



Intel® Digital Security Surveillance Ecosystem Guide



www.intel.com/info/dss

Digital Security Surveillance (DSS) has never been more vital. To meet the growing worldwide demand, DSS vendors require building blocks that can be easily and cost-effectively integrated into robust and reliable system solutions.

Intel is now bringing together the necessary technologies, products, and vendors to integrate DSS systems. This edition of the Intel® Digital Security Surveillance Ecosystem Guide is your introduction to innovative solutions from Intel's growing worldwide ecosystem of leading hardware and software vendors.

Platforms based on Intel® architecture provide the processing power, platform technologies, and reliability that today's DSS solutions demand.

Intel® Digital Security Surveillance Ecosystem Guide

Following the overwhelming demand for the first edition of the Intel® Digital Security Surveillance Ecosystem Guide, Intel is proud to present this new and expanded version. The current edition provides an overview of the technologies deployed in the Intel® DSS platform solution and includes a comprehensive list of Intel ecosystem developers, including hardware manufacturers, application developers, and system integrators.

DSS Requirements

The growing safety consciousness of both the general public government and private industry is driving the demand for tighter environmental security. With the advent of new technologies, powerful solutions to improve public security are becoming an essential part of daily life. The use of biometrics, including fingerprint and facial recognition at immigration check points and intelligent surveillance systems in public venues, are just some of the DSS technologies available today.

Today's sophisticated surveillance solutions require scalability to support high numbers of video channels, higher throughput at the input/output (I/O) interface, robust processor performance to handle sophisticated algorithms, and reliable high-volume data storage. Intel recognizes the issues faced by DSS developers and is providing solutions in both hardware and software.

INTEL® TECHNOLOGIES

Intel® Active Management Technology

Intel® Active Management Technology¹ (Intel® AMT) is a platform-resident hardware and firmware solution based on non-volatile storage that enables maintenance departments to remotely discover, heal, and protect networked computing assets, regardless of the system's power state.² Major independent software vendors are adding support for Intel AMT features to their products, and major original equipment manufacturers (OEMs) are implementing Intel AMT on their platforms.

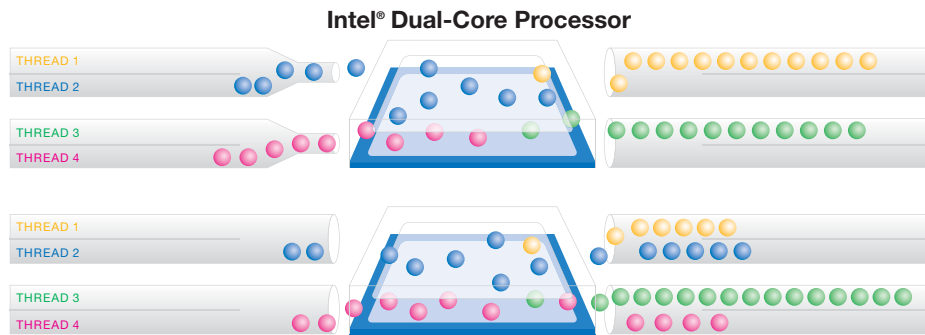
Intel AMT provides important benefits in digital security surveillance systems.

- Out-of-band management enables IT managers to remotely heal systems in the event of operating system failures.
- Remote troubleshooting and recovery saves maintenance costs by reducing site visits.
- Proactive alerting reduces downtime and time-to-repair.
- Remote hardware and software tracking helps to eliminate manual inventory tracking cost and improves accuracy.
- Non-volatile storage protects data during power outages and system restoration.
- Tamper-resistant agents help prevent unauthorized removal of critical inventory, remote-control, or anti-virus agents.

Intel® Dual-Core Processors

Intel® dual-core processors combine two independent processors and caches on a single die. The advantages of dual-core technology include increased performance of cache operations, since the circuitry can be operated at a higher clock rate because signal transmission is confined to a single chip. In addition, a dual-core processor consumes less physical space and uses less power compared to dual CPUs. Having two processor cores working concurrently boosts multitasking performance and improves the throughput of multithreaded applications.

Intel dual-core products supporting Hyper-Threading Technology³ (HT Technology) could process four software threads simultaneously by more efficiently using resources that otherwise may be idle. This can have direct performance benefits for sophisticated algorithms in DSS applications and enable multi-channel, high-resolution image requirements.



Intel Dual-Core Processor with HT Technology³

An Intel dual-core processor with HT Technology enables execution on four threads in parallel.

Demonstration reflects data processing simulation for illustrative purposes. Actual data processing flow may vary.

Figure 1: Intel® dual-core processors can deliver performance benefits for DSS applications. An Intel dual-core processor with HT Technology could process four software threads simultaneously.

Intel® Extended Memory 64 Technology⁴ (Intel® EM64T)

The 4 gigabytes of directly addressable memory supported by a conventional 32-bit CPU is no longer sufficient for many new applications. Intel® EM64T currently offers up to 1 terabyte of addressable memory. This extra memory space can dramatically increase the performance of memory-intensive applications.

PCI Express*

PCI Express*, the latest peripheral component interconnect, offers the extra bandwidth of a faster serial communication system with the convenience of existing PCI programming concepts and standards. An existing PCI card could be converted to PCI Express by changing the physical layer only, and an operating system designed for PCI could boot in PCI-Express system without any code modification. PCI Express provides a maximum data rate of 250 MB/s per direction in each lane. Since PCI-Express is bi-directional, it can support up to 500 MB/s bi-directionally per lane. With 16 PCI-Express lanes (PCI Express x16) a total bandwidth of 8000 MB/s (500 MB/s x 16) is available, providing scalable I/O to support increasing numbers of video channels with high resolution and frame-rate.

LaGrande Technology

Intel created a new technology, code-named LaGrande Technology, to protect critical information such as confidential user data, communication and banking transactions from software-based attacks, without compromising the usability of the platform. LaGrande Technology includes a highly versatile set of hardware enhancements, providing the foundation to help protect the confidentiality and integrity of data. It enhances protection against software-based attacks by implementing domain separation.

Process execution, memory pages and devices are protected from all other software on the system through hardware enforcement, providing a trusted channel between the CPU, chipsets, devices and the platform. LaGrande Technology provides DSS application developers with a protected execution space, sealed storage and protected I/O.

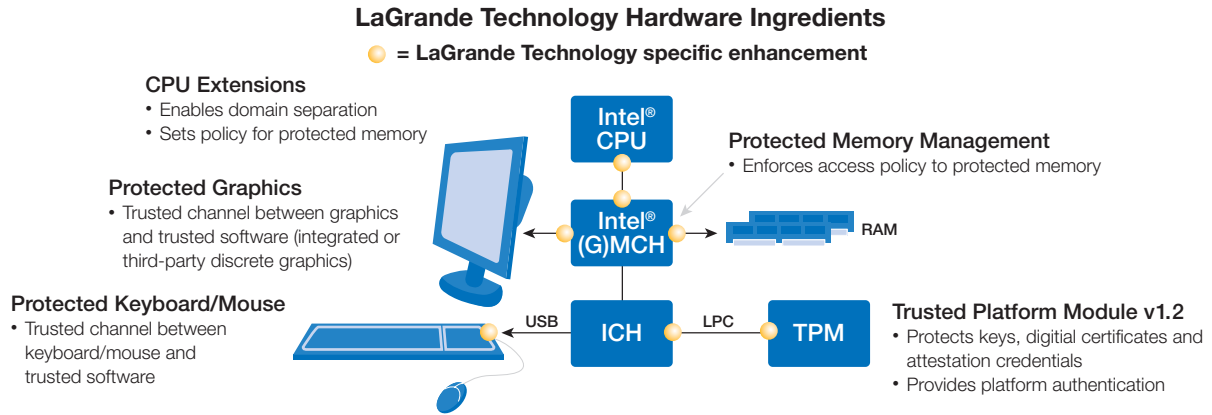


Figure 2: The ingredients of LaGrande Technology and how it can help increase data security and platform integrity (Source: Intel® Developer Forum presentation, 2003).



