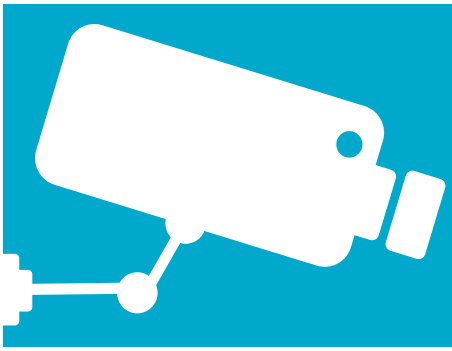
Top Video Surveillance Trends for 2016

IHS



The world market for video surveillance equipment will grow by

over 7%

The Chinese market will account for **46%** of total revenues

66 million

network cameras will be shipped globally

28 million

HD CCTV cameras will be shipped globally

The total RAW capacity of enterprise storage used for video surveillance will increase by **48%**

Top Video Surveillance Trends for 2016

2016 is likely to see the continuation of several long-term trends in the video surveillance market. They include the move from standard-definition (SD) analog equipment to high-definition (HD) CCTV and network equipment, aggressive price competition, further consolidation of the supply base, and the increasing importance of China in the world market.

IHS is forecasting that the world market for video surveillance equipment will grow by over 7% in 2016. However, the total market is made up of many different products, end-user sectors, and geographic regions. Some markets will grow much faster than others. As regards products, the markets for HD CCTV cameras, and boxed appliance recorders will grow rapidly. As regards end-users, investment in city surveillance spending is likely to be fueled by counter-terrorism initiatives. When it comes to consideration of different geographic regions, the role of exchange rates should not be under-estimated. Large currency movements in 2015 made business conditions tough in a number of regions, such as Latin America and Russia.

So, what will be the big stories in 2016? HD CCTV, 4k displays, smarter storage, public safety, and the impact of IoT in residential applications are just some of the trends discussed in our sixth annual white paper on trends for the year ahead. The predictions on the following are to provide some guidance on opportunities in the video surveillance industry. We hope you find them useful in planning for 2016:

- 4K video surveillance – Headway or hype
- Another boom year for HD CCTV in 2016
- More storage options for video surveillance
- The demise of pure server-based analytics
- New commercial markets for body-worn cameras
- Heightened concern over public safety
- Drones: Mobile video surveillance 2.0
- IoT in video surveillance a mixed bag in 2016

If you would like to speak with one of our analysts on any of the topics covered in this white paper, or to discuss our video surveillance service offering, please contact us.

Best regards

Jon Cropley / Principal Analyst – Video Surveillance

For more information on this white paper,
refer to the Video Surveillance research area,
under the Security Technology section of the IHS Technology website.

CONTACT INFORMATION:

Americas
Technology_us@ihs.com

EMEA:
Technology_emea@ihs.com

APAC:
Technology_apac@ihs.com

4K video surveillance – Headway or hype

4K video surveillance has been repeatedly touted as a major trend in video surveillance for the last 18 months and it can sometimes be challenging to see past the marketing hype. Yet make no mistake, the video surveillance market is going to 4K cameras; it's only a matter of when rather than if. For 2016, IHS is predicting:

- Volumes of 4K cameras shipped in 2016 will remain low, less than 1% of the 66 million network cameras projected to be shipped globally. We are unlikely to see over million 4K network cameras units shipped in a calendar year until 2018.
- More "4K-compliant" cameras will be launched because of the increased use of 4Kp30 and above chipsets, meaning more cameras adhering to 4K standards, such as SMPTE ST 2036-1.
- Like the HD surveillance cameras, early 4K models offered the resolution at lower frame rates. We'll see more cameras with a higher frame rate offered, and closer ties to other video standards.
- In terms of marketing, there will be some video surveillance vendors, with one eye on what is happening in the consumer electronics world, which will market to the UHD Alliance premise that "not all UHD is created equal"; we are likely to see the use marketing in the style of Ultra HD Premium, attempting to "differentiate" some 4K surveillance cameras by a focus on HDR/WDR (high dynamic range)and color representation. Perhaps there'll be promotion of 'super low-light performance' further down the line.
- Many of the challenges 4K faces were overcome for 1080p surveillance. The prevalence of 4K in the video surveillance compared with 1080p resolution seems further ahead than it was with the consumer market at a similar development stage. In 2010, 85% of TVs shipped globally shipments were capable of outputting 1080p video, compared with 20% of global network cameras. By 2014, 5% of TVs shipped global could output above 1080p compared with 12% of network cameras.
- As discussed in our trend titled "Another boom year for HD CCTV in 2016", network surveillance cameras will not be the only option for 4K surveillance, as HD CCTV will eventually bring 4K resolution video to non-network systems.

