CCTV System Selection Fundamentals

"What to look for when planning a camera system…"

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You've determined you need security cameras.

Maybe you are responding to an issue where an 'eye-in-the-sky' could have saved the day… Perhaps you think that a few surveillance cameras , in the right spots, would greatly enhance the physical security systems you already have in place… Or maybe, you would like to update & enhance a camera system that already exists…

…either way, you find yourself in the same spot. You need the ability. Now.

Do you feel the pinch of needing to you bring yourself a little more up to speed on the vast (*or is it overwhelming?*) world of CCTV Camera system technology?

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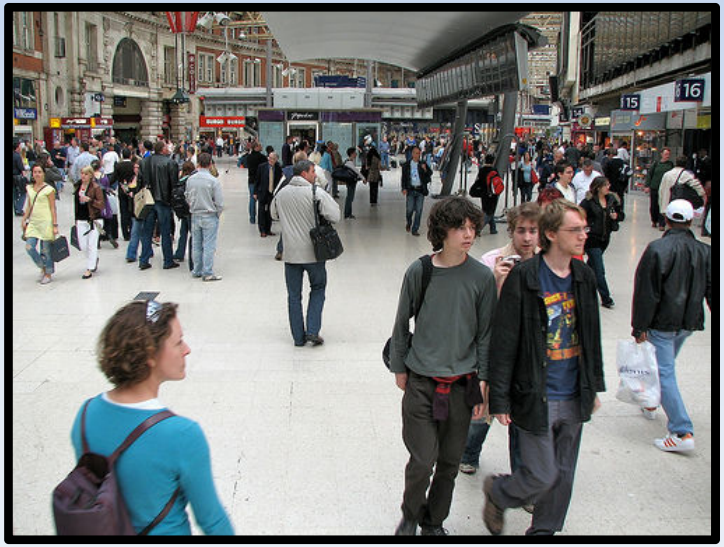
…allow **Security Solutions** to help you out!

So, where do I start?!?

First, be rest assured that even the most basic camera systems can exceed your expectations when used and applied properly. Costly features are nice, and in some cases critical… but for now, here in the beginning, challenge yourself to ***keep it simple***…

Recognize that movies and TV shows might have slightly *skewed* your understanding of what you **need** a modern CCTV system to accomplish for you…



It's true. Many of us have unrealistically placed expectations on how we need our camera system to perform. Granted, the technology *IS* fantastic. Facial recognition, license plate reading, and video analytics technologies are all out there… for a price. Making sure you **DEFINE** what your camera system needs to accomplish is the critical first step.

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… you see, it is ultimately **YOU** and the folks you elect to use the system who will determine how successful of a security tool your camera system will be.

Step 1: Identify the areas to be observed.

It almost sounds too simple.

But seriously, a great camera system starts here.

You know the risks and where they are located better than anyone. Plan out what images you'd like your camera system to see. In the CCTV world, these 'images' are called 'fields of view'.

Sketching out your plan may help here, but making good notes is better…

For example, if you have an outside parking lot that you'd like to monitor traffic on… make a note.

If you have a certain door securing a room of valuables... make a note.

If you'd like to record who and what comes into your facility's front entrance… make a note.

Don't worry about wide-angle lenses, lighting, and camera height just yet.
…just make notes about what you'd like **your surveillance system** to keep tabs on.