Intel® Matrix Storage

RAID, an acronym for Redundant Array of Independent Disks, is a system designed to protect critical data and improve storage capacity by storing data across multiple physical disks that appear to the operating system as one logical disk. The availability of RAID based on Intel® Matrix Storage, built into motherboards based on Intel chipsets, delivers important benefits for DSS systems that require long-hour video storage and data protection.

Intel® Virtualization Technology

With Intel® Virtualization technology, hardware resources can be divided and allocated among multiple independent operating system environments. This enables multiple “virtual” platforms to exist within one single hardware platform. Virtualization enables a single machine to run multiple operating

systems concurrently. For example, this enables the implementation of multipurpose terminals capable of running Point of Sale and surveillance applications on the same platform which can reduce cost and maximize productivity.

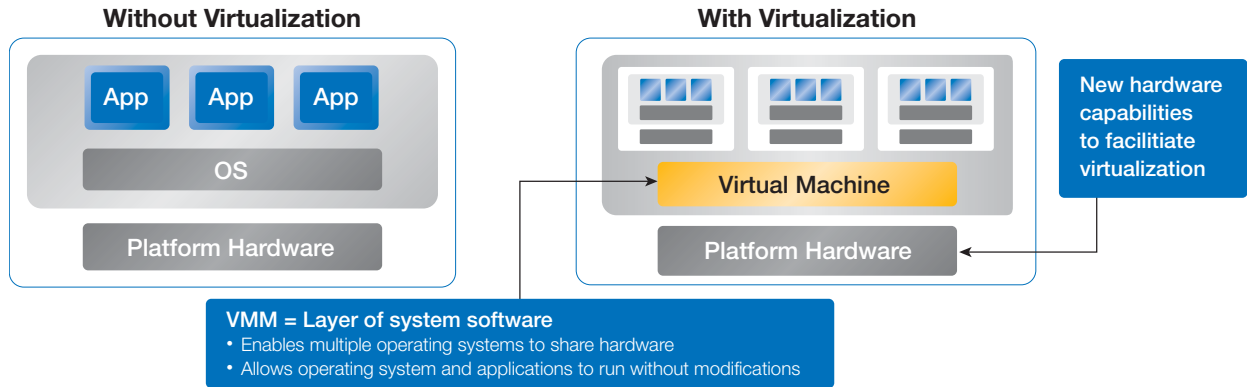


Figure 3: Intel® Virtualization Technology enables multiple virtual platforms, running multiple operating systems and applications, to run concurrently on a single platform.

Intel® Integrated Performance Primitives

Intel® Integrated Performance Primitives (Intel® IPP) enable developers to incorporate video applications and capabilities into their software. Pre-built functions consist of domains such as audio, video and image codecs,

signal processing, speech codecs and speech recognition, cryptography, computer vision and recognition, matrix and vector processing, and string processing.

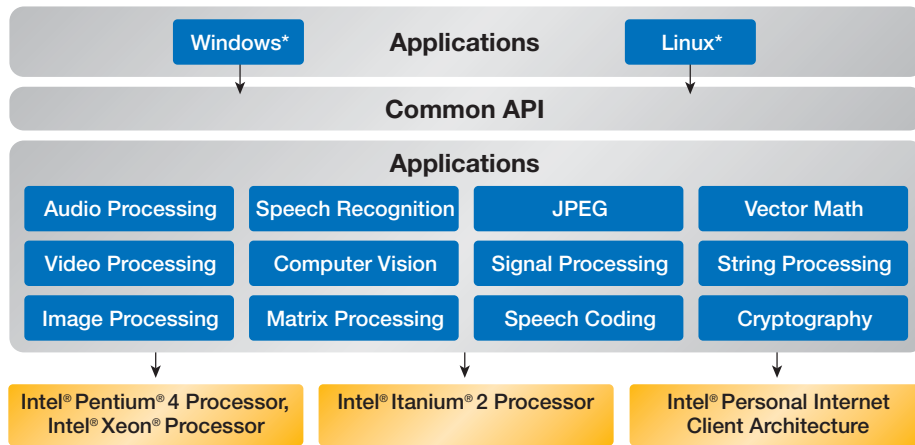


Figure 4: Intel® Integrated Performance Primitives (Intel® IPP) optimize processing performance through a library of pre-built code and a common API with variant code dedicated to yield the best system performance for the targeted processor. It takes into account memory bandwidth and caching behavior of the delivery environment.

Hyper-Threading Technology

Hyper-Threading Technology (HT Technology) enables a single processor to function as two “virtual” processors by executing two threads in parallel. It offers more efficient multitasking by allocating processor resources to applications as-needed, enabling the processor to complete more tasks in a given time. When scheduling threads, the operating system treats the two distinct architectural states as separate “logical” processors.

While HT Technology will not provide the level of performance scaling achieved by adding a second processor, benchmark tests show some server applications can experience a 30 percent gain in performance⁵. When combined with Intel dual-core processor technology, HT Technology can provide a significant performance gain in DSS applications, such as those involving multiple video data streaming.

How Hyper-Threading Technology³ Works

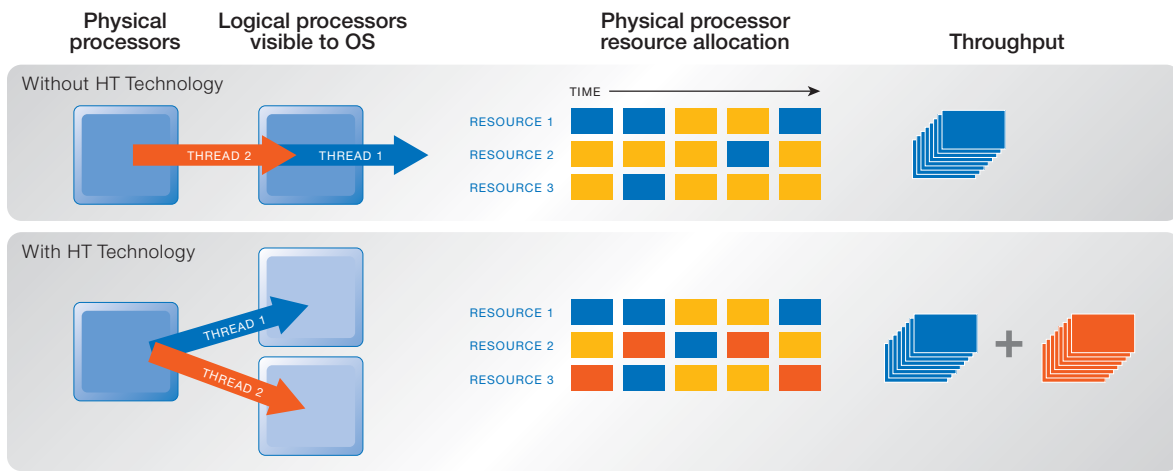


Figure 5: Intel® processors supporting Hyper-Threading Technology can dramatically improve processing performance by utilizing CPU resources that would otherwise be idle.

SIMD Instruction Set

Single Instruction Multiple Data (SIMD) processing enables the execution of a single instruction on multiple data at one time to increase the amount of data that can be processed. Intel’s first-generation of SIMD, in Intel processors with MMX™ technology, directly addresses the needs of multimedia, communications and graphics/video applications.

