

Integrating Digital Surveillance with POS

By Robert Loh, special to SECURITY magazine

Digital security surveillance (DSS) has become an essential security tool for homes, retail establishments and public buildings of all kinds. DSS platforms combining high performance processors with low power chipsets have prompted interest among point of sale (POS) system manufacturers worldwide. This article discusses key aspects of the DSS + POS platform combination, which offers integration of fast MPEG4 encoding, wireless access and software-triggered system alarms.

The need for better security is rising in the retail world based on three basic scenarios:

SCENARIO 1: Many retail organizations' outlets are open for 24 hours a day, often managed by only one or two employees.

SCENARIO 2: Automated cashier and check-out technology is spreading rapidly in technologically advanced countries and requires security video for monitoring purposes.

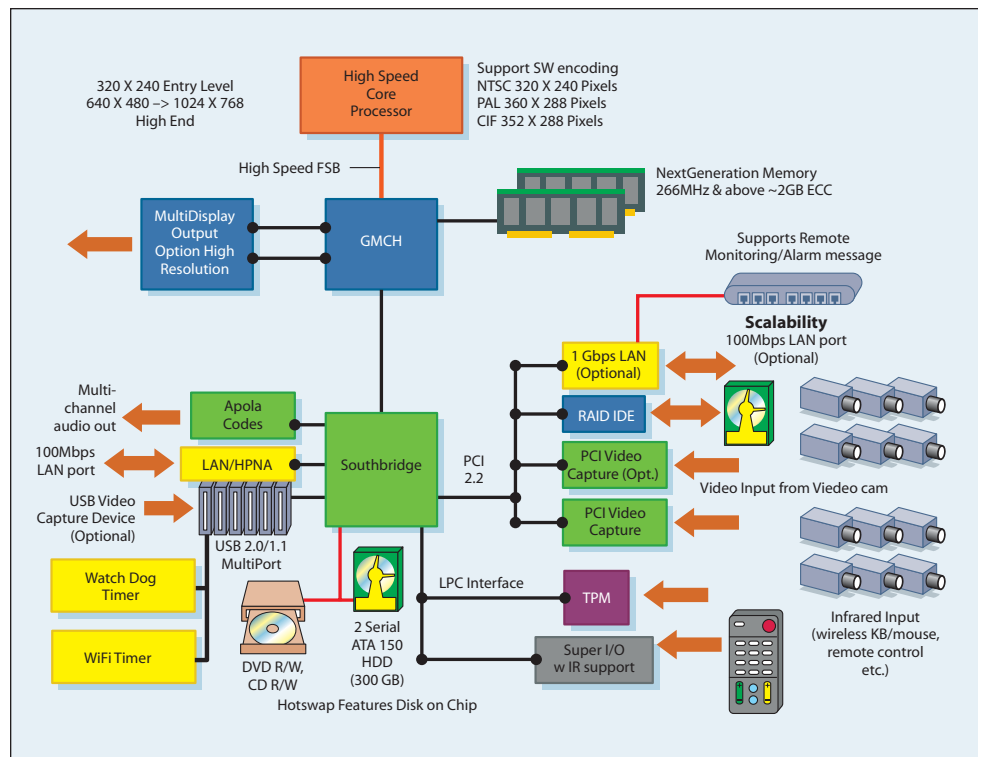
SCENARIO 3: Security video within cashier locations ensures price-accuracy protection for customers as well as security for employees.

In general, two types of digital security surveillance exist in the market today:

- Digital video recorder (DVR) with hardware digital signal processor (DSP) encoders to perform MPEG (Motion Picture Expert Group) encoding
- DSS based on encoding software running on today's high performance processors

Software Encoding vs. Hardware Encoding

Integrating DSS and POS can provide a



Software encoding has become increasingly attractive, as the speed of today's high-performance processors has surpassed 3GHz frequency. By contrast, hardware encoding has several key disadvantages, including independent DSP components, which "lock" to specific MPEG formats. Programmable DSPs are high priced.

number of benefits important in retail settings, including lower support cost, less counter space and easier networking.

DSS platforms based solely on software encoding can be easily integrated into multiple platforms, including point of sale systems. These platforms enable extension to multi-function digital

security surveillance systems.

Software encoding has become increasingly attractive as the speed of today's high performance processors has surpassed 3GHz clock frequency. Platform upgradeability is relatively easy, with processor stock keeping units (SKUs) providing scalability from 1 to 3GHz and beyond.

By contrast, hardware encoding has several key disadvantages, including:

- Some independent DSP components “lock” the system to specific MPEG formats
- Some programmable DSPs are costly to implement and require programming set-up code
- All DSP encoders require independent SDRAM (typically 64MB)

DSP components have limited support life, and this requires software updates to accommodate new DSPs.

Multi-function Digital Security Surveillance

DSS + POS systems using a processor with hyper-threading technology (HT Technology). HT technology enhances overall computing performance with instruction level parallelism (ILP). Operating systems see dual-logical CPUs, providing better stability and applications performance required for running DSS + POS together as two execution tasks.

This platform provides the flexibility of software encoding (MPEG1, 2, 4++) while enabling multi-functionality with dual independent displays. The chipset supports HT technology and ECC memory support, critical for “cash register” transactions, to ensure minimal data corruption.

Key benefits of HT Technology in DSS + POS applications include higher performance gain through multithreaded applications. The chipset enables two independent displays – allowing for surveillance monitoring on one screen and POS transaction monitoring on another. No additional MPEG encoder hardware components are required.

Customers using conventional hardware-based encoding approaches have indicated concern over the inflexibility to address frequent MPEG encoding software changes. Production costs of special “MPEG encoding” cards are typically higher than for a DSS + POS platform. For (independent software vendor), the DSS + POS platform allows them to spend more time focusing on software enhancements rather than software re-coding and driver creation.

On the Market

The Intel 852GME chipset also provides DDR with ECC memory support. DDR of 200/266/333Mhz is supported up to a maximum of 2GB. ECC on DDR memory provides the required level of data integrity during transactions.

Dual Independent display capability on the chipset enables integrated graphics with a 32-bit graphics core engine running at over 200MHz. The graphics engine supports DirectX9*. Support is provided for dual display extended to UXGA & SXGA+ standards. The 852GME has 2 digital video out ports compliant with the DVI 1.0 standard.

In addition, the Intel Pentium 4 processor is built on Intel NetBurst microarchitecture, which provides enhanced video encoding multimedia capability. An Intel digital security surveillance platform based on this processor and micro architecture with the Intel 852GME chipset offers several enhancements including: support of 533 or 400MHz system bus hyper-pipelined technology, more store buffers, larger L2 cache, and streaming SIMD 2 technology integration.

These platforms are capable of maintaining quality DSS video capturing and recording through the use of software multimedia encoding technology. They can help meet the demand for digital security surveillance as an essential security tool for homes, schools, retail shops, hospitals, airports and offices around the world. ❖

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