



Abus-SC
HDVR 30042



Aver
IWH5416 Touch II



D-Link
DNR-326



Hikvision
DS9632-NI ST

PRODUCT DESIGN	75%	78%	80%	F
FEATURES & FUNCTIONS	78%	79%	84%	F
IMAGE QUALITY	80%	82%	80%	F
PERFORMANCE	78%	80%	83%	F
OVERALL RATING	78%	80%	82%	F



Network Video Recorders (Part 2)

Networked video surveillance systems are coming of age, and many of the negative aspects of the past have either been eliminated, or have become minimised. The balance of positive benefits versus negative shortcomings has swung very much towards the positives. Costs have been reduced, flexibility has been enhanced, and performance has been increased to a point where realistic solutions can be created with ease. Benchmark puts some of the leading network video recording options through their paces.

With recent advances in performance and flexibility, coupled with economies of scale that make products realistically priced, networked video surveillance offers too many benefits to be ignored. As such, it is unarguably set to become the technology of choice when considering advanced video-based security.

For many years, video surveillance has been a cornerstone of modern security solutions.

The technology used in these systems has developed, and today's performance is streets ahead of what was on offer a few years ago.

The introduction of networked video initially failed to have a significant impact on the market, because – in truth – the price/performance ratio was well off what it needed to be. However, constant advances mean that the time when networked video surveillance becomes increasingly difficult to dismiss is well and truly at hand.

The true benefits of networked video are not totally dependent upon technology. Much of it has to do with delivering the ability for installers and integrators to create bespoke solutions which fit in with – and work for – the end user's business. This adds value to the proposition, and enables the creation of true solutions, rather than systems with a degree of compromise or limitations that the customer is forced to work around.

Networked video creates flexibility, and this allows installers and integrators to move away from formulaic system designs which are inescapable with analogue systems. The problem with a formulaic system is that

everyone offers the same thing, albeit with different branding. Therefore, the only differentiation is price, and in an industry where margins are low, that often means a greater degree of compromise.

By creating a bespoke solution that delivers added functionality to the end user, you are creating a proposition that has a greater value, but which still offers cost efficiencies and day-to-day benefits for the customer's business.

It is indicative of the flexibility of networked video that the machines on test, both in this test and in the previous one last month, vary greatly. Unlike DVRs, where it is a case of pick a general specification and then decide who you buy it from, NVRs offer a choice of operational methods and a wider variety of performance options.

The main issues relating to NVRs are image quality, ease of recording and review, and flexibility with regard to how captured video is managed. Networked units do also have a few additional requirements. Firstly, they must allow a 'mix and match' approach when it comes to supported devices such as cameras and codecs.

Secondly, they should offer flexibility with regard to video resolutions and aspect ratios. It is no longer acceptable to force those investing in video surveillance to suffer limited frame rates or restricted resolution, simply because the manufacturer hasn't built in suitable processing power!

Finally, they should include the functionality to allow them to support many of the additional elements that users are coming to expect from networked video, such as streaming to mobile devices, remote access and other appropriate features.

Abus SC – HDVR 30042

The HDVR 30042 from Abus is a hybrid recorder which has a variety of possible configurations. Our test unit was configured solely for network camera connections, supporting 16 channels. Essentially, the machine – which is the bulkiest unit on test – is a heavy-duty Windows PC equipped with video capture cards. This is an approach which was popular a few years back, but has declined as demand for reduced-footprint devices increased.

Specification is for recording of up to 25fps on each channel. The NVR supports input video streams using H.264, MPEG-4 and

Abus-SC HDVR 30042

- ➕ Decent image quality; a few interesting options
- ➖ Considering it's a PC, many tasks are slow and clumsy



Aver IWH5416 Touch II

- ➕ Easiest unit to use with generic ONVIF devices
- ➖ It's essentially a PC ... with a somewhat fragmented GUI



D-Link DNR-326

- ➕ Includes some features that high end units lack
- ➖ Operation aimed at those who want reactive systems



MJPEG compression, and can record at a variety of resolutions dependent upon the specifications of the supported cameras. Dual streaming is supported. The HDVR can support up to four HDDs.