The next generations of SIMD, Streaming SIMD Extensions (SSE), SSE2 and SSE3, are extensions of MMX. They provide additional instructions, enabling single-precision and double-precision floating point operations, in addition to adding 128-bit registers and instructions to improve synchronization between multi-threaded agents.

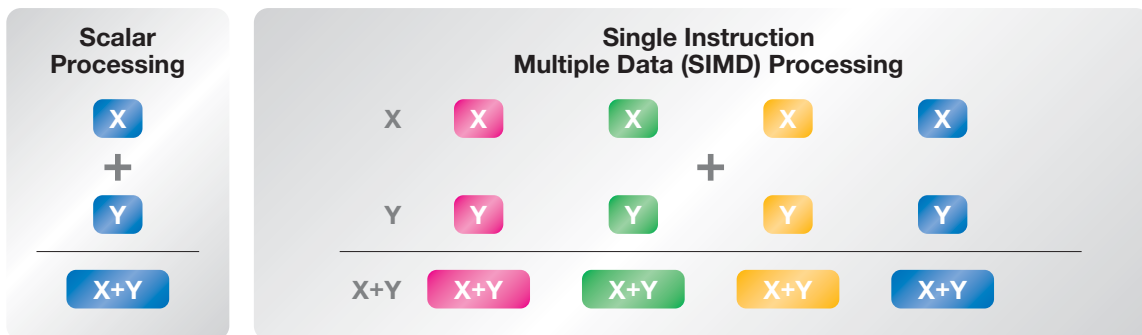


Figure 6: Single Instruction Multiple Data (SIMD) improves performance over scalar processing by enabling the concurrent execution of one instruction on multiple data.

Intel® Digital Security Surveillance Solutions from Leading Vendors

Digital Security Surveillance platform solutions based on Intel technologies, building blocks, and motherboards meet your requirements for robust processing performance, scalable I/O, platform reliability, and data security in cost-effective multifunction designs.

This guide provides an overview of leading solutions now available from the growing ecosystem of hardware and software vendors.



VENDORS

Gigabyte GA-8I945GTE*

The number of available PCI slots provided by PC motherboards continues to decline, and the bandwidth limitations of PCI technology can limit the resolution and quality of digital surveillance systems based on PC boards.

The Gigabyte GA-8I945GTE* motherboard is designed to help manufacturers and system integrators overcome these limitations, while meeting the demanding requirements of digital security surveillance video recording applications.

The Intel® 945G chipset, including the Intel® 82801GR I/O controller hub (ICH7R), provides Gigabyte with multi-year product availability to meet customer requirements in the digital video surveillance market segment. The Gigabyte GA-8I945GTE motherboard supports a broad range of technology enhancements:

- Intel® Dual-Core processors
- Intel® Extended Memory 64 Technology⁴ (Intel® EM64T)
- LaGrande Technology with TPM1.2
- Intel® Matrix Storage Technology
- Intel® Active Management Technology¹
- Digital Security Surveillance Video PCI technology

The addition of an Intel® 41210 PCI Express-to-PCI bridge extends the number of available PCI slots, while the PC industrial computing environment moves to the PCI Express* interface. Exclusive 125 MB/s bandwidth is available on each slot, enabling multiple channels of 640x480 real-time image recording.

www.gigabyte.com.tw



ACTi Corporation **IP Surveillance Solution***

The ACTi IP Surveillance Solution* provides cost-effective IP networking technology for digital security surveillance applications that helps users avoid the added expense of coaxial cables. The use of IP networking also enables users to flexibly monitor real-time video from remote sites and perform sophisticated video analysis on digital video streams.

The IP Surveillance Solution includes IP cameras, a content management server, and a network video recorder. The IP camera is capable for delivering real-time video at D1 resolution (720x480) up to 30 frames per second in NTSC format.

With optimized MPEG-4 video compression and built-in Layer 2 and Layer 3 Quality of Service (QoS) functions, the IP camera is specifically designed for applications where available bandwidth is restricted and high frame rates are required. The content management server is used to manage and control IP cameras and do monitoring, recording, and playback jobs. The network video recorder can be used as a stand-alone recorder, in addition to recording video streams from IP cameras over a network.

Benefits of the ACTi IP Surveillance Solution include remote surveillance capability with real-time video quality, reduced cabling cost for long-distance surveillance deployment, PPPoE networking support, and easy connection to ADSL systems. With the availability of QoS, high throughput levels, and minimal end-to-end latency can be ensured.

Intel® architecture platform building blocks include a high-performance Intel® Pentium® 4 processor and PC server architecture in the content management server and network video recorder.

www.acti.com



ADLINK Technology, Inc. **DS-1000* Embedded Digital Video Surveillance Solution Platform**

The ADLINK DS-1000* platform is a high-performance embedded DVR system based on Intel® architecture. It is an embedded DVR platform solution that supports up to eight channels of real-time video surveillance.

The system's flexible design features compact embedded digital video recorder modules that enable system integrators to easily meet a broad range of digital surveillance system customization needs and environmental requirements.

The platform is based on the Intel® Pentium® M processor (up to 1.4 GHz) with 400 MHz FSB and the Intel® 855GME chipset. Designed for low-power embedded applications, the Intel Pentium M processor enables a high-performance fanless platform design, capable of meeting the processing demands of advanced MPEG-4 video compression. Designed for easy expansion, DS-1000 system provides convenient front-side access.

<http://www.adlinktech.com>



Advantech DVS Systems*

Advantech DVS systems provide excellent video quality and compression, supporting high-quality viewing for up to 16 concurrent channels with D1 resolution at 30 fps, in addition to H.264 (MPEG-4/part 10) hardware compression. This best-in-class file compression provides manageable file sizes (1-5 KB/frame) for efficient archiving and transmitting, with excellent review quality.



Advantech Real View* software provides a user-friendly GUI enabling DVS systems to offer centralized management for up to 256 DVRs, in addition to user-programmable controls including pre- and post-recording frame rates. Systems are designed to integrate with control signals including access control, temperature monitoring, and image recognition applications.

Designed for 24/7/365 use, Advantech DVS systems provide the highest performance computing power available in a chassis that offers excellent heat dissipation and ease of maintenance. With built-in hot-swappable hard disk drives and power supplies and optional RAID support, Advantech's years of experience in providing mission-critical platform solutions give DVS systems the features and dependability that IT departments demand.

www.advantech.com.tw/ePlatform/eVSD

Aimetis AIRA 2005* Software Suite

AIRA 2005* is an advanced Network Video Recorder (NVR) with intelligent video analysis capability to detect and help prevent threatening events in real time. AIRA analyzes incoming video against user-defined policies and initiates countermeasures when an event violates a policy. By using AIRA's advanced query tools, users can quickly locate specific video in seconds, saving hours in forensics work.

Applications include perimeter breach protection, loitering, object stolen/left-behind, flow control, vehicle starting/stopping/moving, spill detection, people/vehicle counting.

AIRA 2005 is a software package installable on any PC running Windows* 2000 or higher. Available in three different editions, AIRA 2005 runs on commercial off-the-shelf (COTS) hardware and supports CCTV, IP, and mega-pixel cameras. Functionality includes simultaneous digital video recording, intelligent video analysis, and remote access to live and recorded images from any networked PC.



Intel® architecture platform benefits include:

- Intel® Pentium® 4 and Intel® Xeon® processors provide excellent price/performance.
- Dual-processor Intel® server boards supporting Hyper-Threading Technology³ enhance system-level performance and reliability.
- Intel® Performance Primitives (IPP) enable maximum processor utilization required by Aimetis' complex video analytics.
- The Open Source Computer Vision Library (OpenCV) enables rapid application prototyping and benefits from the contributions of participating developers.
- Intel® Streaming SIMD Extensions 2 (SSE2) instruction coding optimizes performance.

www.aimetis.com/aira

Arbor**VS-24XX Series* MPEG-4 Video Servers**

By translating analog video and audio signals into compressed digital formats for streaming over Ethernet networks, the Arbor VS-24XX Series* servers can accommodate many remote-monitoring applications including long-distance transmission and deployments in harsh environmental conditions where no human operators are present.