In 2016, 4K video surveillance will continue to attract significant attention and hype despite widespread adoption and high unit shipments being still some way off. As with full HD surveillance, the initial objections and barriers will certainly be overcome; with 4K resolution in time becoming the industry standard.

Another boom year for HD CCTV in 2016

Demand for HD CCTV cameras and recorders has grown rapidly in recent years. In fact, IHS forecasts that in the professional market, shipments of HD CCTV cameras will grow from fewer than 0.2 million units in 2012 to over 28 million units in 2016.

This growth is despite adoption of HD CCTV equipment being initially slow. Several versions of HD CCTV have now been released; but HD SDI, which was introduced in 2009, suffered from a number of problems including high price and low cable reach.

Then, in 2013, Dahua introduced HD CVI. This is an analog solution (HD SDI is a digital solution) and its launch was followed by two other analog HD CCTV solutions, HD TVI and AHD in 2014. Similar to HD SDI, these analog solutions allow users to receive HD footage over their existing coaxial cable. However, they have a much lower price than HD SDI solutions and a greater cable reach.

Most of the growth in demand for HD CCTV since 2012 has therefore come from the three leading "analog HD" formats with each battling to become the dominant standard. The incompatibility of these standards has been cited as a major drawback to their even greater adoption. It is argued that once a user has selected cameras and recorders using one of these technologies, they are tied in to replacing them and expanding their system with cameras and recorders using the same technology. In late October 2015, at the CPSE

Chinese security trade show, the chip vendor Techpoint announced that it had made the first step in removing this barrier. It claimed that DVRs using the latest generation of its TVI chips can record footage from both TVI cameras and AHD cameras.

Another barrier to greater adoption of HD CCTV that is often cited is that its maximum image resolution is much lower than that of network cameras. Techpoint announced plans to overcome this barrier too, by launching 3 megapixel equivalent cameras, followed by 5 and 8 megapixel equivalents. Its competitors are likely to respond by improving the functionality of their own solutions.

Given this background, IHS forecasts that HD CCTV equipment will be increasingly selected in preference to SD analog equipment. Growth in the longer term is likely to be constrained by the move to IP cameras. However, 2016 at least will be another boom year for HD CCTV.

More storage options for video surveillance

Storage configured for video surveillance is gaining more industry attention. The RAW capacity shipped of SAN, NAS and DAS storage used for video surveillance is increasing at around 40% each year. (CAGR 2014-19). The traditional boxed appliance model, (born out of the death of the VCR) typically included DVRs in a capacity to suit and perhaps external DAS for extra capacity; this was simple and it worked. Yet video surveillance has evolved and this type of approach has been insufficient for an increasing percentage of users.

Average camera resolution continues to increase. HD-compliant 1080p 25/30 fps cameras have established themselves as the minimum expected from new cameras. Panoramic and 4K cameras are two further storage-hungry high-growth categories.

Analytics and more efficient compression technologies will reduce some of the storage requirements. However, these technologies are not going to offset the large increase of data from increasing shipments of higher specification cameras, which are capturing much more information than ever before.

Also the increasing perceived value of video information will increases the length of time it is stored.

Increased storage requirements in video surveillance are the consequence that few want to talk about or to plan for.

The body-worn camera market could drive the wider video surveillance industry to re-access its approach to storage design. Shipments of body-worn cameras are forecast to boom in 2016. Specifically, in the United States, tens of thousands of new body-worn cameras will enter the market with the assistance of new federal funding. All these cameras require their footage to be retained for long periods (often years). Despite the unit shipments of body-worn cameras being only a drop in the ocean compared with those of traditional fixed video surveillance cameras, several parallels can be drawn between the storage headaches faced by both markets:

- Many of the end-users and those tasked with maintaining body-worn cameras (law enforcement officers) have a limited IT background (like many security professionals). They need an integrated system designed with total cost of ownership in mind, accounting for both upfront and maintenance costs.
- The probability of reviewing footage decreases with its age. However, preferably it should remain accessible. Increasing retention can provide anti-litigation, insurance and operational assistance. An efficient storage infrastructure can enable the use of post-recording analytics.
- There's likely to be an advantage in pulling together stored information from different inputs – video + metadata from other sensors:
  - Body-worn for law enforcement – other digital evidence or wearable tech
  - Video surveillance – connected IoT devices

Initial cloud storage offerings have made headway in the body-worn camera market, yet IHS believes that the longer-term costs of increased spec. cameras and more widespread deployment mean a hybrid approach will best suit the larger systems. This approach will incorporate multiple storage types and will often be the most cost-efficient solution. In its most basic form, this means a combination of cloud and local storage with one unified platform.

