
- c) Do not use devices such as mobile phones for unauthorized recording or copying of footage. Do not allow video recordings for your own use or to sell to other people
- a) The data recorded and observed must not be discussed with friends or any others.
- b) Do not destroy, change or erase any video recording or document.
- c) The data should be shared with the other agencies, only after authorisation from your superiors.
- d) The control room security should be taken seriously. Admittance should be restricted to only those who need to be there. The location of the control room should be treated as confidential.

## Notes

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## UNIT 11.4: Gender Sensitivity

### Unit Objectives

At the end of this unit, you will be able to:

1. Understand the importance of gender sensitivity for a CCTV Supervisor

### 11.4.1 Introduction

Sexual harassment of women is a sad reality. It is important to protect women against sexual harassment both in public or private work places. Women everywhere have a right to gender equality, i.e. equality of life and equality of liberty, equality in working conditions everywhere. Women's participation in work will improve once they get a sense of security at the workplace. This will enhance their economic empowerment and ensure inclusive growth.

### 11.4.2 Important Terms

- a) **Sex** means defining the biological status of a person categorising them as male, female or intersex.
- b) **Gender** refers to the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women.
- c) **Sexual Harassment** includes unwelcome acts or behaviour both by implication and behavior, such as:
  - i) Unwanted Physical contact and trying to touch or
  - ii) Asking or implying for sexual favours or
  - iii) Making sexual remarks or
  - iv) Displaying pornography or
  - v) Any unwelcome verbal, non-verbal or physical conduct of sexual nature.
- d) **Internal Complaint Committee:** It is a committee of members of an institution formed to address and resolve complaints dealing with sexual harassment or misconduct.
- e) To ensure appropriate behavior make sure you approach everyone with respect. You should also understand the different types of prejudice that exist as a result of differences between people, including:



Fig 11.4.1 Sexual harassment

- b) Suggestive or other sexually aggressive remarks
- c) Leering (suggestive staring) at a person's body

**Eve Teasing**

Eve-teasing means teasing a girl or woman publicly, it is a very difficult situation for the one being teased and can turn into a serious issue.



Some people consider it harmless but it can range in severity from catcalls, groping in buses or crowded places to sexually suggestive remarks and other forms of sexual aggression. The worst part of it is that it often places responsibility on the woman for being a tease because of her clothes etc.

Fig 11.4.3 Quote on eve teasing

Almost every Indian woman has faced this at sometime whether in a bus, or a mall, or a theatre. Eve teasing is complex problem and it requires serious attention.

Extended Eve teasing can lead to event of sexual abuse, or molestation. Molestation is forcing undesired sexual behaviour by one person upon another.

### 11.4.3 Safety Instructions for Women and Children

To avoid incident of eve teasing or molestation the following guidelines has been issued :

**Instructions for Home maker**

Do's	Don'ts
<ul style="list-style-type: none"> <li>▪ While going out, always switch-on a light.</li> <li>▪ Important telephone numbers should be kept on a convenient place.</li> <li>▪ Avoid strangers</li> <li>▪ Dont accept eatables from strangers</li> <li>▪ When you step out, leave a light n in the house.</li> <li>▪ Keep important numbers in a easily reachable place</li> <li>▪ Keep a connection with your neighbour in case of an alarm</li> </ul>	<ul style="list-style-type: none"> <li>▪ Don't take lift from unknown person.</li> <li>▪ Don't go out side school without permission of school teacher.</li> <li>▪ Don't hesitate to shout/ scream on being harassed.</li> </ul>