The use of MPEG-4 video compression requires less Ethernet bandwidth than traditional Motion JPEG or MPEG-1 and 2. As a result, a single Ethernet interface can support more video channels without sacrificing quality.

Transferring data streams over Ethernet networks reduces the possibility of data loss that can occur over coaxial cables used in traditional surveillance applications, extending the visual capabilities of a deployment. Built-in MPEG-4 hardware encoding and MP3 software encoding enables the capture and transfer of high-quality video at faster rates. After capturing video and audio data, Arbor VS-24XX will store these data in a dedicated server.

The computing core of the solution is the Intel® PXA255 processor, which provides low-power consumption and is ideal for Arbor's fanless and dust-proof platform, designed for withstand remote field deployments.

Intel® architecture building blocks enable low power consumption in Arbor's fanless and dust-free hermetically sealed mechanical designs. The Intel® PXA 255 processor provides a cost-effective, high-performance solution.

Arbor's customers include airports, factories, train stations, and remote meteorological facilities.

www.arbor.com.tw/products/mpeg_4_video_servers.htm

Aspectus**Aspectus VI-System***

The Aspectus VI-System* is designed to enhance security and save personnel resources by providing cost-effective automatic detection of events such as intrusion, unattended baggage, and other occurrences in railways, prisons, water facilities, utility companies, and other high-security venues.

The system is based on Aspectus' patented IPoIP* (Image Processing over IP) technology. It uses a unique distributed image processing architecture, in which the majority of image processing is performed by a central server. Maximum server performance is a key requirement, and the Aspectus VI-System is compatible with Intel® Pentium® processors supporting Hyper-Threading Technology!



Benefits of the Aspectus VI-System include:

- Low false alarm rate (FAR) and high probability of detection (POD)
- Scalability to support systems ranging from a dozen up to thousands of cameras
- No additional video hardware required — uses existing video devices
- Low bandwidth: no need to transmit video bandwidth data streams
- Multiple applications: a single platform for multiple video intelligence applications

www.aspectusvi.com

AXIOMTEK**FASTORA Storage Architecture (FSA)***

AXIOMTEK provides complete storage product lines including network attached storage (NAS-100V1*), a backup and instant recovery appliance (EXB-315V1*) and an entry-level SAN disk array (DAS-315FA*), designed for integration within an existing LAN and SAN environment.

NAS-100V1

- 1U rack-mount form factor
- Dual Intel® Xeon® processors 3.0 GHz
- 2 GB ECC Memory DDR 333 (12 GB maximum)
- Powered by Windows Storage Server 2003*
- 2 Gigabit Ethernet ports with fail-over and load-balance functions
- Ultra320 SCSI or 2 Gps Fibre Channel for connection to a storage pool

EXB-315V1

- 3U rack-mount form factor, providing 15 disk arrays
- Intel® 7501 chipset
- All the client data, operating system components, applications, and settings are backed up with one click at the user interface or scheduled automatic backups
- Incremental backup for new and modified files after the first full backup
- External boot-up offers quick recovery following a boot disk failure by rapidly booting the target system over the IP network
- Total recovery of the operating system, applications, and data for designated servers, desktops, or notebooks to a previous time

DAS-315FA

- 3U rack-mount form factor, providing 15 disk arrays
- Intel® 80321 64-bit I/O processor
- Two 2 Gps FC channels provide high-speed data transmission
- Hot-swappable design guarantees nonstop operation
- Cable-less design for better reliability
- User-friendly configuration via RS-232 port or Ethernet

The AXIOMTEK product lines provide the benefits of centralized management, reduced cost, minimal downtime, enhanced data protection, and easy integration with existing network environments.

www.axiomtek.com

**axonX
SigniFire***

The axonX SigniFire* system provides early-warning fire and smoke detection using standard video cameras. SigniFire technology applies advanced artificial intelligence capabilities to analyze live video images obtained by ordinary security surveillance cameras. The system identifies fire hazards including:

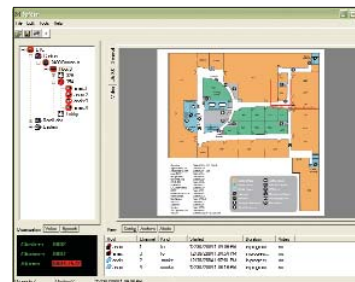
- Direct presence of flames within the camera's field of view
- Presence of a reflected flickering fire light when flames are not directly visible
- Presence of pluming smoke clouds.
- Presence of ambient smoke
- Advanced intrusion detection

SigniFire also provides a verified response solution by means of remote visual inspection and confirmation of alarms using the video images over the Internet.

The technology is deployed on an advanced Digital Video Recorder (DVR). High-capacity internal storage provides months of on-event digital video recordings with instant access to archived events from virtually anywhere over the network. SigniFire technology is based on an Intel® Pentium® 4 processor for video processing and DVR capabilities. One unit is capable of processing eight video cameras simultaneously.

Unlike the traditional smoke detection-based technologies, which are commonly referred to as point sensors, the axonX *volume sensor* solution constantly monitors the volume within the point of view of the camera, and can detect smoke and flames at their incipient stage. The technology is designed to enable early detection, faster response, and rapid visual verification by remote operators to help resolve false alarm problems.

www.axonx.com



DVTel**Latitude* Network Video Management System**

DVTel's Latitude* Network Video Management System (NVMS) is a software-based, enterprise-level video, audio, and data management system. This fully digital, IP-based video surveillance solution combines a CCTV matrix switch, a multiplexer, and a DVR with unlimited storage capacity in a single system. The Latitude NVMS offers in a single graphical user interface for monitoring, and provides recording and analysis functionality designed to enhance the performance of live and recorded video.

DVTel's network-based solutions are designed to replace legacy Digital Video Recorders, Video Switching Matrix Systems, stand-alone video multiplexers, and security networking products. Collectively, DVTel solutions create an Intelligent Security Operations Center (iSOC) for network video and audio recording, monitoring, and analysis.

Intel® platform building blocks enable a full-featured, enterprise-wide iSOC that delivers the best available quality for real-time video. The hardware platform solutions include the Intel® 915GV and Intel® 915GM chipsets with the Intel® ICH6 I/O Controller Hub and Intel® Graphics Media Accelerator 900. The solution supports four PCI Express* x1 and four PCI master interfaces.

Through the use of existing networking infrastructure the DVTel Latitude system helps eliminate the added expense of multiple wiring sets. DVTel's multi-source intelligent management capability enables users to acquire information in video, audio and/or data formats, administer and analyze the captured information, and take appropriate action.

www.dvtel.com

**Enswer****Sunny* Solar Panel/Battery Application Solution**

The Enswer Sunny* power supply of for non-stop systems is a self-power generation solution for mission-critical digital surveillance systems that must operate on a non-stop basis, despite disruptions that can occur in conventional power supplies. Enswer customers include major US airports, transportation providers, and enterprises.

The power supply is well-matched to systems based on Intel® mobile platform building blocks, including the Intel® 915GM chipset, Intel® Pentium® M processor, and the Ultra Low Voltage Intel® Celeron® processor.

www.a-top.com.tw

**Evalue Technology Inc.****XQure Auto V-POS***

The XQure Auto V-POS* system combines Point-of-Sale (POS) and digital video recording applications in a single platform. Transaction data can be saved to the system database and is easily accessible for retroactive analysis or reports.

