

CCTV Different Technologies

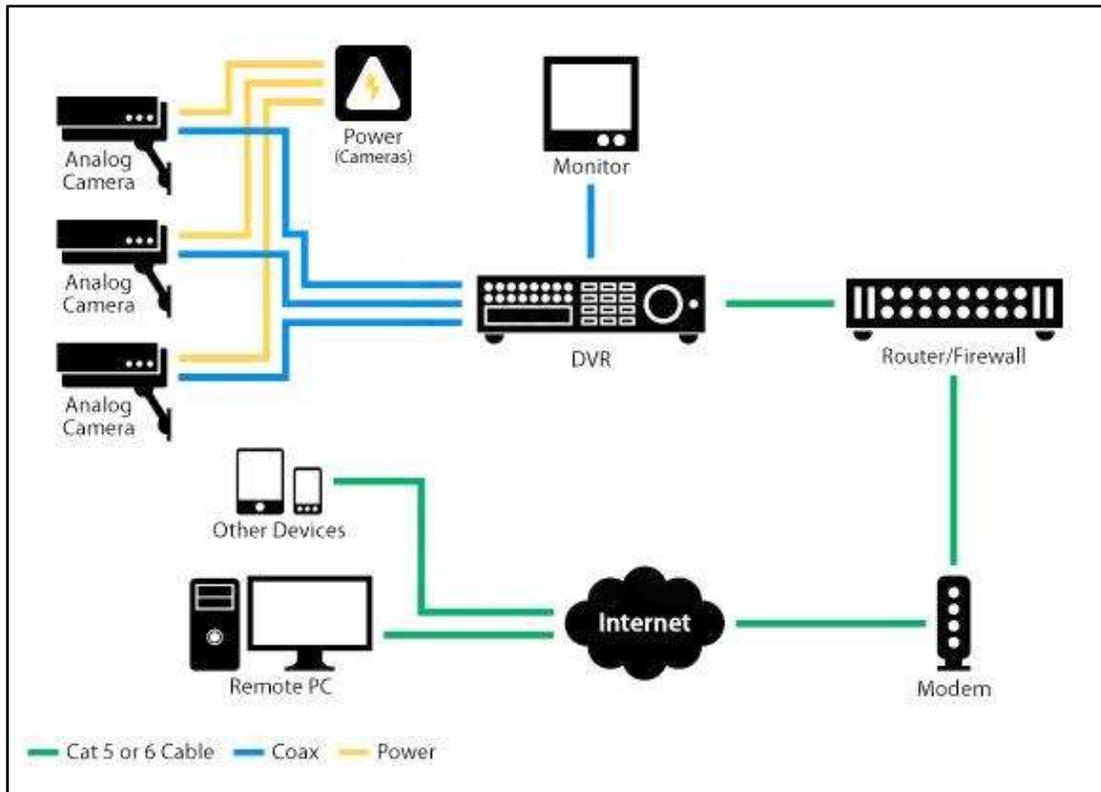
In the last few years, different technologies have entered the CCTV industry such as (CVI, AHD, HD-SD). It became very confusing to differentiate between them and which one is suitable for a specific application. Unfortunately, every technology has its pros and cons, therefore; all technologies are being produced and used for the different CCTV applications and objectives.

In this document we will list definition of those technologies as well as the differences among them.