The HDVR runs the Abus VMS; this is also available as a software-based system. The documentation is somewhat haphazard as it covers the software, PC specifications, various capture cards and multiple HDVR configurations. If you want to ensure that the specification is right, you will probably need to sit down with someone from the company and go through things in detail.

Supported devices include a number of cameras from Abus, along with a few models from Panasonic, Sony, Vivotek, Acti, Axis, Mobotix, JVC, IQinVision and Arecont Vision. It might seem like an impressive list, but some brands only have a few models supported.

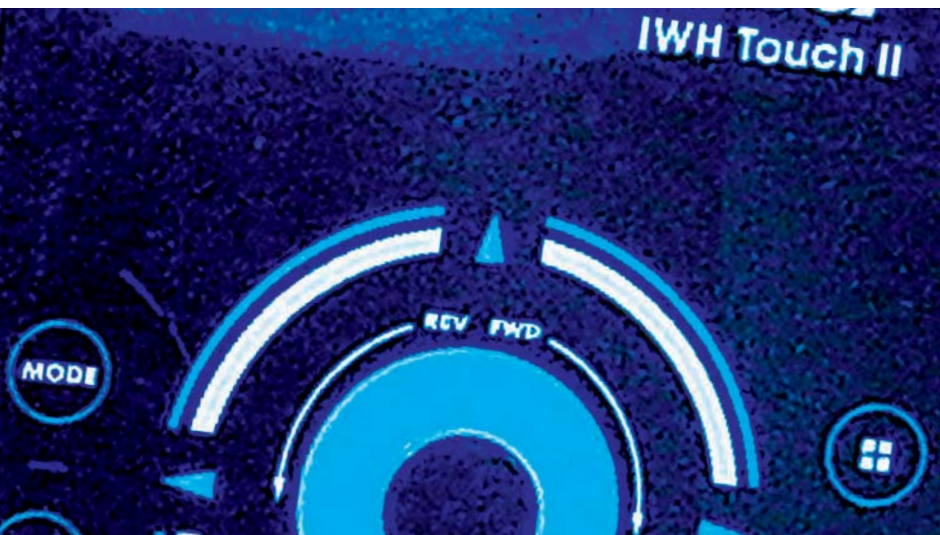
On initial power-up, our unit displayed a Windows message which intimated that a system upgrade or change had been made at the factory, but that the process hadn't been properly completed. After a restart and allowing it time to finalise its configurations, we started adding cameras. The process is clumsy, and some settings need to be carried out via the camera's webpage. However, the version of Explorer on the HDVR kept crashing, and there's nothing as frustrating as having to deal with an errant PC via the Abus interface! We needed to use an additional standard PC to complete the configurations, which is ironic given that the HDVR is actually a Windows PC!

In truth, the HDVR interface simply serves to make any PC operations slow and clumsy, and the GUI isn't immediately intuitive.

Working with supported cameras isn't always plain sailing, and even Abus cameras can be problematic. However, once the



Scan this code to download the D-Link DNR-326 specsheet



cameras are added, you need to delve deeper into the configurations to set the NVR up.

The process isn't the easiest, and you start to realise why so many manufacturers moved away from using PC-based systems.

There are some positives. Screen displays can be easily customised, and can combine live and playback video. Activity detection allows the creation of alarm zones which can initiate differing alarm responses. In general, alarm handling gives a good degree of functionality. That said, accessing the various features is, at times, a chore if you are more used to machines with more modern and intuitive embedded systems.

Recording quality can be configured for resolution, frame-rate and bandwidth. At full HD resolution in real time, using the highest bandwidth (16Mbps) the quality was good, motion was smooth, and colour rendition was as expected. There was the odd flicker in busy scenes, but nothing that created issues.

Bringing bandwidth down to a more realistic level of 8Mbps does introduce the first signs of compression, with edges softening and a general degree of sharpness starting to decline. At around 6Mbps the image, whilst usable, is obviously compressed.

General connectivity is decent, and on a par with most similar machines.