The use of this approach for body-worn camera storage could be the catalyst for the wider adoption of a similar approach in video surveillance storage, especially in higher channel-count systems.

In the market for storage used for video surveillance in 2016 we can expect to see:

Increased use of multiple tiers of storage

Use of storage tiers in video surveillance has previously meant just a separate archive or directly attaching add-on capacity to recorder appliances. Now we're seeing a multitude of options designed for video surveillance, which all pull together different storage tiers (in some cases storage media) into a unified platform. This allows more efficiency in varying how recorded footage is treated throughout its lifetime; in some cases data is moved from edge to centralized storage and into the cloud.

Further partnerships between video surveillance suppliers and storage specialists

As storage demands have increased, some video vendors are turning to specialists to provide systems which can cope with high numbers of high-resolution video streams. In terms of video management software, this means the integration of data from different storage types, tiers and physical locations is required, with similar performance from each.

Chinese video surveillance vendors increase enterprise storage offerings

Commonly storage can account for most of the equipment cost for higher-channel-count systems. Large capacity storage can be very expensive. As seen in many product categories, Chinese vendors have extremely competitive offerings; specific storage for video surveillance has been behind cameras on their product development roadmap. This year we'll see more enterprise storage products for video surveillance available from Chinese vendors.

The industry has moved so far from the days of the cassette recorder. However, its implementation of enterprise storage may be forced to evolve further to cope with the demands of increasingly low priced but high specification cameras.

The demise of pure server-based analytics

The market for video content analysis has endured a rough ride to date; nevertheless, its development remains intently monitored by the wider surveillance industry. IHS has researched the video content analysis market continuously for over 10 years, tracking consistent growth despite various challenges to date. Again, in the latest publication of market data, demand for intelligent video surveillance solutions remained strong. However, this disguises a fundamental shift in how such solutions are being implemented.

In the early years, the preferred way of running video content analysis was on off-the-shelf computers or servers. This circumvented the need to replace existing video surveillance equipment; and the use of servers provided the required level of processing power. This approach was largely standard amongst the dedicated software suppliers that were formed to target this market. Initially, strong growth prevailed until around 2008, when the industry suffered extensive reputational damage after it had widely overstated the capabilities of video content analysis. More recently in 2014, a milestone was reached: the first decline in the market for pure server-based video analytics (dumb cameras connecting to a server that carries out all the processing).

In 2014, the market for pure server only based analytics was estimated to have shrunk by $39.4 million in one year to $81.9 million. This was accompanied by a strong rise in the market for edge-based analytics, indicating a substantial shift in preference. The increasing prevalence of edge-based video analytics comes as no surprise, given the vastly increased processing power on board today's video surveillance cameras enabling the option, and lower total system and networking costs fuelling it. However, a more steady transition, along with a continued dominance of server-based analytics in certain environments was still forecast.

It is inevitable that the on-board processing power of video surveillance cameras will continue to increase and many applications will be performed at the edge. However demand for high-end server based analytics

is expected to be sustained. With the future prospects for server-based video analytics looking ever bleaker for more basic applications, IHS expects that the remaining dedicated software providers will look to partner manufacturers with video surveillance devices to develop the level of intelligence that is embedded on them; this will further drive the trend away from pure server-based analytics in 2016.

New commercial markets for body-worn cameras

Few would argue against a growing need for body-worn cameras on police officers. Body-worn cameras cause both police officers and members of the public to modify their behaviour, potentially save police forces time and money, and provide clear, transparent evidence. In 2015, several police forces around the world choose to deploy body-worn cameras to assist their officers, including the London Metropolitan Police, which agreed to deploy 22,000 body-worn cameras to all of its front line officers, further extending the use of body-worn cameras in law enforcement.

