

# NVR Vs. DVR – What's The Difference?

When shopping for a [security system](#), you'll need to choose between a DVR or NVR recorder. Both perform the same function but differ in how and the type of cameras used. Understanding the difference between DVR and NVR is essential when evaluating security systems. In this article, our security experts will break down the differences and detail the pros and cons of each so that you can make an informed decision.

## NVR vs. DVR – The Basics

At the core, both NVR and DVRs are responsible for video recording. DVR stands for Digital Video Recorder, whereas NVR stands for Network Video Recorder. The difference between NVR and DVR is how they process video data. DVR systems process the video data at the recorder, whereas NVR systems encode and process the video data at the camera, then stream it to the NVR recorder which is used for storage and remote viewing. As DVRs and NVRs handle the video data differently, they require different types of cameras. Most NVRs are used with IP cameras whereas DVRs are used with analog cameras. It's important to note that a DVR based system is a wired security system, whereas NVR systems can be a wired or wireless system.

# DVR vs NVR

## What's the Difference?



1x coaxial cable with BNC connector & 1x power cable per camera



VS



1x Ethernet or POE Cable for power, video & audio with RJ56 connector per camera

Coaxial cable: fatter, use BNC connectors (larger, harder to thread, take longer to install)



VS



Ethernet cable is slimmer, smaller RJ59 connectors, easier to run and install

Each camera needs power source (via splitter): messier, uses more power



VS



Power over Ethernet (PoE): power from NVR. No need for power splitters or wall sockets for

Analogue cameras. DVR processes images.



VS



Digital cameras process the images, hence higher price

DVR Security System – Pros & Cons

Advances in analog high definition within the last five years have reduced the gap in resolution between the two systems. You'll probably notice that [DVR](#) based security systems are priced lower than NVR systems. The lower price point is an attractive advantage of DVR systems, but what are the tradeoffs? To answer this, we need to break down each of the components of a DVR system.

### **Camera Type – Analog**

The cameras used by a DVR system must be analog security cameras, better known as CCTV cameras. Most of the cost savings found by using a DVR system is due to the camera. While you can mix and match cameras in your home security system, there is less flexibility in the type of cameras you can use with DVR systems.

In a DVR system, the analog cameras stream an analog signal to the recorder, which then processes the images. The advantage of this system is the reduced complexity required of the camera when compared to an NVR system.

### **Cable – Coaxial BNC Cable**

The camera connects to the DVR recorder via a coaxial BNC cable. Although the use of coaxial cable may not seem significant, it does have some limitations:

- As the coaxial cable doesn't provide power to the camera, there are actually two cables included within one covering – a power and video cable. The cables separate each end to provide the separate functions. As such, you'll need to install your DVR recorder near a power outlet.
- The size and rigidity of coaxial cables can make installation more challenging. The coaxial cable is wider in diameter than Ethernet cables used with NVR systems which can make it more difficult to run cables in tight spaces. Coaxial cables also tend to be more rigid, compounding this problem.
- However, if your property has existing coaxial connections for a previous security system, you can use the same cable to connect your new system.
- Standard coax cables do not support audio. A variant that with an added RCA connection is needed but even with these a DVR has a limited number of audio input ports so only a small number of cameras can record audio.

- The image quality on coaxial cable will begin to degrade after about 300ft/90m, which can limit the ability to which you will extend your security presence outward. Lower quality cable will result in a signal loss at shorter distances.

### **Recorder**

DVR recorders rely on a hardware chipset known as an AD encoder, which is responsible for processing the raw data streaming from the camera into legible video recordings. DVR systems also have different requirements when it comes to the recorder. Specifically, in a DVR system, the user must connect every camera directly to the recorder. In comparison, an NVR system only requires that each camera connects to the same network. Also, in a DVR system, the recorder doesn't provide power to the cameras. Each camera connection will need a splitter that supplies power to enable cameras to function.