## Glossary of CCTV Terms

- 1) **Angle of View** – The angular measure of a lens' field of view (FOV) on the diagonal of the image, expressed in degrees or radians. Vertical and horizontal angles of view are also sometimes stated.
- 2) **Aperture** – The opening, located within the optical path between the front of the lens and the focal plane that allows light to pass. The size of the aperture determines the depth of field and the time required to adequately expose an image. The size of the aperture is controlled using a multi-leaved adjustable device called a diaphragm or iris.
- 3) **Aspect Ratio** – A numerical expression for the ratio of the image height to the image width represented as a ratio, such as 4:3, or a number, such as 1.33.
- 4) **Aspherical Lens** – A lens with a surface geometry that is not derived from a portion of a spherical surface. Aspherical surfaces are much more complex to calculate and manufacture than spherical surfaces. Using aspheres allows lens designers many more options to design lenses than spherical designs alone.
- 5) **Automated Video Surveillance (AVS)** – See Video Analytics.
- 6) **Backlight Compensation (BLC)** – A video contrast control that corrects the exposure of persons or objects in front of a bright light source.
- 7) **Bandwidth** – A measure of the capacity of a communications channel. The higher a channel's bandwidth, the more information it can carry.
- 8) **Blooming** – The defocusing effect that occurs around bright areas in an image, where the intensity of the incoming light has exceeded the imager's ability to produce a usable image.
- 9) **Camera Fusion** – An emerging technology that allows a single video image to be created from separate video signals. Camera Fusion can integrate video signals from image sensor, intensifier, and thermal imager technologies into a single output, selecting each pixel to provide the best contrast in the final image.
- 10) **Cathode Ray Tube (CRT)** – The term used to denote a video terminal or television set that operates using a "picture tube."
- 11) **CCTV Camera** – A video camera employed in a CCTV system.
- 12) **Character Generator** – An electronic device that can insert text into an image. Character generators can be used to watermark an image or apply a date/time stamp to a recording.
- 13) **Charge-Coupled Device (CCD)** – A type of image sensor, an array of photocell semiconductors, used to create a digital image. CCDs are used in cameras, document and image scanners, and other devices.
- 14) **Compressor/Decompressor (CODEC)** – A CODEC is a set of algorithms for compressing and decompressing large files, such as a video file.
- 15) **Color Resolution Chart** – A test chart used to determine the resolution of a camera or lens in terms of color response.
- 16) **Complementary Metal Oxide Semiconductor (CMOS)** – A type of image sensor used in a camera to detect light and create a video image. CMOS sensors require less electrical current than CCD image sensors, and are often found in applications requiring portability or small size.

- 17) Common Intermediate Format (CIF)** – A standard that defines the sizes (width and height in pixels) of full and reduced-size images. A full CIF image is 352 x 288 pixels per image. QCIF (176 x 144) contains one quarter of the information of a full CIF. QQCIF (88 x 72) is a quarter of a quarter CIF and are often referred to as thumbnails, and contain 1/16 the information of a full CIF image.
- 18) Compression** – Algorithms used to compress digital image files to conserve bandwidth and video storage capacity. Moving Picture Experts Group (MPEG) and Motion Joint Photographic Experts Group (MJPEG) are examples of video compression formats.
- 19) Consumer Camcorder** – A small, handheld, electronic video camera, combined with a video recorder, intended for home use.
- 20) Convex Parabolic Mirror** – A bowl-shaped mirror, which creates a panoramic image that can be recorded by a camera focused on the mirror.
- 21) C-Mount (cine-mount)** – One of two predominant video camera lens mounting methods. C-mount lenses have a 1-inch mount diameter with a thread pitch of 32 threads per inch and focus 17.5 millimeters behind the rear lens element. A C-mount lens can be used on a CS-mount camera (see CS-Mount) by placing a 5 millimeter spacer ring between the lens and the camera.
- 22) CS-Mount (cine-short-mount)** – One of two predominant video camera lens mounting methods. CS-mount lenses have a 1-inch mount diameter with a thread pitch of 32 threads per inch and focus 12.5 mm behind the rear lens element.
- 23) Date/Time Stamp** – The capability to insert the current date and time into an image during recording.
- 24) Day/Night Camera** – A camera that provides color images in daylight conditions and black and white images in low-light conditions. When the ambient light falls below a certain level, an internal mechanism automatically removes the infrared (IR)-cut filter from the optical path and the camera switches to black and white mode.
- 25) Depth of Field** – The front-to-back distance along a camera's axis of view where the image appears to be in focus. Depth of field is a function of the size of the imaging device, lens focal length, and lens aperture setting.
- 26) Digital Camera** – A device that records a digital image or stream of images in a digital format.
- 27) Digital Imager** – A fundamental component of every digital camera. The imager records the view received from the camera lens, also called a sensor.
- 28) Digital Signal Processing (DSP)** – The set of algorithms or rules used to generate visual images from digital information. DSP can be implemented as software, firmware, or hardware.
- 29) Digital Video Recorder (DVR)** – An electronic device that records video images and stores them to a computer storage device, such as a hard drive.
- 30) Direct Attached Storage (DAS)** – A video storage technology used to connect hosts to storage devices via a direct, one-to-one small computer system interface (SCSI) attachment.
- 31) Electron** – Electrons are negatively charged subatomic particles, the movement of which is the basis for electricity.
- 32) Electron Guns** – CRT devices, such as televisions and computer monitors, function using electron guns. These guns fire electrons at the interior surface of the face of the CRT, which is coated with phosphor compounds. The phosphors glow when electrically charged, creating a visual display.