The Auto V-POS helps users reduce cost, requires less counter space, and is designed for simplified maintenance and higher levels of transaction security. Key benefits include:

- Single-device operation for significant hardware bill-of-materials savings
- Dual-display panels: POS transaction monitoring on one display, and surveillance monitoring video on the second display
- Auto start-up automatically activates recording when a transaction starts
- POS transaction text overlays, live video, and outputs into video files enable easy filtering
- Smart video search by transaction keywords, events, date, and time
- Supports up to 16 surveillance cameras for maximum security at minimum cost
- Live monitoring via the Internet

The platform is based on the Intel® Pentium® 4 processor and Intel® 845GV chipset, which support dual independent display capability with a 32-bit graphics core at over 200 MHz providing DirectX9* support. The Intel Pentium 4 processor is built on Intel NetBurst® microarchitecture, which provides enhanced video encoding multimedia capability.

www.evalue-tech.com



FalconStor Software, Inc.**IPStor* Enterprise Edition Software**

FalconStor IPStor* network storage software is designed to optimize the storage, protection, and availability of enterprise data. The IPStor solution enables corporate IT to meet and potentially exceed the high availability and security requirements of digital security surveillance (DSS) and other mission-critical applications.

IPStor provides a unified and hardware-agnostic infrastructure for SAN, NAS, and direct-attached storage ideal for the high network performance needs of DSS environments. While centralizing storage management for capacity-intensive DSS systems, IPStor delivers simplified, on-the-fly storage provisioning and supports dynamic growth of the infrastructure as storage needs expand. Advanced IPStor storage services continuously protect DSS data, providing high data availability and rapid data recovery while ensuring security via standard authentication and encryption methods.

IPStor solves a comprehensive range of real-world challenges in DSS environments, including storage consolidation, business continuity, disaster recovery, backup consolidation and acceleration, and compliance.

For optimum performance, IPStor software runs on Intel® architecture, including the Intel® Xeon® processor at 2.8 GHz with Intel® EM64T⁴. Network interface cards, such as the Intel® PRO/1000, are used for networking purposes.

Customers range from major global corporations, Internet data centers, and storage service providers to medium-sized and smaller businesses with requirements.

www.falconstor.com

**Fraunhofer IIS****Smartcam HDTV***

The Fraunhofer Smartcam HDTV* is an intelligent, high-resolution camera designed for demanding IP-based digital security surveillance and broadcast applications.

This extremely compact and smart HDTV camera is designed for high-resolution, IP-based broadcast and surveillance applications. It provides a broad range of integrated real-time functions including image enhancement, face, persona and object detection, and scene analysis.

Additional capabilities include image encoding and decoding in JPEG2000 and H.264 formats, image visualization over dual-HDSI, and streaming of 1080p HDTV live images over dual Gigabit Ethernet interfaces. Streams can include metadata, such as data to indicate facial positioning.

Fraunhofer has integrated powerful real-time surveillance algorithms into an extremely compact high-resolution HDTV camera. With its integrated embedded CORBA client/server structure, the camera is very easy to adapt to meet the dedicated requirements of specific users.

Image visualization is provided via HDSI outputs. The double Gigabit Ethernet interfaces enable IP-based streaming of image data encoded in JPEG2000 or MPEG-4 video streams, and/or image analysis results. An integrated PC Card adapter provides extensions including WLAN and Compact Flash.

Platform building blocks include the Intel® IXP2350 network processor, a low-power, cost-effective network building block with programmable microengines, an Intel XScale® core, PCI/ATM/Memory Interfaces, and two integrated Gigabit Ethernet ports. Other Intel® building blocks include Intel StrataFlash® memory (P30) and the Intel® Internet Exchange Architecture (Intel® IXA) SDK for microengine programming.

www.iis.fraunhofer.de



FTEC**FTEC Smart Eyes* Digital Surveillance Systems**

FTEC Smart Eyes* Digital Surveillance Systems enable users to track incidents including robberies, internal thefts, shoplifting, and other criminal activities. Users can also use the system to monitor the security of multiple business locations through remote clients, while eliminating the need for additional staffing to monitor premises security.

The solution is designed for venues requiring environmental security surveillance, including airports, manufacturing plants, warehouses, commercial and office buildings, highways, financial institutions, oil and gas facilities, and retail stores.

FTEC Smart Eyes Digital Surveillance Systems provide user-friendly yet powerful multifunction solutions designed for integration with POS systems and include digital I/O and smart update capabilities.

The system provides an improved surveillance solution:

- Providing solid evidence when incidents occur
- Sending notification and alerts to users or security personnel when external sensors are triggered
- Tracking missing objects
- Full-duplex audio communications

For flexibility, stability, and reliability, the FTEC platform is based on Intel® Pentium® 4 processor supporting Hyper-Threading Technology³ and the Intel® D915GAV motherboard.

www.smarteyes.com.my

**GeoVision****GV-DVR* System (GV-1480S/1240S/1120S)**

The GeoVision GV-DVR* system is an all-in-one digital security surveillance solution designed to process video, audio, and data from local and remote networked surveillance environments.

The GV-DVR includes a built-in video capture card, preinstalled surveillance software, and is based on an Intel® Pentium® 4 processor at 3.0 GHz, Intel® 865PE chipset, and 512 MB RAM in a 4U rack-mount chassis. It is designed to simplify integration with Point-of-Sale systems, license recognition systems, and centralized management system.

The system is a comprehensive and powerful DVR solution that can transmit video, audio, and data over the Internet to a Webcam, Geovision Center V2 central monitoring station, Geovision Vital Sign Monitor (VSM), handheld device, or Smartphone.

Features and capabilities include:

- DVD recovery in case of failure
- GV-Keyboard and IR remote
- HDD of a maximum size 1600 GB with 4 CPU cooling fans
- Recording speeds: 480fps (NTSC)/400fps (PAL); 240fps (NTSC)/200 (PAL); 120fps (NTSC)/100 (PAL)
- Live display 480fps (NTSC)/400fps (PAL)
- Maximum video resolution 720x480 (NTSC), 720x576 (PAL)
- Screen resolution 1280x1024
- 16 video and 16 audio inputs, one TV output
- Enhanced network security with RSA encryption

Flexible combinations of specifications and accessories are provided to meet a broad range of specifications and budget requirements.

www.geovision.com.tw/002/GV-System.htm



Giantec Inc.**tracer3000 Plus* Mobile Digital Video Recorder Systems**

The Giantec tracer3004 Plus* series is a new modular platform that enables system integrators to meet a broad range of digital security surveillance requirements. The system uses hard disk drives instead of VCR tapes to store recorded video and provides four channels of camera input, four channels of audio and video input (including one channel video loop-back function).

Combined with an external wireless transmission system, the tracer3004 Plus is an ideal solution for real-time surveillance of public transportation systems, including police vehicles, cash carriers, ambulances, patrol wagons, fire engines, and other fleet management applications. Giantec tracer3000 Plus* series also includes the tracer3008 Plus* system with eight channels of video input.

The tracer3004 Plus system uses digital technology for high-quality image recording and features real-time triplex (live/recording/playback) mode and Motion-JPEG (M-JPEG) compression. The system supports frame sizes including 640x480, 640x240, and 320x240 with a recording rate of 100fps. Recording modes include continuous, motion-detection, and scheduled recording.

The system includes an easy-access removable 2.5 inch hard disk and can display one or four video windows simultaneously. The tracer3004 includes an easy-to-use IR remote control unit and supports GPS and Wireless LAN access. The unit can be remotely controlled using RCC software over a LAN or the Internet.