North America and Western Europe were the leading markets in 2015, accounting for 79% of the 135,000 body camera units shipped to the law enforcement market. This is a trend that is not expected to slow down either, as regions such as the United States, Benelux, France, Germany and the United Kingdom are expected to continually increase the proportions of their police forces using body-worn cameras.

However, come 2020, IHS forecasts most of the markets in these regions to have reached near saturation, becoming mainly replacement markets. If camera manufacturers are to continue to grow, IHS predicts that they will need to widen their customer base and to sell to markets other than the public safety sector. There are many such commercial markets that could benefit from body-worn cameras, including repossession officers, club bouncers, electricians and plumbers. However, IHS has identified Correctional Officers and Manned Guarding as two key potential markets in the future.

Correctional officers

In 2012, Los Angeles County tested body cameras in the jails, but the technology was less developed at the time, prompting the county to opt for fixed surveillance cameras instead. However, as the technology has developed, and become more widely used in the police and law enforcement community, jails are now starting to consider their use.

In September 2015, following the death of an inmate at Santa Clara County, supervisors decided to equip all jail guards with body-worn cameras. San Francisco also announced a similar step. It was hoped that, as with police officers and members of the public, the technology would be most effective in preventing escalation during guard-inmate interactions, whether abusive behaviour towards guards or unnecessary use of force by guards. It was also hoped that body cameras would save jails time and money, and provide clear accounts of interactions between guards and officers.

In the United States, an estimated 400,000 correctional officers are guarding 2,200,000 inmates, across the federal and state prisons, and county jails. This is a huge potential market.

Man guarding

Private security firms such as G4S, Securitas AB, AlliedBarton, and Chubb Fire & Security are just some of the companies that employ the estimated 1,200,000 security guards in the United States. In such a litigious country, there is a clear benefit in an officer activating a body camera with a simple push of a button to provide a real-time recording of an event and creating an objective record of events as they happen.

Again as with police officers and correctional officers, the ability to quickly and decisively understand what happened during an incident or a complaint allows companies to save both money and time.

IHS can foresee opportunities for security companies to offer tiered pricing for providing security guards with body cameras, and the storage and management of the video data.

VSaaS or Priority?

There are two main methods for storage and data management: local or priority (on-site storage on a physical server owned, controlled and maintained by a privet server), or third party "VSaaS" (off-site "cloud" storage and management through an external datacenter such as Amazon Web Services or Microsoft Azure).

There is still much debate as to which storage method is the best option within the law enforcement market. However, with the two examples of correctional facilities and privet security guards, the decision as to use a VSaaS or priority method is much more clear cut.

For correctional facilities a local or priority data storage method offers best and most affordable solution. The ability to have a dedicated server within a jail, where the number of cameras and the amount of data generated will be fairly easy to forecast, and the physical distance between all of the users and the server is minimal, there would be little point in having any other solution.

Man guarding however, is a market that is much better suited to a third party "VSaaS" method. This method would offer the flexibility and scalability that would be needed for this market, and allow security guards spread all over a country to access and download their videos to a central storage site very easily with just a computer and an internet connection.

Heightened concern over public safety

In the wake of tragic terror attacks on high profile cities, notably two mass shootings in Paris, one at the start of 2015 and one at the end, public safety is once again at the top of the agenda.

The public safety market will benefit in 2016 from a number of major technical developments that are starting to make their mark on the wider security market. The most important for the public safety market is the ability to take interactive, wired or wireless metadata and process it with analytics to provide "actionable intelligence" in cities. This has become increasingly important, as 2015 bought new threats to cities in the form of mass shootings. Previously, when it came to terrorist threats, cities had focused on the threat of suicide bombing. This required emergency services to be able to respond quickly, police to cordon off an area, ambulances and paramedics to treat the wounded, etc. The threat of mass shootings requires far more of rapid response; as the threat itself is fluid, it becomes more difficult to coordinate the emergency services response.

The technological advances seen in video surveillance with video analytics, as well as in public safety command and control centres with enhanced integration between sub-systems, are allowing cities to improve their response times to incidents of all kinds.

IHS expects development of safe cities will continue into 2016, with an increased urgency from those cities yet to adopt a safe city approach. The safe city concept is based on a consolidated IT platform which combines public-safety information from different types and sources obtained through sensors, and multi-agency collaboration. Safe city projects have three aims: intelligence gathering before an event; the ability to take effective action during an event; and making video feeds and other sensor data for post-event analysis.