Aver – IWH5416 Touch II

The IWH5416 Touch II network video recorder from Aver supports up to 16 video inputs. These can be Aver cameras; ONVIF conformant models are also supported. The NVR supports input video streams using H.264, MPEG-4 and

MJPEG compression, and can record at a variety of resolutions up to 5 megapixels per channel, with an overall capacity for streams of up to 80 megapixels across all inputs. It's an odd way of specifying performance, but that's how they do it.

Recording can be event-based or scheduled. There are a number of event options including motion and object detection, face detection, scene change, etc.. These can be associated with various actions initiated via an alarm management function.

Video inputs are via two RJ45 network ports: these can be independently configured, and both support gigabit ethernet. Video output is via HDMI and VGA connections. Alarm inputs (16) and outputs (4) are included, as are audio inputs (16) and a single output. Other connections include an e-SATA port, 6 USB ports, plus RS485 and RS232 connections.

Up to six internal HDDs can be fitted. These are mounted on the front of the machine and are hot swappable.

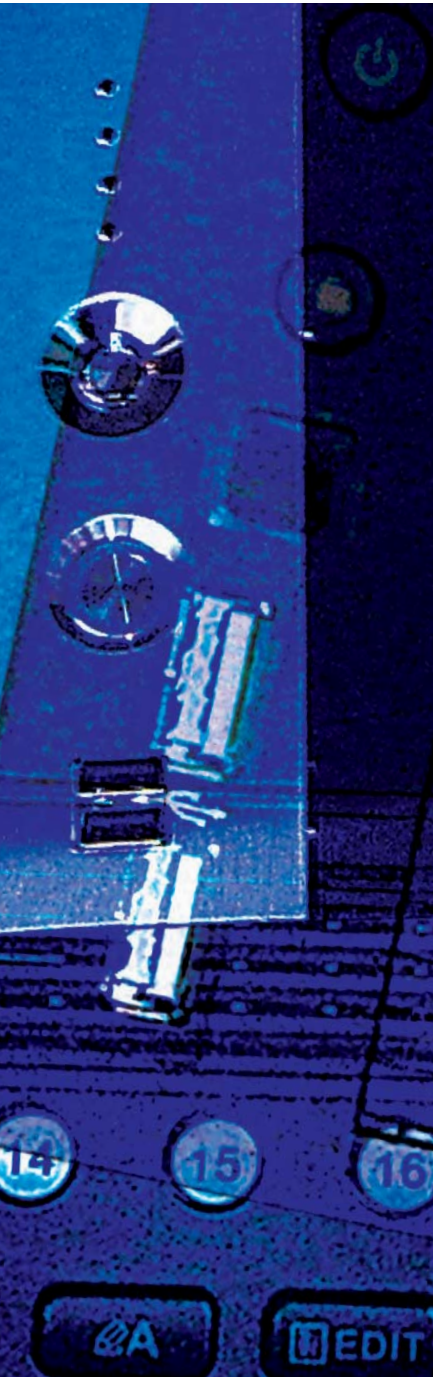
The NVR is basically a Windows 7 PC in an NVR housing. It will support composite video, via a rather clumsy interface with DVI inputs and flyleads. Whilst the unit is predominantly billed as an NVR, once you delve into the operating system you soon realise that some of the configurations aren't operable with IP cameras! Instead you have to configure the cameras themselves, even with Aver models.

There is an ability to set the main camera parameters through a Details window. However, this has limited options when used with ONVIF-compliant models.

One downside is that Aver don't give you any documentation, even a quick start guide. If you're trying to optimise the recorder and an Aver camera, then be prepared to juggle CDs. It does make you feel as if the penny-pinching has gone too far.

There is one upside: the Touch II was probably the most accepting recorder on test for ONVIF devices. There was a slight limitation on which parameters could be adjusted via the NVR's GUI, but connectivity was generally good.

The NVR feels like something of a halfway house. On one hand you have a fairly fragmented GUI, plus haphazard instructions on PDF only. On the other, the unit includes object counting, where objects moving from one defined zone to another are logged. Whilst this might have some appeal, it dramatically reduces the number of supported



video channels. We would have preferred it if the NVR basics were further developed before any advanced bells and whistles were added.