The Intel® architecture platform design includes a Mobile Intel® Celeron® processor to enable robust floating-point operation and flexible I/O support.

www.giantec.com.tw/products/products.htm

**Hikvision****DS-4000HCI, DS-4000HTI Video/Audio Compression Board* Series****DS-8000HCI, DS-8000HSI, DS-8000HFI Embedded Net DVR/DVS*****DS-8001SI, DS-8004SI Video Server***

Hangzhou Hikvision Digital Technology Co., Ltd. Specializes in the development of digital video and audio compression products to meet the growing demands of the worldwide digital security surveillance market segment.

The Hikvision product line is designed to meet the requirements for powerful enhanced CCTV and local or remote digital surveillance systems to deliver improved image and voice quality. Hikvision solutions include an embedded operating system, embedded microcontroller (MCU), high-performances DSP-based hardware compression, and powerful storage and Web support capabilities.

- Hikvision video servers adopt embedded real-time multitasking operation system (RTOS) and an embedded Intel® architecture processor that efficiently improves system performance. Software is burned in flash memory to improve system reliability. The video server simultaneously compresses video and audio signals using the H.264 hardware compression standard. It transmits the compression at bit-rate through network, enables real-time video and audio preview, supports streaming protocols, a Web browser with bi-directional voice communication, and includes multilingual support.
- Hikvision network disk video recorders use the most advanced technology available in the information industry such as video/audio encoding/decoding, hard disk recording, and TCP/IP.
- Hikvision compression boards utilize the H.264 (MPEG-4/part10) video compression algorithm and OggVorbis* audio compression technology.

Hikvision designs PC-based DVR solutions based on Intel architecture embedded system boards.

www.hikvision.com



HumanScan BioID* SDK 3.1

The HumanScan BioID* SDK 3.1 (Software Development Kit) offers flexible and scalable multimodality with three biometric categories:

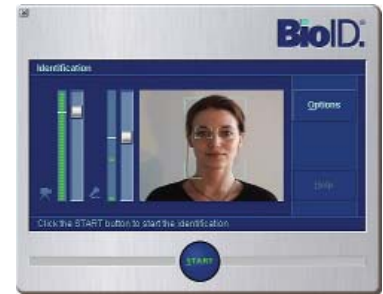
- Face recognition (static biometrics)
- Voice recognition (dynamic biometrics)
- Lip movement recognition (dynamic biometrics)

BioID is designed to be easily integrated into existing network applications and protection systems to greatly enhance security, privacy, and user convenience. The SDK enables developers to create DSS and other applications that can rapidly verify the identity of a subject based on appearance, voice, and lip movement, or by any combination of the three characteristics.

BioID's multimodality ensures high recognition accuracy, tolerance, and maximum access protection. The scalability of BioID offers one of the most optimum Equal Error Rates among all the biometrics known to date. BioID SDK 3.1 can be implemented anywhere human subjects must be clearly identified. It can be used by itself or in conjunction with applications where conventional protection devices including PINs, passwords, keys, or cards are used.

The sophisticated algorithm offers high recognition speed and accuracy, and permits a potentially unlimited number of users. To help ensure optimum performance, reliability, and availability, HumanScan's solution is based on standard Intel® architecture platforms, with no specific biometric hardware required. Standard Web cameras and microphones are available at low cost, and are pre-installed on many systems.

www.humanscan.com



Huper Laboratories, Ltd. huperDVR* 2400

Huper Laboratories is a leading provider of media compression, visual detection, and video surveillance solutions. Digital surveillance places exceptional demands on a digital video recorder:

- Reliability and performance (more frame rate and higher resolution)
- HDD space for data storage
- Easy-to-use user interface

Huper DVR products are based on Intel® processors with Hyper-Threading Technology,³ which enhances performance to enable high frame-rate with improved video resolution, while reducing CPU utilization. Huper's proprietary compression engine, HM MPEG-4,* provides excellent compressed video quality with data size of 1.67 KB per frame at 320x240 resolution, consuming less storage space, while preserving excellent image quality.

Application areas include anti-terrorism, smart search, flow counting, auto tracking on Pan/Tilt/Zoom (PTZ) camera, visibility enhancement, remote PDA and mobile phone viewing, and text over video for POS solutions.

The huperDVR* 2400 is a 16-channel DVR that offers real-time video/audio recording and playback. It integrates traditional security devices, controls remote PTZ cameras, and features remote monitoring, recording, and control of multiple sites simultaneously.

www.huperlab.com



iBASE Technology, Inc.**DB100* All-In-One DVR Motherboard**

The iBASE DB100* DVR motherboard is an IPC-grade design with built-in video capture and MPEG-4-like compression capability. It provides an integrated “all-in-one” solution for the digital security surveillance market segment.

Designed to meet the needs of system integrators in the DSS market segment, the DB100 is designed for enhanced platform stability, reliability, and cost-effectiveness.

Benefits include:

- All-In-one motherboard designed to minimize integration effort and reduce costs
- Thoroughly tested, highly integrated board maximizes system reliability and compatibility, while enabling fast system designs and shorter time-to-market
- Conformance with IPC-grade product design rules enhances quality and system reliability

The DB100 motherboard is based on the Intel® 865 chipset and Intel® Pentium® 4 processor, and is designed for future upgradeability. Together, the Intel® processor and chipset provide validated platform building blocks with the reliability, stability, and product quality required in critical industrial-grade and outdoor applications.

www.ibase.com.tw

**IntelliVision****Intelligent Video Suite***

IntelliVision Intelligent Video Suite* performs intelligent video analysis and fully automates video monitoring of security cameras. It automatically tracks and identifies objects, analyzes motion, and extracts video intelligence, issuing real-time alerts when exceptions occur. The system analyzes and mines video data and outputs the results in real time and/or stores them in a database for future use.

By automating video analysis and security alerts, Intelligent Video eliminates the need for manual labor and associated monitoring costs. It can increase the productivity and efficiency of existing video surveillance systems and the people who monitor them. These solutions can be customized and deployed to meet specific security needs.

IntelliVision capabilities include:

- Intelligent Video Motion Detection
- Perimeter monitoring
- Intrusion detection and monitoring of secure areas
- Detection of unattended or abandoned objects
- Tracking people and vehicles
- Motion and behavior analysis
- Asset protection

IntelliVision Intelligent Video is an open architecture solution that works with Intel® architecture computing platforms, primarily those based on Intel® Xeon® and Intel® Pentium® 4 processors, for high levels of accuracy and reliability.

Customers include the US Department of Homeland Security, Transportation Security Administration, National Security Agency, the US Navy, and major private sector users.

www.Intelli-Vision.com



iOmniscient IQ Series*

iOmniscient's IQ Series* of intelligent video surveillance software transforms any video surveillance system into a tool for preemptive action. The system enables preventative security. By alerting operators in real time rather than after the event, the system helps prevent incidents and enables security personnel to quickly apprehend perpetrators.

The IQ Series is based on patented technology that can detect objects left in or removed from a crowded scene. The system can also detect theft, graffiti, vandalism, slips and falls, and other forms of unauthorized, potentially hazardous, or inappropriate behavior. It can see objects that are invisible to the human eye and count accurately in a crowded scene. The iOmniscient counting system can also be used for crowd management, traffic control, as well as market research.

Building blocks of these high-performance platforms include the Intel® Pentium® 4 processor and Intel® Xeon® processors in single, dual or quad-processor platforms.

The product has won numerous "Best New Security Product" Awards and "Most Innovative" Awards in the USA, UK, Europe, and Asia.

