iGuard - CCTV Help Guide

*A quick guide to help you understand some of the world of CCTV in plain speak.

What about CCTV CAMERAS ?

- **Outdoor Cameras** require more Infra red LED's for night vision. They also have a larger aperture to let in more low level light at night.
- **The Lowest of light levels** will help a camera get much better images outside at night compared to pitch dark.
- **Reflection & Refraction**. You cannot shine a torch into a paddock and see everything. Keep this in mind; your camera does need some reflection and refraction to see what is 'out there'.
- **A 2.8mm lens** has an approx 90 degree horizontal viewing angle.
- **A 12mm lens** is approx 22 degree viewing angle.
- **Sharing the pixels** - You can take a rubbish camera and put it right up to someone's face and get a great image. Just keep this in mind and remember that a camera's image breaks down to pixels. The wider the field of view the fewer pixels to share across the image for detail.
- **1 MP** Camera translates to a 1280 x 720 pixel image. **Also known as HD 720P**
- **1.3 MP** Camera translates to a 1280 x 1024 pixel image.
- **2.0 MP** Camera translates to a 1920 x 1080 pixel image. **Also known as Full HD 1080P**
- **3.0 MP** Camera translates to a 2048 x 1536 pixel image.
- **4.0 MP** Camera translates to a 2312 x 1736 pixel image.
- **Screen Resolutions** are now becoming the weak link in CCTV image viewing quality. The minimum requirement for a screen nowadays would be Full HD 1080P. Most NVR's have a HDMI output for 1080P viewing and will only display that amount of pixel quality. New NVR's are incorporating a 4K output via HDMI . A 4MP resolution camera will best add picture quality when connected to an appropriate UHD 4K screen.
- **Good quality images** can be obtained at closer range with 1MP cameras. The basic rule always being that the closer the subject, and more narrow the angle, the better the subject image. Keep in mind not to spend 300% more to obtain the 1% result you may be chasing (Like seeing someone's eye colour at 20m....)
- **Be Realistic** when choosing your system. 80% of desired effect of having CCTV is in prevention; or acting as the deterrent. Around 15% will be the essential tool for problem solving, logistics, prevention, assessment, record keeping and management. (This is where CCTV really pays for itself usually in short time.) The 5% may be actually catching a criminal who kindly looks at the camera without his hoody or cap on and the police actually know who it is. CCTV is still the best tool we have against crime though the hit rate is far from 100%. The general rule is don't over capitalise for unrealistic outcomes ☺
- **AHD & TVI cameras** send a High Definition Signal over Coax or Cat6 Ethernet cabling to be recorded at an NVR (Network Video Recorder). AHD & TVI cameras can be cabled up to 300m without any latency. AHD & TVI cameras offer a more stable and cross platform solution. AHD cameras give excellent night vision with reduced digital noise. The only variation with these formats is some slight colour variation that is barely noticeable. TVI has generally higher contrast and AHD has a more 'true' colour replication.
- **IP cameras** send a digital signal over usually Cat5 or Cat6 Ethernet cabling to be recorded at an NVR (Network Video Recorder). IP cameras are limited to max 100m over Cat6 cabling before needing to be boosted via a PoE switch at this point. IP cameras suffer from latency issues and conflicts occur within differing system types. Also the NVR is reliant on all settings being correct within the camera itself to perform its job properly.
- **Power to Cameras** should be wired back to one central location/s. This allows the power supply to the digital recorder and cameras to be backed up easily if need be via a UPS (Uninterruptable Power Supply). Also basic surge protection is a minimal recommendation.
- **PoE** stands for Power Over Ethernet. That means that the cameras do not need a separate power supply and get their 48v power supply from the network cable connected. The NVR must have PoE power out on its Ethernet connections.

What about Network Video Recorders ?

- **DVR** stands for Digital Video Recorder.
- **NVR** stands for Network Video Recorder.
- **DVR and NVR** are essentially the same device. They both record digital video to hard drives using a H264 format or CODEC.
- **H264 / H265 CODEC** just means the style and programming format in which the recorder lays down its images. A DVR can digitally record a HD analogue signal and the NVR can digitally record an 'Internet Protocol' signal directly. H264 is the widely adopted format today in digital CCTV recorders. It generally provides the best images and the least disc space to do so . The H265 Codec is emerging in the market also requiring less storage and can be transmitted over networks easier, using less bandwidth   Though H265 needs more processing power to 're-build' its pictures in real time. Some NVR's use H264+ which is an improved H264 format. Some manufacturers sell this under the guise of being the H265 Codec.
- **DVR and NVR** both act and operate in the same way for the end user. There is generally no difference in user experience or interface apart from the quality of images obtained.
- **Ease of Use (General User Interface GUI)** is an essential factor in deciding which type of NVR to use. The system has to be stable and employ a non complicated user friendly experience.
- **Just upgrade my Cameras** is not a solution to getting better images. You need the 'machine' to match the camera. It all comes down to processing power and formats.
- **Real Time** recording is an important feature of a DVR. Real time is 25 frames per second or more. This is the frame rate required to obtain smooth motion. 25 frames is essential during playback and searching of footage.
- **A DVR and NVR both** network in the same way. Both connect to the network and let you perform a lot features including live viewing to portable devices, networks etc. An NVR may have a higher rate of data transfer.
- **Ease of Use** is probably the most important feature to obtain in a DVR or NVR. The user interface must be intuitive and user friendly. Features must be easy to implement and also the unit must be stable in use.
- **Pentaplex operation** lets you simultaneously record, watch live or playback video, backup & remotely monitor all at the same time. Processing Power comes into play when you have to do all these jobs at once – not like your average video camera.
- **4 Channel / 8 Channel / 16 Channel & 32 Channel** represents the amount of cameras that the recorder can record at once. Remember the more cameras the more HDD you will need.
- **HDD** is an acronym for Hard Disc Drive. Specific HDD's should be used for DVR's and NVR's.
- **Motion Recording** is a standard feature on digital CCTV recorders today. Whilst there is nothing changing in the cameras vision the recorder will retain the last 'still' image without having to continually record and waste disc space.
- **How Many Terabytes (TB)** do you really need? Firstly the amount of storage capability does not reflect the capabilities of the NVR. The storage amount required is dependent on how long you wish to retain footage , what quality of footage is required, how much activity there is (eg > 8hr Shop Vs. 24hr Factory) and also the anticipated duty cycle on the hard drives. Most times the more activity there is, the more hard drives you need.
- **Auto Rewrite** is performed by the recorder when the HDD disc is full. The DVR records over the oldest footage first. It is always good to get 30 days footage before re-write. Keep in mind that 'less motion' at the camera translates to more record time on the Hard Drive (HDD) . More motion , like in a 24hr shop, will result in less days stored on the HDD disc. So if you have a lot going on , then you will need more disc storage ☺