Once you get the Aver unit in its stride, it does start to take your focus off the interface issues. If you want motion detection, you can either use it from the camera or the NVR. The unit also includes face detection; it can be a touch hit and miss, unless you set the system up specifically to optimise the function.

On a more general level, video quality is good, with high levels of detail, smooth motion and good colour accuracy. You will see the odd dropped frame, but it's not to detriment of the video quality. If anything, you'll have to be looking for it!

There is a good amount of flexibility within the NVR's processing, and unless you're using high megapixel video on every channel at highest quality, there's more than enough grunt to handle the video, both with regard to live viewing and footage replay!

With regard to playback, the unit does offer search by motion, as well as other methods.

D-Link – DNR-326

The DNR-326 network video recorder from D-Link takes a different approach to the issue of video recording. The hardware element is a simple two-bay HDD management device, which is supplied bundled with VMS software. The recorder supports up to 9 video inputs. These can be D-Link cameras; models from Acti, Arecont Vision, Sony, Panasonic, Axis, Cisco, IQinVision and Mobotix are also supported.

The NVR supports input video streams using H.264, MPEG-4 and MJPEG compression, and can record at a variety of resolutions including HD1080p and HD720p. The cameras' configurations, such as frame rate, resolution and quality, can all be adjusted for recording.

Recording can be event-based or scheduled. Recording capacity is quoted as 90Mbps for H.264 at both HD resolutions. This equates to an average of 10Mbps per camera, and should allow decent quality to be achieved without over-stretching the processing. With MJPEG streams, HD1080p can be captured at 90fps, and HD720p at 192fps across all inputs.

Connections to the HDD bay are an RJ45 network port which supports gigabit Ethernet, and a power input for 12V DC power; a PSU is included. There is also a front-mounted USB port.

Configuration of the system is via a network connected workstation. Once the set-up is complete normal operation does not require a PC. It is, however, required to search and playback any captured footage.

The first task is to add HDDs to the hardware unit; it is supplied as an empty unit. The connections are simple, and a supplied CD is then run on the workstation. This has a utility to auto-discover any connected NVRs. This immediately found the attached hardware, both when used with a static IP address and DHCP! The installation wizard then guides you through the set-up and format of the HDDs.

Once this is completed, it automatically searches for attached cameras. Interestingly, the NVR did find all attached third party cameras, but didn't discover the D-Link models! The reason is because when used with static IP addresses, all the cameras use the same default settings.

Once the addresses are changed, the cameras are automatically added. If a device shows no image, the only adjustment required is to set the right Log-in details. If you want to tweak camera settings, you can open the camera's webpage from within the NVR application, and unlike some products that offer this function, it actually works on the D-Link software.

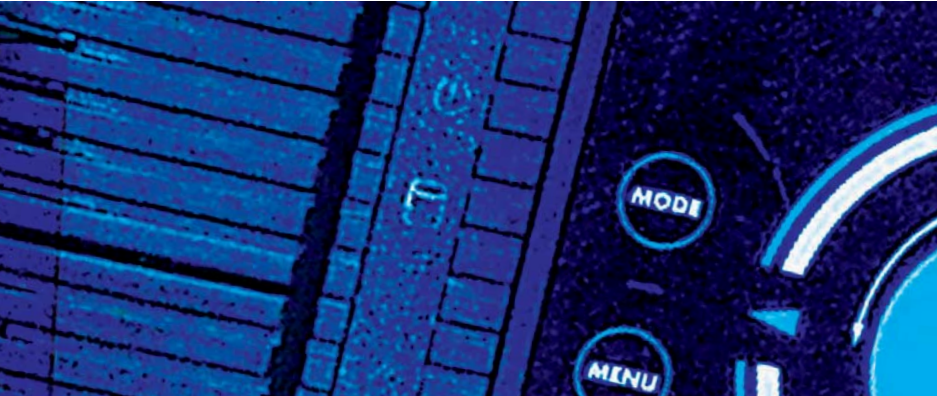
With regard to the software, the GUI is clean and intuitive. Admittedly it lacks the depth that some high end NVRs deliver, but the DNR-326 is what it is.