Major customers include airports, rail and port authorities, shopping centers, police agencies, defense installations, museums, government facilities, and private organizations concerned with security, theft, vandalism, and public liability.

www.iomniscient.com



Lex PC104-Plus* Interface DVR Card: D878A Series*

As data becomes digitalized and high-speed networks are rapidly implemented, Digital Security Surveillance (DSS) systems are evolving from traditional analog closed-loop systems to all-digital, open-loop systems with integrated high-speed network connectivity.

Lex Computech Company's FI855A* Main Board is able to meet the demanding requirement of DSS applications with the core processing performance of the Intel® Pentium® M processor and on-board Gigabit LAN capability.

The current DSS market segment includes traditional analog CCTV systems, storage implementations, standalone DVRs (which store data on a hard disk), and PC-based DVR systems. Compared to a standalone DVR, a PC-based DVR system provides the advantage of programmability to implement added functions. This flexibility enables users and system integrators to develop and install value-added application software based on their unique requirements.

Lex Computech's PC-based platforms provide:

- Support for multiple operating systems including Microsoft Windows*, Linux* OS, and embedded operating systems
- A flexible applications development platform
- Standards-based communication with other devices
- Standard PC components including widely available and affordable DDR RAM and hard disk drives
- Flexible expansion capability: standard PCI, Mini PCI, PC104-Plus* interfaces
- Powerful computational performance based on Intel® architecture, with low power consumption and high reliability

www.lex.com.tw



Messo

SRD316+ and SCR311 CCTV System*: 16-Channel DVR and Day/Night Camera

All fine digital video cameras share one important similarity—cost effectiveness in image recording and storage. The Messo SCR311* day/night camera is designed for low-illumination environments. This camera remains in color mode during the day or with sufficient illumination. During night time or insufficient illumination, this camera raises its sensitivity and reduces noise and required storage space.



The SRD 316+* DVR offers a more stable and enhanced image processing because of the embedded Linux* operating system. The system is designed for 24-hour non-stop operation in applications where system stability and reliability are critical.

SRD 316+ is capable of 1024x768, maximum display resolution, and recording resolution of 640x480 at 15fps with 1-channel audio recording. Quadruple simultaneous functions include backup, recording, playback, and network access.

The SRD 316+ provides stable and fast data processing enabled by the combination of the embedded Linux operation system and Intel® architecture processor:

- Storage: With the 500 GB hard disk and MPEG-4 compression technology, recoding time can be as long as three months when the camera is set in normal mode. Users do not need to worry about storage-related problems because the oldest data will be automatically deleted if the HDD reaches capacity.
- Remote Surveillance: Built-in software enables the SRD316+ to offer remote surveillance functions, such as remote setup, monitoring, Pan/Tilt/Zoom (PTZ) control, and data backup so that users can control the surveillance system anywhere.

www.messo.com

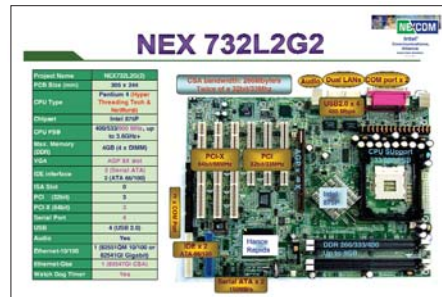
Nexcom

NEX732L2G*

The Nexcom NEX732L2G* provides the bandwidth of PCI-X* and the performance of AGP8X to optimize video capture performance for Digital Security Surveillance.

Key benefits include:

- 8x AGP for high-performance video capture performance
- PCI-X to provide wide video data transfer rate
- 16 Channels at 320x240 and 480fps to support live display and recording capability
- 800 MHz FSB, supporting Intel® Pentium® 4 processors with core speeds up to 3.6 GHz
- Maximum of 4 GB DDR memory support
- Communications Streaming Architecture (CSA) bandwidth: 266 Mbyte/s (2 x 32-bit/33 MHz)
- Serial ATA support (150 MB/s)



Platform building blocks include the Intel® 875P chipset, optimized for the Intel Pentium 4 processor supporting Hyper-Threading (HT) Technology;³ the Intel® 82547GI Gigabit Ethernet Controller full-duplex Gigabit Ethernet performance; and the Intel® 82551QM Fast Ethernet Multifunction PCI/CardBus Controller.

<http://webserver.nexcom.com.tw/0330/nexweb/weben/prodview.aspx?prodidx=10000269&stylesheet=prodview>

NICE

NiceVision* Smart Video Solutions

NiceVision* smart video solutions enhance security and improve operational performance by transforming passive CCTV infrastructures into automatic threat detection and management systems.

NiceVision provides a complete video solution from threat detection to resolution and operational improvement:

- Proactive automated event/threat detection using real-time video analytics and computer vision technologies.
- Scenario reconstruction for instant verification.
- Smart event management and resolution, leveraging the network to enable remote management and surveillance.
- After-the-fact investigation and analysis to improve security.
- Operational performance improvement by uncovering operational patterns (such as traffic congestion), enabling efficient resource allocation and capacity planning using video analytics to track and count people, vehicles, and objects.



Platforms

- NiceVision Pro*: enterprise-class DVR
- NiceVision Alto*: multi-purpose DVR
- NiceVision Harmony*: low-cost DVR
- NiceVision NVSAT*: smart Encoder*
- NiceVision VMX*: Virtual Matrix solution
- NiceVision NVIP*: NVR solution
- NiceVision CSS*: central storage solution

Video Analytics Applications

- Intrusion detection
- Baggage detection
- People counting
- Tail-gating
- Vehicle detection
- Line control

NiceVision solutions deliver class-leading video quality, with efficient storage and enterprise-grade IP networking, built around proven technologies including MPEG-4 video compression and NiceVision “Level-of-Service” resource management.

For maximum reliability and performance, NiceVision specifies Intel® Celeron® and Intel® Pentium® 4 processors.

NiceVision customers include airports, transportation and transit terminals, gaming facilities, government, utilities and critical installations, corporate campuses, retailers and shopping centers, financial institutions, law enforcement, and correctional facilities.

www.nice.com/nicevision

Phoenix

Phoenix TrustedCore* Embedded

Phoenix TrustedCore* Embedded manufacturers of Intel® architecture digital security surveillance systems to secure their entire platform from the firmware BIOS level.

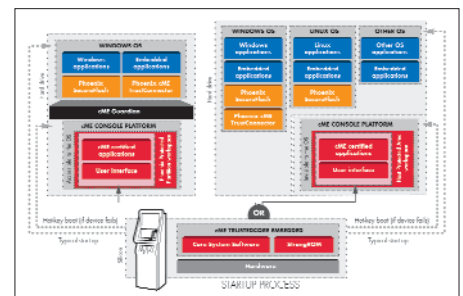
The Phoenix TrustedCore Embedded solution includes support for a protected application area, and is designed to meet the requirements of embedded storage management and recovery applications. In combination with the built-in security kernel, the environment is protected from malicious attack or accidental mischief.

Phoenix TrustedCore Embedded supports authentication of both Phoenix FirstWare* and certified partner applications, enabling Phoenix manufacturing, OEMs, and system builder partners to deliver a complete and secure execution environment for built-in utilities and applications.

Benefits in digital security surveillance applications include:

- Native Intel architecture system hardware attributes on legacy systems to strongly encrypt and strengthen storage for private keys.
- Seamless, native Intel architecture device authentication through built-in prevention of private key copying, and by associating the key with only its host device.
- Intelligent installation, automatically detecting underlying hardware and firmware, optimizing security for the platform.
- Fully integrated with Microsoft Cryptographic API (CAPI)* to support any digital certificate-aware applications.
- Compliance with requirements for Microsoft compatibility and for US government cryptographic security.

www.phoenix.com



Portwell, Inc.**PVS-2540* and PVS-2540M* DSS Subsystems**

In Digital Security Surveillance products, the legacy PCI bus can impose bandwidth bottlenecks in video I/O interfaces. The scalable PCI Express* bus interface overcomes these bandwidth limitations and helps ensure enhanced video display quality.