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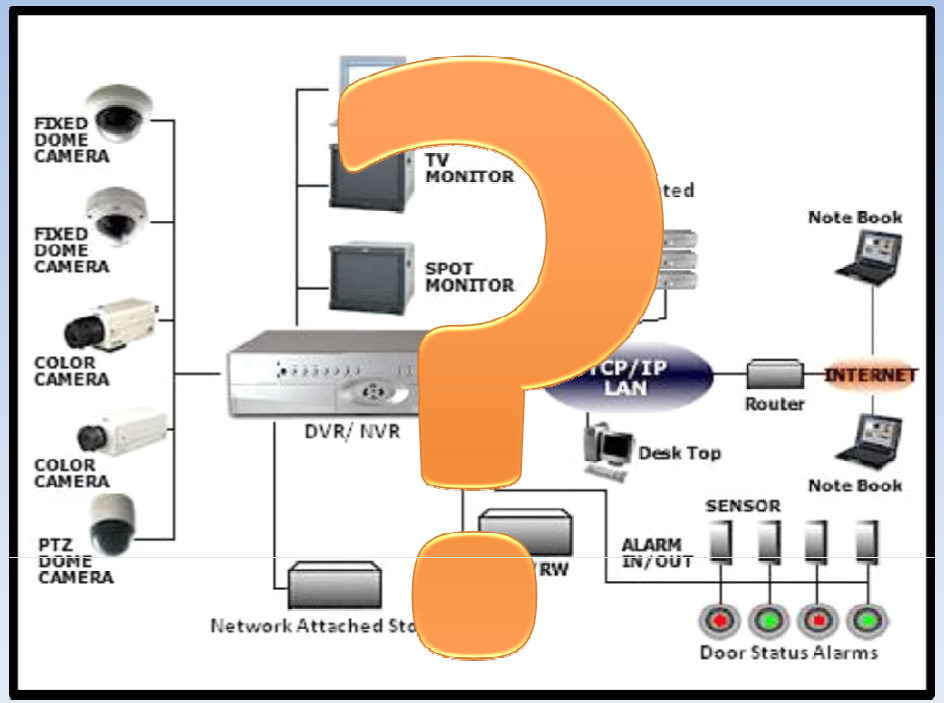
Step 2: Demystify the lingo.

Now the challenging part. You know what you need, but how do you ask for what you want?



Take a minute and review the next pages. While you are doing so, it might help to remember the areas you identified in Step 1. In any case, here are a couple of helpful things to know:

'IP' vs. 'Analog' Cameras: In the CCTV world, this is the difference between digital and analog based systems. Analog technologies have been around for many years, but IP (internet addressed) cameras offer the functionality to be viewable on a computer network, not just a DVR or VCR. With the availability of the internet, it is possible to remotely view whatever your IP camera is seeing.

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Step 2: Demystify the lingo.

'Fixed', or 'Static' Cameras: this type of camera is the true workhorse of most CCTV systems in use today. This type of camera remains focused on one field of view, in an unblinking and vigilant manner.

The fact that the static camera is not distracted by auxiliary movement , noise, or fatigue lends it to great utility in detecting very subtle activities like shoplifting or pilferage. This type of camera is invaluable in maintaining constant visibility of high-risk or high-value areas.

Fixed cameras are manufactured with a variety of lens types, weatherproofed housings, and video output options.

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Motion detection, varifocal lenses, and local audio pickups are common features available today. These are very versatile and well proven surveillance tools!

