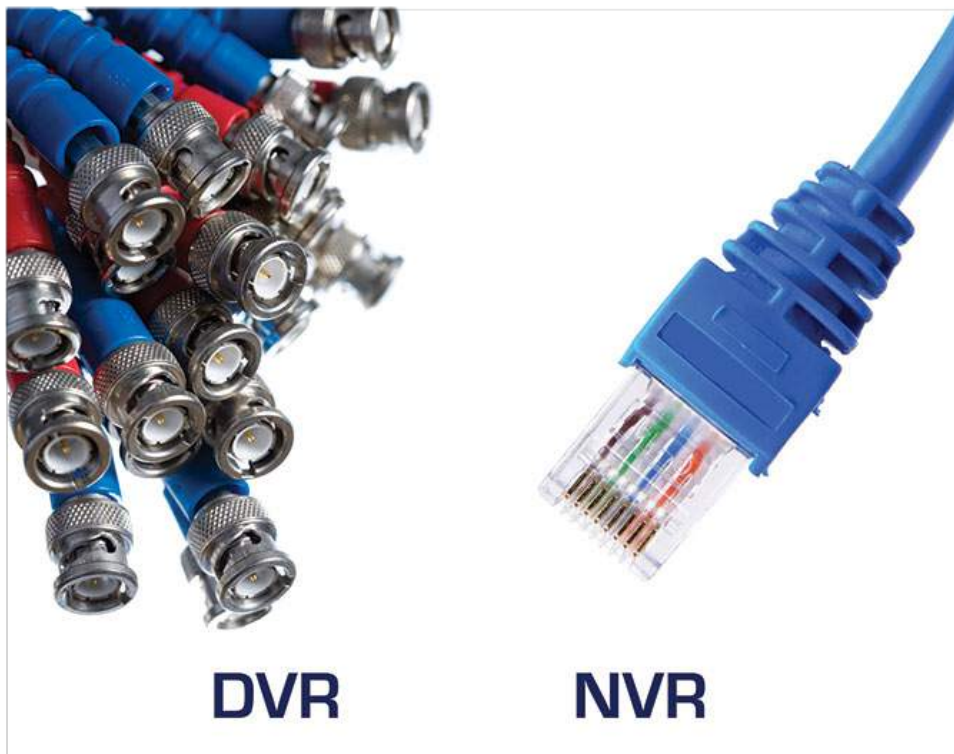

DVR or NVR?

Video Recording For Multi-Site Systems Explained



Introduction

This article explains the functional differences between Digital Video Recorders (DVRs) and Network Video Recorders (NVRs), what are the implications for systems designers and end users when choosing from either option and how should they implement a recording solution in a multi-site security system.

Digital Video Recording.

First came the camera and monitor, closely followed by the Video Cassette Recorder (VCR), recording one video stream to a 3-hour tape at 25/30 frames per second.

Technology then brought us the multiplexer, which allowed several streams of video to be recorded onto the same tape and separated out into discrete, viewable streams on replay and the time-lapse VCR which enabled the dropping of frames and in so doing permitted a 3-hour tape to be used over much longer periods, albeit at the cost of lost information.

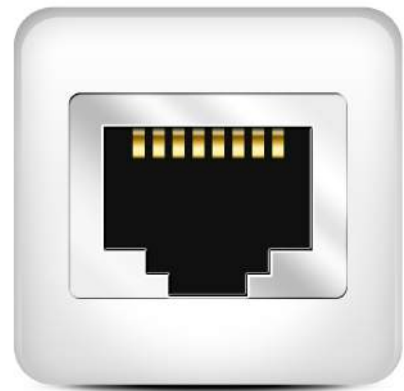
The rapid development of video compression algorithms and a rapid reduction in data storage costs then gave rise to the DVR. This you could consider as being the functionality of a multiplexer together with a computer disk for storage in place of tape, all housed in the same box together with some additional ports for connectivity.

Although modern DVR's now feature CAT 5 network ports so that the device can be provided with an IP address and thereby become accessible over an Ethernet network, many limitations still apply - reliability, scalability and connectivity.

Network Video Recording

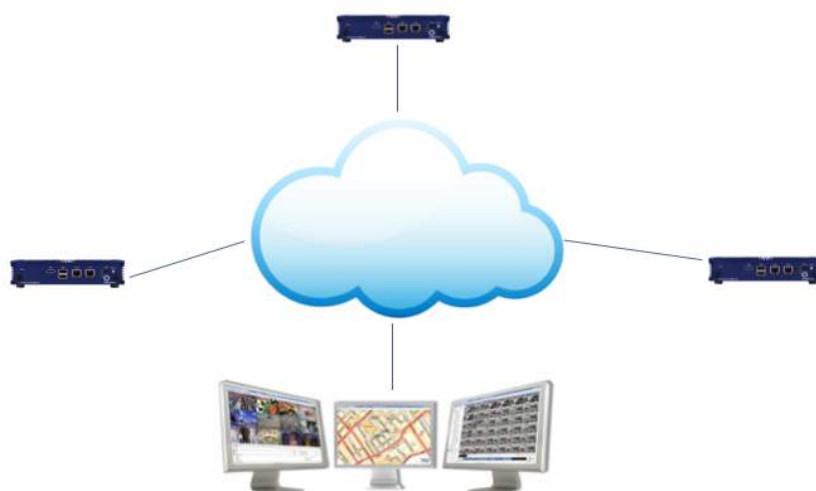
The Network Video Recorder is the next natural point in video security recording technology. It is important to differentiate between DVRs and NVRs, as both are often termed 'digital'. A DVR digitally compresses analogue video feeds and stores them on a hard-drive, the term 'digital' referring to the compression and storage technology, not the transmitted video images. The DVR therefore has to be located near the analogue feeds. In contrast an NVR stores digital images directly from the IP-network.