Cloud-based technology, such as video surveillance as a service, is yet another technological advance cities will use in 2016; since it gives them a flexibility that would otherwise be unavailable. Cities using cloud-based technology benefit in two ways. First is the technological aspect, with benefits from: rapid elasticity, meeting high demand without new hardware; broad network access from any device, anywhere; and resource pooling, being independent of hardware or location. Second is the budgetary aspect, with benefits from: the city only paying for the capacity it needs at the moment, scaling up or down as required; no need for major capital expenditure, as projects can be funded through an operational budget; and the city being able to make multiple investments across the city as capital is not tied up in one large project.

The combination of a heightened awareness of a potential terrorist event in cities and advances of technology in both video surveillance and command and control systems will lead to more cities undertaking safe city projects, to increase the size of the public safety market.

Drones: Mobile video surveillance 2.0

Mobile security cameras are relatively common now in the video surveillance market. IHS estimates that 1.3 million cameras were shipped into mobile applications in police cars, trains, trams, transit buses, school buses and body-worn applications worldwide in 2015.

Mobile video surveillance is good at capturing what has happened in the vicinity of a vehicle it is attached to. Body-worn cameras have taken this mobility one step further, recording the scene as viewed by an individual police officer.

However, to date, there has not been a truly mobile security camera: one capable of following an event irrespective of whether the person or vehicle it is attached to is close by.

Enter the drone-camera.

As IHS reported in its CPSE event review, a number of exhibition stands featured drone nets at the show. Expect this to become an increasingly common feature at security trade shows around the world.

Drones have been used for military purposes for many years. However, the potential video surveillance applications are extremely exciting, especially in the public safety market. For example, a number of police forces have shown interest in using them to extend their surveillance networks to the skies. In the United Kingdom, forces in Cumbria, Kent, Lincolnshire, Dorset, Devon, and Cornwall have already stated that they are trialing drones. Similarly, the Tokyo police are launching a police unit capable of defending citizens from drone attacks, a threat which will become increasingly likely as drones become more common.

IHS also predicts that enterprising video surveillance equipment vendors will increasingly offer their own video surveillance equipment on drones, either through OEM arrangements or through strategic partnerships with drone manufacturers. This has already started, with Hikvision promoting its own drone at recent trade shows and exhibitions. As drone technology improves – driven by the consumer electronics market and initiatives such as Amazon's drone delivery system – the sky is the limit for drone-camera technology.

IoT in video surveillance a mixed bag in 2016

The Internet of Things (IoT) is a technological evolution based on how connected devices can be used to enhance communication, automate complex industrial processes, and make cities and homes smarter. According to IHS there will be 25 billion smart appliances, wearables, game players, and other consumer devices connected to the Internet of Things (IoT) by 2025.

Whilst there is still much hype on the concept, IHS has made some predictions on the impact in the real world of IoT on the video surveillance market:

1. The IoT will have no impact on the commercial video surveillance market in 2016. Security systems integrators are generally slow to adopt new technology and the proliferation of wireless connectivity will not change how professional video surveillance projects are installed or how video surveillance cameras interact with other connected "things".

2. The residential security market has already been fundamentally changed by the IoT. The 'smart home', an IoT application, has been built around the security and video surveillance offering. MSOs, such as Comcast and AT&T, have entered the residential security market offering connected intruder systems and security cameras. Incumbent security service providers, such as ADT and Vivint, have increased their product offerings to include connected devices for energy, heating, home automation and, of course, video surveillance. Companies offering smart home devices, such as Samsung Smartthings and Lowe's Iris, also feature video surveillance products prominently in their core bundles.

3. By 2020, the IoT will have some impact on how enterprise commercial video surveillance projects are implemented. The security camera will no longer only be a security product. It will also act a sensor for the building to assess room capacity, the movement of

people and identify who has entered the building. The IoT will drive the building's decision to apply heating, lighting, and entrance control as well as a whole host of other scenarios that haven't been thought of yet.

4. The video surveillance IoT story will start in the United States, but China will quickly become the leader for connectivity in physical security. Western Europe will lag behind both regions.

5. By 2025, even small commercial and retail video surveillance systems will be interacting with buildings and leveraging the IoT to provide heating and lighting solutions, automated access control, and even communicating with your smart home to let it know when you leave the office.

Please contact Jon Cropley, Principal Analyst for Video Surveillance at IHS, with any questions.
jon.cropley@ihs.com

Follow the conversation **IHS4tech**

1108-ML-0116