- 33) Electronic Noise** – Static in a video system, seen as graininess or snowiness in the image on the screen.
- 34) F-Stop** – The ratio of the focal length of the lens to the diameter of the aperture. The smallest number represents the widest aperture. The aperture size and the shutter speed determine the amount of light reaching an image sensor.
- 35) Fiber Channel (FC)** – A high-speed network protocol and interconnect technology that provides high performance transfers of block data between networked storage devices.
- 36) Field of View (FOV)** – The size of the area that can be seen while looking through an optical device. This area can be calculated using a lens calculator.
- 37) Fisheye Camera** – A camera that employs an ultra-wide-angle lens that has an angle of view that may exceed 180 degrees and has considerable barrel distortion.
- 38) Focal Length** – The distance between the optical center of the lens and the plane behind the lens where the image is formed. For a particular size of imaging device, the focal length determines the angle from which the lens accepts light or the angle of view.
- 39) Focus** – The process of adjusting the distance between the lens and the focal plane so that objects of interest appear crisp and sharp in the final image.
- 40) High Definition Television (HDTV)** – An improved television system that provides approximately twice the vertical and horizontal resolution of previous television standards.
- 41) Horizontal Resolution** – The number of alternating pairs of vertical black and white lines that can be recorded by a camera and/or reproduced by a television or monitor.
- 42) Hybrid DVR** – A video recording device that incorporate functions of both network video recorders (NVRs) and DVRs by accepting and converting video images from analog cameras as well as IP video inputs.
- 43) Image** – A two-dimensional representation of a FOV.
- 44) Intelligent Backlight Compensation** – A set of rules for changing the intensity of the pixels in an image to improve the perception of details and contrast. These rules are employed when the ambient light interferes with the details in the captured image.
- 45) Intelligent Video** – See Video Analytics.
- 46) Intensifier** – An electronic device that amplifies the effects of limited numbers of photons (low levels of visible light) in a near-dark FOV. Intensifiers are used to provide images under low levels of illumination from the stars, moon, or other light sources.
- 47) Interlaced Picture** – Scanning two sub-pictures (horizontal lines) to make up one picture frame. Many television systems only transmit one half of an image with each pulse of analog signal. The horizontal lines of the image are divided into even and odd sets, and the video signals alternate sending the sets of horizontal lines to the television or CCTV monitor. Systems using interlaced video signals require two pulses of video signal to make one complete image.
- 48) Infrared (IR)** – The region of the electromagnetic spectrum that lies slightly past barely visible red light. The IR band starts at wavelengths greater than 750 nanometers, and extends to about 1,200 nanometers. There is no universal agreement on the boundaries of the IR band.

- 49) Infrared-Cut Filter** – A filter used with an IR sensitive camera to improve performance during daylight operation. Such filters are often found on day/night cameras.
- 50) Infrared Illuminator** – A light source that produces IR (invisible or barely visible) wavelengths of light. IR illuminators are used as spotlights or floodlights for cameras sensitive to reflected IR light.
- 51) Iris** – The iris is the physical mechanism that can be opened or closed to change the size of the aperture.
- 52) Internet Small Computer System Interface (iSCSI)** – An Internet protocol (IP)-based networking standard used for linking voice, video, and data from multiple types of network storage devices.
- 53) Joint Photographic Experts Group (JPEG)** – A standard for photographic image compression. JPEG is a lossy compression method, which discards data from an image and interpolates the surrounding area.
- 54) Kilobyte (KB)** – Each KB is composed of 1,024 bytes, and each byte is composed of an 8-digit binary number.
- 55) Lens** – An optical device that bends or refracts rays of light to produce an image.
- 56) Light** – The portion of the electromagnetic spectrum that is visible to the human eye.
- 57) Light Sensor** – A device used to detect either the presence or absence of light or to measure the intensity of light present in an environment.
- 58) Lipstick Camera** – A small, self-contained electronic camera often used for covert surveillance.
- 59) Local Area Network (LAN)** – A network configuration used to connect computers and peripheral devices in close proximity to one another in order to share resources, such as files, applications, and printers.
- 60) Lux** – The basic unit of illumination, equal to 1 lumen per square meter, or 1/10 of 1 foot-candle.
- 61) Megabyte (MB)** – 1 MB is composed of 1,024 KB. See Kilobyte.
- 62) Monitor Station** – A workstation designed for the presentation of visual information.
- 63) Microbolometer** – A type of sensor for the detection of long-wavelength IR energy, which radiates from all objects as a function of their respective temperatures. Microbolometers are one type of sensor used in thermal cameras and heat sensing devices.
- 64) Monochrome CCD Sensor** – A CCD sensor that does not record color information. Monochrome CCDs are used in monochrome CCTV cameras, particularly ones used in low-light applications to detect reflected IR energy.
- 65) Motion Detection** – See Video Analytics.
- 66) Moving Picture Expert Group (MPEG), Motion Joint Photographic Experts Group (MJPEG)** – Digital formats for streams of images that record motion.
- 67) Network Attached Storage (NAS)** – A network storage technology used to record and access data in file format from one or more data storage devices.
- 68) Network Video Recorder (NVR)** – A software application that records video transmitted over an IP network from multiple CCTV digital cameras to a variety of storage devices.
- 69) Neutral Density Filters** – An optical filter that reduces the total amount of light entering the camera evenly across all visible light wavelengths. The filter is often used to force open a lens aperture to minimize the depth of field so that the focus setting of a camera lens can be made in bright locations.