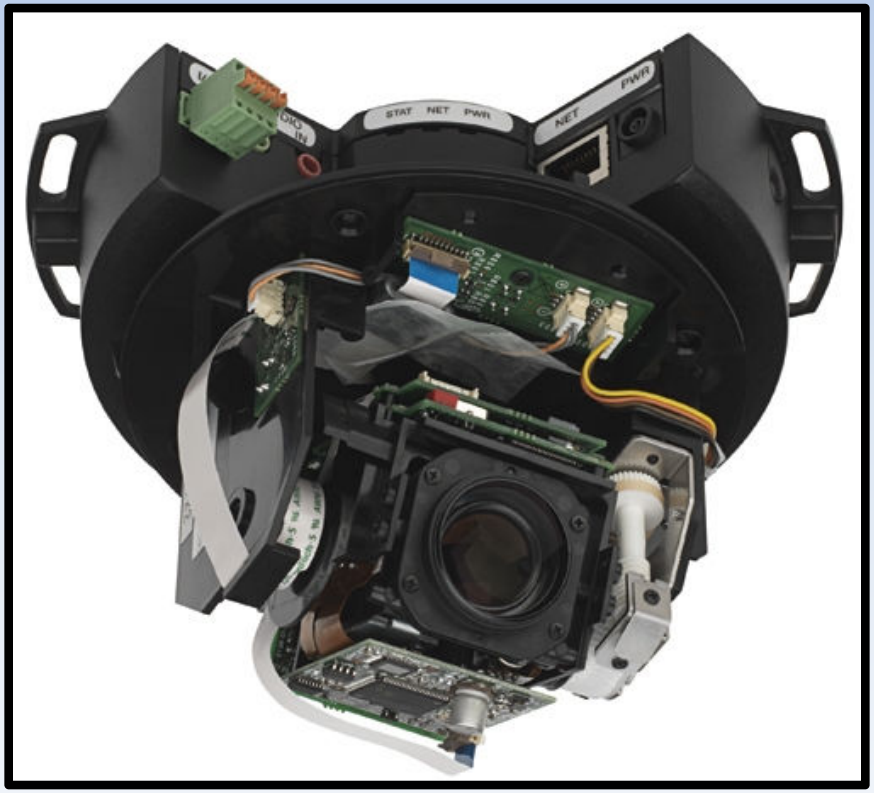
Step 2: Demystify the lingo.

'PTZ' Cameras: an abbreviation of the definition 'Pan-Tilt-Zoom' type of camera.

This camera type allows a user to reposition the view of the camera using a remote interface; whether that is a control joystick, computer keyboard, or a remotely accessible web browser.

In addition, this type of camera can in some cases be configured to 'patrol' an area; constantly rolling back-and-forth across a predefined path.

The functionality of this camera is not a replacement for the common and familiar fixed or static cameras, but a PTZ camera located in a strategic spot can tremendously enhance the surveillance capabilities of your camera system.



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Step 2: Demystify the lingo.

'LUX Value': is a measure of light intensity, or how much light is present in a given space*.

Modern cameras are manufactured to operate within a specific LUX range, depending on the intended location. Listed below are some common 'LUX Values' for familiar areas. Cameras that cover the full spectrum of light sensitivities are available, from **Full Sunlight** to **Starlight** (nearly pitch black).

	Area Description -- LUX Value		Area Description -- LUX Value
	Bright, summertime day **50,000+ LUX**		Typical Office Hallway **300 - 700 LUX**
	Brightly lit interior space **1500 - 3000 LUX**		Moon-lit night **0.3 – 5.0 LUX**
	Sunrise or Sunset **50 - 900 LUX**		Starlight-Only night **0.001 - .29 LUX**

** 'LUX' = (Lumens x m^2)*

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Step 2: Demystify the lingo.

'IR', or 'Infrared' Camera:

The ability of a camera to see in variable exposures to light greatly adds to the utility of the camera… but what about seeing in dark?

Many modern cameras permit for an 'IR', or 'Infrared' detection operation. These cameras often have an array of IR emitting LED's built into the housing so that IR illumination is directed exactly where the camera is pointed.

Due to the nature of the IR wavelength, no illumination is observed by the human eye, yet the camera is able to use the emission with great results; often providing 'eyes in the dark' for a cost much cheaper than adding additional facility lighting.

This feature greatly expands the surveillance capabilities of a camera system.

Image from camera without 'IR' sensitivity

Image from camera with addition of 'IR' sensitivity

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Step 2: Demystify the lingo.

'DVR, or Digital Video Recorder': Being the utility basis for a CCTV system, the ability to record, store, and playback the video observed by the cameras is often accomplished by the system's DVR. The DVR performs it's function as a terminal clearinghouse for all the video feeds in a system. Determining how many days (and to which quality) video feeds need to be stored is a function of proper CCTV design and heavily influences the DVR selection.

DVRs will accept an incoming video feed, catalog it, time stamp it, and even perform basic video analytics. Modern DVRs can be purchased as network appliances, often being fully integral with existing computer networks. The features and storage capacities available are often only tempered by the cost of the unit, with price points ranging from a few hundred to many thousands of dollars.