The use of Portwell's PCI Express system board and video capture card enable breakthrough I/O bandwidth with support for up to 16 channels 720x480 video in NTSC resolution, up to 30fps.

The Portwell PVS-2540* system is based on the Intel® 915GV chipset, including the Intel® ICH6 I/O controller hub. Combined with Portwell's PCI Express hardware or software video capture cards, the platform provides an extremely reliable DSS subsystem.

The PVS-2540M* system is based on the Intel® 915GM chipset, including the Intel ICH6. Combined with Portwell PCI Express video capture cards, the platform enables a high-performance and low-power DSS system.

The chipsets used in both platforms include an integrated Intel® Graphics Media Accelerator 900 and support four PCI Express x1 and four PCI master interfaces.

The application software includes infrared receiver control, scheduled recording, cyclic recording, event recording, motion detection, and Pan-Tilt-Zoom (PTZ) control functionality, with a PDA display and event notification through e-mail.

www.portwell.com.tw

**QNAP Systems, Inc****NAS-4300S* Network Attached Storage with 16-port Switch**

Surveillance systems required to run 24 hours per day create a large volume of image files. With eight hot-swappable HDD drive bays, QNAP NAS-4300S* supports up to 2.4 terabytes of capacity for long-duration image recording. For remote monitoring, the NAS-4300S provides the user-friendly interface and Web management capability, enabling an administrator to configure the system through an Internet connection.

Equipped with 16-port Layer 2 switch, dual Gigabit Ethernet LAN ports, and triple power supplies, the NAS-4300S is powered by a high-performance Intel® Pentium® 4 processor. The platform is provided in a 19-inch, 3U rack-mountable chassis.

**VioCard-300* MPEG-4 Network DVR Card**

QNAP VioCard-300* is an independent monitoring system based on the Intel® Celeron® processor, memory, image conversion chipset, 10/100/1000 Mbps LAN port, built-in operating system and an ActiveX* control monitoring application. VioCard-300 makes it easy to build multi-channel DSS systems in a standard modular industrial chassis.

With its embedded 4-channel management software, the VioCard-300 is an independent monitoring system, with capabilities that include video decoding, MPEG-4 video streaming, and video display. The captured images are transferred via a network so administrators can access, configure, and manage the system by authorized account and password via a Web browser.

The VioCard-300 can be expanded to build a DSS system with over 16 channels, and is ideal for monitoring multiple areas, different buildings, or widely dispersed locations. The Intel Celeron processor provides floating-point performance required for optimum image analysis.

www.qnap.com.tw

S2 Security Corporation S2 NetBox*

The S2 NetBox* is an IP-based, scalable, integrated physical security management system. It handles credential-based access control, alarm monitoring, video surveillance, and temperature monitoring. Multiple S2 NetBox units can be used to achieve complex scaling for enterprise-wide deployments.

The S2 NetBox is the industry's first integrated physical security management system implemented as a solid-state network appliance. Because of its form factor and architecture, it can be used cost effectively in single-facility applications, and is also capable of scaling to global networks.

There are several key differences between the S2 NetBox and other integrated physical security systems:

- It is a network appliance that can be connected to any IP network, and it can be safely accessed from any location with a network connection. Internal data security measures ensure that the system is safe for deployment on public networks.
- The S2 NetBox is operated from an easy-to-use Web browser. There is no software installation required on any client computer.
- The S2 NetBox is solid-state, including on-board solid-state storage. Because of its solid-state design, MTBF (mean time between failures) exceeds the typical life of the application.

The S2 NetBox utilizes the Intel® IXP425 processor and Intel® Flash memory. The Intel® processor was selected because of its speed, small footprint, and networking capabilities.

www.s2sys.com



Vidient SmartCatch* 2.5

Vidient SmartCatch* software monitors, tracks, and identifies objects for security policy violations through existing CCTV and DSS infrastructure. SmartCatch includes a set of advanced patents-pending video algorithms designed to perform complex behavioral analysis, track multiple objects, and simultaneously identify security threats inside or outside, regardless of weather conditions.

SmartCatch applications include:

- Perimeter intrusion detection
- Crowd control
- Humans and vehicles loitering detection
- Tailgating detection
- Suspicious stationary vehicles detection
- Unattended article detection
- Exit lane protection
- Asset protection
- Turnstile-hopping detection



Used by major airports, transportation providers, and enterprises, SmartCatch actively monitors suspicious behaviors, potential threats, and intrusions captured on CCTV surveillance cameras. The solution can overcome limitations of conventional DSS systems resulting from a camera view that is not always on screen, too many screens for efficient monitoring by available security personnel, limited human attention span, and limited personnel resources.

Vidient's video algorithms are designed for accurate monitoring of policy infractions, both indoors and outdoors under complex environments, while minimizing false alarms. The solution monitors, analyzes, and interprets activity in real-time, eliminating errors in judgment or policy interpretation.

SmartCatch works with existing camera and surveillance infrastructures and easily integrates with card access readers, biometrics, and other sensor devices. As a policy-based solution, SmartCatch enables users to define rules to classify and detect problem behaviors and initiate appropriate alerts for easy security policy implementation. SmartCatch runs on industry standard scalable hardware platforms based on Intel® Xeon® processors at 2.88 GHz or higher.

www.vidient.com

Visiowave (part of GE Security)**VisioWave Discovery 2400 Series***

The VisioWave Discovery 2400 Series* performs professional video streaming, recording, and content analysis with an unequalled price/performance ratio for digital video networks.

Digital video networking involves encoding and compressing video streams from a variety of sources including cameras, DVD, VCR, satellite TV, and CATV, and transmitting them over the network. VisioWave provides highly integrated, cost-effective, and intelligent solutions for networked video security applications. The compact, high-density platform is highly maintainable and designed for easy deployment and integration with networked digital video equipment.

The Discovery 2400 is available in four different configurations and supports up to 24 simultaneous video ports with integrated RAID recording and video content analysis capabilities:

- High-density video security equipment—up to 24 video ports in a 19-inch, 3U rack-mount chassis
- Integrated recording (eight hard disks with RAID 5)
- Integrated intelligence for video content analysis

The VisioWave hardware platform is based on dual Low Voltage Intel® Xeon® processors at 2.8 GHz, the Intel® E7520 chipset, and the Intel® 82546GB Dual Port Gigabit Ethernet Controller. Low voltage Intel® processors accommodate power supply unit limitations while delivering high performance and reliability.

Major customers include airports, metro transportation and rail facilities, industrial sites highways, and urban surveillance installations.

www.visiowave.com



For more information, please visit
www.intel.com/info/dss

¹Intel® Active Management Technology is available on select systems that contain an Intel® 955X, 945G or 945P Express Chipset and Intel® PRO/1000 PM network connection. Appropriate third-party software is required to take advantage of Intel AMT. Check with your system provider for availability. The system must be connected to a power source and an active LAN port.

²Look for systems with the Intel® Pentium® 4 Processor with HT Technology logo which your system vendor has verified utilize Hyper-Threading Technology. Performance will vary depending on the specific hardware and software you use. See <http://www.intel.com/info/hyperthreading/> for information.

³Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting Hyper-Threading Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See <http://www.intel.com/info/hyperthreading/> for more information including details on which processors support HT Technology.

⁴Intel® EM64T requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. See www.intel.com/info/em64t for more information including details on which processors support Intel EM64T or consult with your system vendor for more information.

⁵Intel Technology Journal, Volume 6, Issue 1 p.11.

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