### **System Flexibility**

DVR security systems are less flexible than their NVR counterparts in terms of camera type and mounting options. Whereas NVR based systems can integrate both wired and wireless security cameras, DVR systems can only use wired security cameras. DVR systems also have less flexible mounting solutions, because routing coaxial cable can be more difficult in tight situations and a power outlet is required for each camera.

### **Image & Audio Quality**

As we've discussed, in DVR systems the cameras transmit analog video via the coax cable directly to the recorder and images are processed at the recorder level. The analog signal results in a lower quality image compared to NVR systems. Coaxial cables also don't natively transmit an audio signal, and DVR recorders usually have a limited number of audio input ports.

## **NVR Security System – Pros & Cons**

[NVR](#) security camera systems incorporate the newest technology to provide an enhanced, feature-rich security system. Also known as POE security camera systems, NVR based systems are more flexible and complex than DVR systems.

### **Camera Type – IP Camera**

As NVR systems process the video data at the camera rather than on the recorder, the

cameras in NVR systems are much more robust than their DVR counterparts. NVR systems use [IP cameras](#) which are standalone image capturing devices. IP cameras each have a chipset which is capable of processing the video data which is then transmitted to a recorder. Unlike analog cameras, IP cameras are typically all capable of recording and sending audio as well as video. The more powerful hardware on IP cameras also enables improved smart functionality and video analytics, such as facial recognition.

### **Cable – Ethernet**

Like DVR systems, NVR systems connect the camera to the recorder. However, how they connect the camera to the recorder is entirely different. NVR systems use standard Ethernet cables, such as cat5e and cat6, to transmit data. Professional installers prefer ethernet cables due to the number of advantages compared to coaxial cables:

- Ethernet cable powers the camera using Power over Ethernet (PoE), which means your camera needs one cable running to capture video, audio, and power the camera, thus eliminating the need for messy splitters like a DVR system.
- Ethernet cable tends to be easier to route and terminate because it is thinner and has a smaller connector allowing for less drilling.
- Ethernet is cheaper than coaxial cable and much more readily available, making cable replacement or system expansion more accessible and affordable. Many modern homes and businesses are being built wired for Ethernet, making installation even easier.
- An added advantage of Ethernet cable is that every camera on the system can transmit audio since Ethernet can send audio data natively.
- Cables do not need to run between every camera and the recorder. They need to be on the same wireless network. Installation is more straightforward and cleaner as multiple cables aren't required.
- Despite a shorter max Ethernet cable length, 328ft or 100m, network switches can be used to extend total distance without impacting image quality.

### **Recorder**

Unlike a DVR system, the recorder in an NVR system doesn't process video data. That step is completed at the camera before it is transmitted. NVR recorders are only used for storing and viewing the footage.

### **System Flexibility**

NVR systems are inherently more flexible because security cameras don't necessarily have to be physically connected directly to the recorder. Instead, IP cameras only have to be on the same network. As such, you could feasibly have cameras all over the world on the same network that connect to your NVR can then be viewed as a comprehensive system.

### **Image & Audio Quality**

As NVR recorders receive a pure digital signal from the cameras, video quality is better than compared to a DVR at the same resolution. In addition, as Ethernet cables carry audio, all cameras with microphones could record audio to the NVR.

## **In Summary – DVR vs. NVR System**

Both systems record video data and are reliable. Although in the past the video quality of DVR systems lagged behind comparable NVR systems, today this gap is significantly lessened. The difference between DVR and NVR systems come down to the cost, how the data is transmitted, and type of cameras. NVR systems tend to have better picture quality, as well as easier installation, increased flexibility, and native support for audio on every camera that has a microphone. However, NVR systems also tend to be quite a bit more expensive than comparable DVR systems, which is an important consideration for the budget conscious consumer. For people looking for a relatively straightforward security system, a DVR system will most likely be sufficient, especially if your property is already wired for a coaxial cable from an existing security system. If you need a top of the line, very flexible solution, an NVR based system will be best. At the end of the day, the deciding factor will be based on the specific security needs of your property.