Therefore the most obvious difference between the DVR and NVR is that whereas the DVR records from analogue streams provided from analogue cameras, the NVR records video streams that have already been encoded at the cameras. Thus you find no video connectors anywhere on a NVR; it's input and output is IP data comprising compressed and encoded video. By placing the compression component in either the IP camera or in an IP encoder, an NVR has greater flexibility and better performance over a DVR.



NVRs Versus DVRs - Architecture

The huge advantage of architecture based on NVRs is that they can be located anywhere on a network – at the monitoring centre, adjacent to camera clusters, on the edge of a network, collected together in a hardened environment, indeed anywhere at all. NVRs record and replay simultaneously, and recordings on any one machine can be remotely viewed by a number of operators spread across the network simultaneously, all totally independently and without affecting each other.

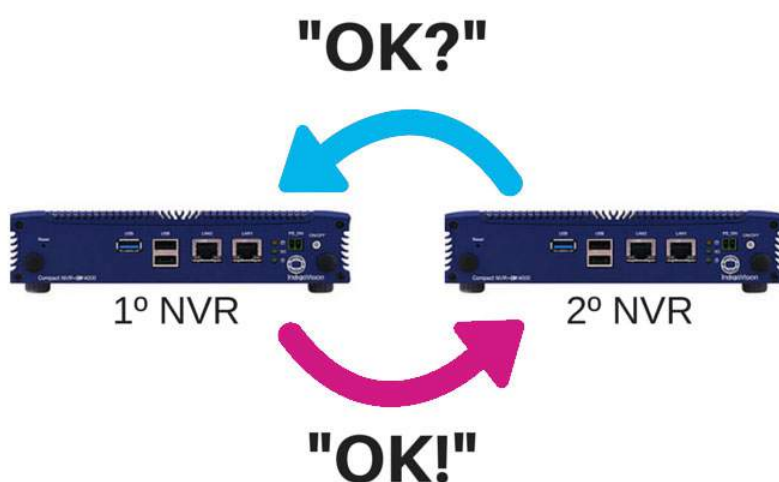


The importance of the independence of physical location, well away from the cameras if necessary, should not be underestimated by strategically placing NVRs accordingly, the impact of video streaming on bandwidth usage can be minimised. Typically an NVR might be placed on a Local Area Network (LAN) and near (in network terms, not necessarily physically) a camera cluster so that the load is carried by the local LAN capable of absorbing it easily, thus saving capacity on other, perhaps more restricted, parts of the network.

NVRs Versus DVRs - Resilience

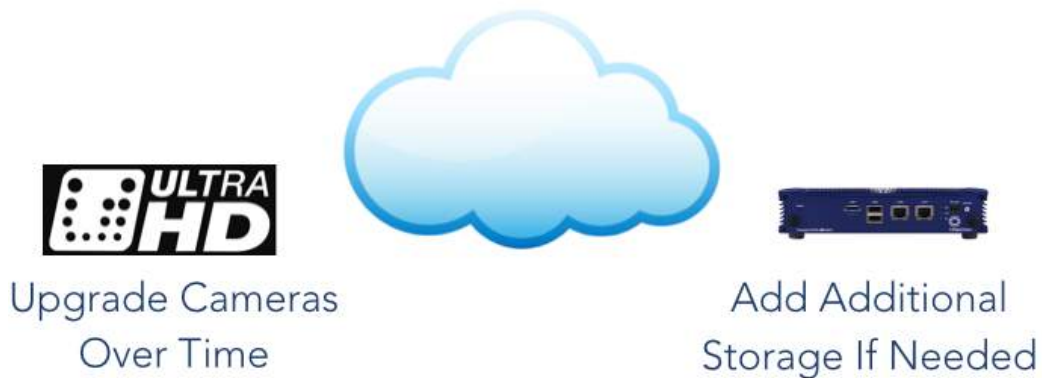
NVR “Mirroring” techniques can be used to duplicate the recording of video streams on additional NVRs located at different parts of the network, which provides a high level of protection against network failure; if one part goes down the other is there as a backup.

For further resilience, NVRs can be programmed for Automatic Failover. NVRs can be programmed as a “secondary NVRs”, constantly checking the health status of “primary NVRs” in the system. Should one primary NVR fail, a secondary NVR will automatically take over recording, with no intervention from the user.



NVRs Versus DVRs - Scalability

Scalability is also much easier with an NVR, you can have as many NVRs across a system as you like – adding another is just a matter of plugging it in and configuring it. NVRs also give more future-proofing to a system. As an NVR is responsible for recording an IP stream, you can replace higher resolution cameras to the system and the NVR should be able to just record them.



NVRs Versus DVRs - Connectivity

Finally NVRs deliver much more connectivity, particularly over multi-site installations. This is again down to the fact that the NVR is purely responsible for recording IP streams and does no compression. That results in increased performance over a DVR, meaning you can connect multiple viewing clients to an NVR, you can play back more cameras from an NVR - especially over limited network bandwidth.



Summary

When looking at the right recording solution for a multi-site installation, a DVR may look like a cost effective solution. However, as this article has demonstrated when you dig deeper a Network Video Recorder could be the better choice due to better reliability, scalability and connectivity when compared to a Digital Video Recorder.