- 70) Oscilloscope** – A type of test equipment used to observe electronic signals.
- 71) PAL (Phase Alternating Line)** – A video signal standard used outside the U.S. The PAL standard requires 50 Hertz (Hz) electrical power distribution.
- 72) Pan-and-Tilt Devices** – A movable camera platform that allows the camera to be aimed or pointed at objects of interest.
- 73) Panoramic View** – An unbroken view of a wide arc (often 180 degrees or more) of a horizon.
- 74) Peltier Cooler** – A type of electrically powered heat sink used to cool electronic devices that have performance degradation when operating at higher temperatures.
- 75) Personally Identifiable Information (PII)** – Unique personal information that can be used in conjunction with other resources to identify, locate, or contact a specific individual.
- 76) Phosphor Elements** – The chemical compounds which line the inner face of a CRT video display. The phosphor elements glow when struck by the streams of electrons, producing the picture seen on the CRT.
- 77) Photon** – In quantum physics theory, a photon is a single discrete unit of light or a packet of light.
- 78) Pin-Hole Lens** – A small, fixed focal length lens often used in covert camera applications.
- 79) Pixel** – A picture element, the smallest component of a visual display. The resolution of a video monitor is proportional to the number of pixels used to generate the display.
- 80) Polarizer** – A special neutral-gray colored optical filter that can be rotated to selectively pass light oriented along a very narrow axis relative to the filter. The light originating from outside the axis is blocked. A polarizer is often used to reduce or eliminate reflections from window glass and water surfaces.
- 81) Pyroelectric Sensor** – A type of sensor device for the detection of thermal infrared radiation.
- 82) Resolution** – The term resolution is used to express the level of detail that can be captured by a sensor, camera imager, or camera, or displayed by a video monitor. Resolution applies to the horizontal, vertical, and color characteristics of the details in an image.
- 83) Resolution Chart** – A printed graphic used as a target image, a resolution chart provides a demonstrated system performance value, which can be compared with stated parameters to determine if a system is functioning normally.
- 84) Sensitivity** – Relates to the minimum quantity of light required for the camera to produce an image, as well as to the resolution of the camera imager. Images taken at high resolutions require more light to produce.
- 85) Server Attached Storage (SAS)** – A data sharing storage technology that was developed as an alternative to DAS in order to achieve a distributed approach through the use of a LAN.
- 86) Signal to Noise Ratio (SNR)** – Expresses a performance characteristic of a camera's ability to produce a clean and clear image. SNR values are usually given in decibels (dB), with higher values more desirable than lower.
- 87) Small Computer System Interface (SCSI) Protocol** – A set of command, protocol, and interface standards used for connecting and transferring data between computers and peripheral devices.
- 88) Smart Video** – See Video Analytics.

- 89) Software Algorithms** – A problem-solving procedure composed of a series of steps or instructions. Any useful computer program contains a set of algorithms.
- 90) Storage Area Network (SAN)** – A data sharing storage technology that consists of communications infrastructure and management layers.
- 91) Thermal Camera** – A camera that creates an image from the thermal IR radiation emitted by objects. The IR energy radiated from objects depends on the objects' temperatures and is displayed as different colors or shades of gray.
- 92) Third Generation Intensifier** – The newer generation of image intensified night vision technology often found in tactical equipment such as night vision goggles.
- 93) Transmission Control Protocol/Internet Protocol (TCP/IP)** – An Internet communication protocol that defines rules for data format, addressing, routing, and transfer so that computers can communicate with one another.
- 94) Vector Output** – A method for combining multiple inputs into a single output.
- 95) Vectorscope** – An oscilloscope used to set up and measure the chrominance portion of a video signal.
- 96) Video Analytics** – A technology that uses software to analyze the video image stream. Video analytics software may provide object detection, recognition, identification, tracking, and analysis in a variety of surveillance applications.
- 97) Video Motion Detection (VMD)** – When the current image changes beyond a threshold value, the system triggers one or more pre-programmed actions and initiates an alarm.
- 98) Video Monitor** – An electronic device for displaying video output that may be digital or analog.
- 99) Watermarking** – The process of adding a semi-transparent layer of verbal or visual information onto an image. Watermarking is often used as part of an authentication process.
- 100) White Light** – White light is made up of all colors of the visible portion of the electromagnetic spectrum, from about 500 nanometers to about 700 nanometers.
- 101) Zoom Lens** – Zoom lenses are variable focal length lenses that are designed to maintain a focus setting throughout the zoom range. Many zoom lenses have an integral motor that allows remote operation of the focal length setting.



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