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Step 2: Demystify the lingo.

'PoE', or 'Power over Ethernet': One of the constant design challenges of camera systems has been that for every camera location, electrical power must be made available.

In the past, this meant running low-voltage DC power lines from a power supply to remote locations for use by the camera. This situation added cost due to the materials and labor involved in the installation.

The impact of this requirement has been lessened somewhat by the advent of 'PoE' network switches and devices. With this type of hardware, the electrical power for the device is carried by the same singular data cable used to take the video stream away from it.

Common type of 'PoE' network switch

While the impact doesn't appear to be significant – requiring only one connection to be made between the camera/switch – the result is that camera system design has been greatly simplified and streamlined.

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Cameras can now be hung in locations previously determined to be less-than-ideal because of the difficulty in supplying them power. The result: video surveillance in surprisingly tight or physically restrictive locations.

Step 2: Demystify the lingo.

Camera Housings: Another widely configurable element of camera system design is the selection of which type of housing (or enclosure) to choose in containing a camera. Often times, this decision in effect determines the camera, as certain housings are designed to accommodate for specific cameras.

The design variability of housings offers a great number of considerations:

Will the camera be subjected to wet & cold weather? Then a weatherproof housing with an electric heater may be in order.

Is vandalism a potential problem? Then perhaps a Detention-Grade housing is the solution.

Mini-dome styled housings are a popular choice for indoor applications. The sleek styling these housings present often minimize the intrusion of a camera system into the ambient environment. In addition, a smoked globe often makes it difficult to determine where the camera is pointed. Effective deterrence, for certain!

Whatever the application, a housing exists to meet the need!

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Converged Security: In your busy world, who has the time & resources available to have an expert onsite, who is familiar with all of your facilities' different physical security systems? The good news is that 'convergence' is making life much easier. It is now quite possible to integrate your CCTV camera system, electronic access control system, and Fire/Burglar Alarm systems all tied together; into one singular, seamless enterprise platform… ALL systems, in one place. It is 'force multiplication' through technology!

Hybrid Systems: …or, "matching up the old with the new".

Already have an system of analog cameras in place? They may be rock solid, good-as-new cameras, but they just lack the nice digital edge that the makes the newer technology so appealing. Guess what? There are many industry-proven methods for integrating your (old) existing cameras into a new digital backbone. So you don't lose your existing capital investment!

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Step 2: Demystify the lingo.

Does anyone remember Step #1 ?

Now, take a minute to review the notes you took in Step 1. You may find that you are able to slightly refine or bring detail to the requirements you have already laid out.

Do you want your new camera system to integrate with your existing computer network so that it is rendered maintainable by your existing IT staff?

…then maybe an IP addressed camera system is the route you should take.

Do you have a dark area of the parking lot you'd like monitored for those late-nights spent at the office? **…perhaps an IR capable camera is a fit for the need.**

Would you like to not only see, but hear what events your camera is recording?

…then look into adding audio capture abilities onboard cameras.

In any case, you can apply a few pieces of knowledge to your specification, or at the least open your questions up a bit when asking the experts about a direction to take! Congratulations!

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Step 3: Make it happen!

So. Now you know a few things.

You've successfully navigated the waters of a dynamic and high-tech industry. You have identified your needs, and you've begun to 'flesh-out' the type of system capabilities you are looking for.

…but what if you have tougher questions, like how to integrate this new system with your old one? …or maybe the most important one: How much is this going to cost?!?

Take a deep breath. Relax. This is the easy part.

You need the experts. Granted, you know just enough to avoid the 'run around' by a nefarious vendor, but you would really prefer to build a trusted relationship with someone not out to simply sell you parts…

You'd like a partner in this project… someone dependable, with experience in this type of thing, with a long track record of meeting the physical security needs for clients worldwide.

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…give us a call. Thank yourself later.

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…We look forward to discussing this new camera system with you!

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