	Analogue	AHD Analogue High Definition	HD-SDI Serial Digital Interface	Network IP
Transmitted Signal	Analogue	Analogue	Digital	Compressed Digital
Max. Resolution	1080 X 720	1280 X 1080	1920 X 1080	Unlimited
	0.8 MP	1.3 MP	2.1 MP	Up to 18 MP
Transmission Line	Coaxial, UTP	Coaxial	Coaxial	UTP
Max. Cable Distance	305 m	450 m	110 m	105 m
Recorder Compatibility	Only Analogue	Accept SD, 960H, AHD	Only HD-SDI	Only IP
Camera Control (fps, bit rate, resolution, etc.)	Limited	Limited	Limited	Unlimited
Smart Features (motion detection, privacy zones, alarm, etc.)	DVR Only	DVR Only	DVR Only	Camera/NVR/Both
Bandwidth Requirement for Remote Viewing	Medium	High	High	Low
	Cameras Combined in 1 Stream	Cameras Combined in 1 Stream	Cameras Combined in 1 Stream	Cameras Viewable Individually
Remote Monitoring Ability	Medium	Low	Low	High
Picture Quality	Medium	High	High	High
No. of Video Streams	1	1	1	3
Security Features	Medium	Medium	Medium	High
Storage Ability	Limited	Limited	Limited	Unlimited
Complexity	Low	Low	Low	Medium
Band Integration	Weak	Weak	Weak	Very Strong

Analogue CCTV

In the traditional analogue CCTV application, cameras capture an analogue video signal and transfer that signal over coaxial cable to the Digital Video Recorder (DVR). Each camera may be powered by plugging in the power supply right at the camera or by using RG59 Siamese cable which bundles the video and the power cables. The DVR converts the analogue signal to digital, compresses it, and then stores it on a hard drive for later retrieval. Intelligence is built into the DVR to handle such things as scheduling, motion detection, and digital zoom. Monitors for viewing the video are connected to the DVR, or it can be set up to publish over an internal network for viewing on PCs. The DVR can also be set up to broadcast over the Internet and can add password protection and other features. When broadcasting over the Internet, the video for all of the cameras is transmitted as one stream (one IP address), therefore; it is very efficient.



Analogue AHD CCTV

Same as traditional analogue CCTV in almost everything except for it can offer higher resolution such as 720p, 960p, and 1080p. This will be reflected on the file size in the HDD at the DVR side even with best compression technique.

Because the transmitted signal is still analogue so it is true that AHD DVR can display traditional analogue cameras as well as AHD, but the opposite is not true.

HD-SDI CCTV

Definition: (SDI) is a family of digital video interfaces first standardized by SMPTE (The Society of Motion Picture and Television Engineers). These standards are used for transmission of uncompressed, unencrypted digital video signals (optionally including embedded audio and time code) within television facilities. They can also be used for packetized data. Coaxial variants of the specification range in length but are typically less than 300 meters.

In the SDI (serial digital interface) CCTV application, cameras capture an analogue video signal, convert it to digital signal and then transfer that signal over coaxial cable to the SDI DVR. Each camera may be powered by plugging the power supply right at the camera. The DVR compresses the received digital signal, and then stores it in the hard drive for later retrieval. Intelligence is built into the DVR to handle things such as scheduling, motion detection, and digital zoom. Monitors for viewing the video are connected to the DVR, or set up to viewed over an internal network on PCs. The DVR can also be set up to broadcast over the Internet and can add password protection and other features. When broadcasting over the Internet, the video of all cameras is transmitted as one stream (via one IP address), therefore; it is very efficient.

On the other hand, SDI technology is a proprietary, so HD-SDI camera cannot be connected except to HD-SDI DVR. Likewise the HD-SDI DVR accepts HD-SDI cameras only.

IP CCTV

In the IP CCTV technology, each network camera captures an analogue image but immediately converts it to digital signal inside the camera. Digital processing happens at the camera such as compression and motion detection. The digital video stream is then broadcasted over the local area network (LAN) using Ethernet (CAT5 or CAT6) cable. Power is supplied to the cameras through the Ethernet cable via Power-Over-Ethernet (POE). The Ethernet cable for each camera is plugged into the switch which feeds into the network hub. As with all network devices, some set-up needed for each network camera to set-up its IP address and other identifying attributes.

A Network Video Recorder (NVR) performs the same function as DVR in the analogue series. It captures each camera's signal, compresses it, and records it. The main difference is that the video feeds are digital (and much higher resolution) and not analogue. The software built into the NVR provides features such as intelligent search, zoom, privacy zone, motion detection, etc. The NVR combines the video streams from the cameras and handles the broadcast over LAN and internet for local and remote viewing.

