



## **CHAPTER 2**

# **WHAT IS REMOTE MONITORING SYSTEM**

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### **2.1 Overview**

Remote monitoring system is a monitoring system that allows the user to monitor, observe, check and analyse a situation from another location. RMS can be a very simple system; for example a Web Camera or it can be a very sophisticated system; like the Digital Video Recording System. RMS allows users to view live situations remotely from anywhere in the world via another computer. In today's competitive business environment, crucial information from the right source has to be delivered to the right people at the right place and time in order for a company to maintain its competitive advantage. Getting important information at the right time enables the company to implement ideal strategies for the purpose of business expansion or to compete with its competitor.

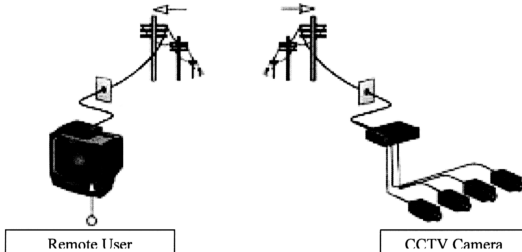
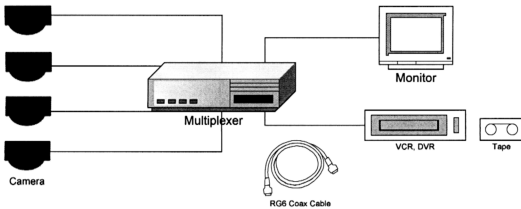


Figure 2.1 Remote Monitoring System

## 2.2 Closed Circuit Television/Traditional CCTV

The closed circuit television (CCTV) is a common security strategy implement by companies for crime prevention. CCTV uses video cameras, monitor and video recorder to record events or image. CCTV enables the security guard to monitor situations in numerous areas by simply observing the CCTV monitors. In fact CCTV is widely used today. Walking down the street, you'll probably find CCTV recording your image or picture while filling your car petrol, during bank queues, or while shopping in the supermarket. Whether you like it or not CCTV is here to stay. CCTV functions for short distances, normally from one building to the next building.



**Closed Circuit Television (CCTV)System**

Figure 2.2

CCTV is also used in production industries, for monitoring traffic-flow through towns and cities, for remote site monitoring (over long distances), in hospital theatres and etc. Its usage is unlimited. It is a cost-effective system and it makes business more profitable.

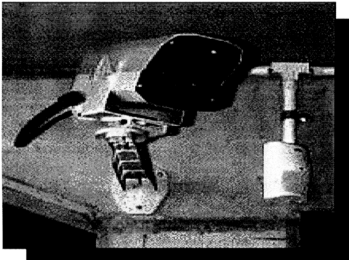


Figure 2.3 CCTV Camera



## 2.2.1 How Does CCTV Work

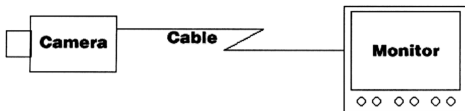


Figure 2.4 Operations of CCTV

The camera captures the scene, converts it to an electrical signal, and sends it down the coax to the monitor. The monitor electrically charges the front of the picture tube to re-create the image. At the same time video recorder records the image to the disk or tape. The image or frame stores and displays the time and date of the scene, for user's reference.

## 2.3 Digital Close Circuit Television

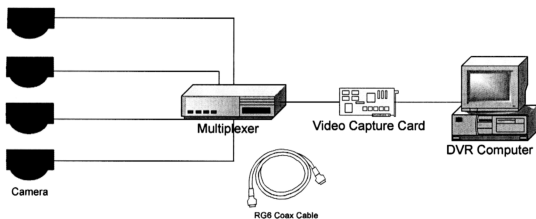
A Digital CCTV is a new concept of remote monitoring system. It invokes the use of new digital technologies such as digital cameras, video recorder, PC camera, computers and the Internet. Digital CCTV is a new system, which operates via the telephone line, Internet line, or computer network. Unlike CCTV, Digital CCTV's operational distance can be very far, it can be from one building to another building or from one country to another country.

With remote access capabilities, everyone, not just to travelling business people, but companies with multiple locations such as hotels, resorts, restaurants, banks,



warehouses, offices, stores and even private homes gain unparalleled benefit.

Users are able to monitor the different situations in different locations by merely logging onto the computer.



**Digital Closed Circuit Television (CCTV)System**

Figure 2.5

### 2.3.1 How Digital CCTV Works

The camera captures the scene, converts it to an electrical signal, and sends it down the coax to the video capture card that is attached inside the computer. The images and frames then run into the computer and will be divided according to the number of cameras connected to the video capture card. Up to 16 cameras can be connected at the same time. The DVR actually works as a normal computer with large amount of disk space, which consists of memory to record the event into the hard disk.



## 2.4 Legal Aspects regarding Employing Video Camera

Information technology has become more and more sophisticated and powerful. Its sophistication now enables crucial data and information, which, seriously affects the successfulness of a company's business to be obtained when needed. The Data Protection Act 1984 was introduced to protect the privacy of individuals as the information technology has made all information or data easily obtainable. Therefore, it is important to check the legal aspects concerned before setting up any forms of remote monitoring system, as data collected can become very sensitive. However, not all data collected fall under the scope of the Data Protection Act 1984. Data, which falls under the scope of this act, consist of three characteristics.

- 1) Collection Data
- 2) Data collected is considered Personal Data
- 3) Data collected can be Automatically Processed with Reference to the Personal Data of the Individual.

**Collecting Data:** Under the act, it refers to all equipment, which is able to collect data; not just limited to computers or video recorders. If the data collected can be saved on any medium, and can be retrieved later, then it is considered collecting data. All components of the CCTV is able to record images and picture, as the result, CCTV fulfils the first requirement.



**Data collected is considered Personal Data:** If the data collected is general information about building, places, not related to individual persons, it is not considered personal data. However, if the data collected consists of individuals and the identity of the person can be determined through data cross - reference then it is considered personal data. For example, if the identity of a person attending a concert can be determined through cross-reference with the seat number, then the data collected is categorised as personal data. Therefore when an employer fixes CCTV to monitor the maid at home, the data collected is considered "Personal Data". Accordingly, you are required to inform them that their actions and behaviours are being recorded and your system may need to be registered.

**Data collected can be Automatically Processed with Reference to the Personal Data of the individual:** If the equipment that is used to record or save the personal data is capable of locating and processing information about individual then the CCTV falls under the Act's category. In other words, the functional ability of the equipment determines if the equipment falls under the act or not. If the equipment merely allows users to fast forward or rewind the data, and view the data, it is not considered automatic processing. However, if the equipment can be programmed to locate the information about the time, the data, the places, related to the individual, then it is considered automatic processing.

If the CCTV fulfils the above-mentioned three requirements, it is falls under the act and needs to be registered (<http://www.ncjrs.org/school/toc.html>).