Quality is good, with clear detail. Motion is relatively smooth – there is the odd dropped frame, but no real jerkiness – and colour rendition is high. The video quality has 100 levels. At the highest setting (0) using H.264, there are slight signs of compression, but nothing that affects the potential use of the video. Degradation starts to become more obvious at Level 30, and by Level 40 you might want to consider what the video will be used for.

General performance is aimed at those who want a video system running in the background. That said, it does have some nice touches such as event handling, alarm recording, search by motion, etc..

Hikvision – DS9632-NI ST

The DS9632-NI ST network video recorder supports up to 32 video inputs. These can be Hikvision cameras, although the manufacturer



claims support for Axis, Panasonic and Samsung devices; ONVIF and PSIA conformant models are also supported. The NVR supports input video streams using H.264 compression, and can record at a variety of resolutions including 5 megapixel, 3 megapixel, HD1080p, HD720p, 4CIF, VGA and CIF.

Recording can be event-based or scheduled, with pre- and post-alarm footage supported. Video quality, resolution and frame-rate can be set for each camera stream. Throughput can be up to 160Mbps; this equates to an average of 5Mbps per channel, and so if a number of HD or megapixel streams are used, this might be restrictive.

Video inputs are via two RJ45 network ports: these can be independently configured, and both support gigabit ethernet. Video output is via HDMI; secondary outputs use VGA and BNC connections.

Alarm inputs (16) and outputs (4) are handled via simple push-fit connectors, and the unit also supports two audio outputs. Other connections include USB port e-SATA ports. The NVR also features two front-mounted USB ports.

On initial power-up, we were greeted by an installation wizard. This guides you through the initial steps of configuration, and seems relatively straightforward. We set the IP details for the LAN ports, assigned the storage and searched for connected cameras. It found our ONVIF units, which shared the IP subnet, and also identified some Hikvision cameras on differing network segments. The menu allows the configurations for these to be changed, but when we did so the cameras did not appear.

We carried out a restart, via the unit's Reboot menu option. On restart the NVR displayed screens that were fractured and rolling. Figuring this was a glitch, we then

rebooted again. The only way to achieve this was by cutting power, waiting a while, and then repowering the unit. The same problem resurfaced.

Either the screen rolled, or rapidly tracked across itself, and the commands were unusable and unreadable. On one occasion they slowed enough for us to enter the password, only to be greeted by another fragmented screen. The unit was unusable.

Because connection to the unit was impossible, and the front panel controls did not allow access to the menus, the only option was to once more cut the power and leave the NVR for 15 minutes unpowered with all connections removed. When we again applied power, the start-up splash screens appeared normally. However, once started the unit returned to rolling fragmented screens. It was the unanimous decision of the test team that the unit had failed during testing.

Verdict

The HDVR 30042 from Abus is effectively a PC in a heavy duty casing. However, it lacks the flexibility of a PC, and the GUI feels old-fashioned and unintuitive. There are some good functions, but overall performance is average. A few years ago, this might have been Recommended, but in today's market, it feels clumsy.

The IWH5416 Touch II from Aver has a GUI that is crying out for a rework, and which does make the PC-based unit feel old-fashioned. That and the quality of the documentation (PDF files only) does give something of a bad first impression. However, if you persevere with the unit you will find a rather capable performer hidden away! The NVR has some extra functionality, but we'd forgo that for a better interface and installation/operation experience. It was the unit which was happiest with ONVIF generic devices!

The DNR-326 from D-Link takes a different approach to video recording; it shows the variety of options that networked video delivers. At first glance it might seem a bit basic, but it does have features that so-called high end NVRs struggle to deliver. It won't be ideal for every application, but for some it presents a credible and effective choice!

The DS9632-NI ST from Hikvision cannot be rated due to its software glitch; we will report back on performance following assessment of a second unit. It's final rating will be published in the next issue.