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## Integrating Video Analytics Into DVRs

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### INTRODUCTION

From the advent of video processing algorithms for CCTV surveillance systems, video analytics continues to be an emerging technology in the security market. As it grows, new uses specifically aimed at market segments have emerged, giving a greater chance of extracting more practical and useful information.

As this technology expands, difficulties remain on the best way to add video analytics into both new and existing digital video recording devices (DVRs). This white paper discusses integrating video analytics into DVRs and why the Aexeon Analytix product family is the most cost effective solution.

### AEXEON ANALYTIX

Aexeon Analytix is a unique solution to adding video analytics to DVR applications. It is a PCI video capture and processing add-in PC card that can be installed in any Windows® 2000 or Windows® XP system with an available PCI slot. Aexeon Analytix comes equipped with up to four Texas Instruments DM642 video processors for real-time video analytics. The Aexeon Analytix family is available in two and eight channel versions, named the Aexeon Analyx 200 and Aexeon Analytix 800.

### PRODUCT FEATURES

#### No System Processor Usage

With traditional analog DVRs, video data is passed to the system via a video streaming card. This video streaming card digitizes the incoming camera video and transfers the digital data to the host processor where it can be further manipulated. Depending on the system interface type (PCI or PCI Express), hundreds of megabytes of video data may need to be sent to system memory for host processing tasks such as compression and storage. In these systems, adding video analytics algorithms to an already taxed system can cause instability.

Aexeon Analytix eliminates this problem by performing all processing on board. Since all processing is done on the Aexeon Analytix, the host processor of the DVR does not need to intervene. This allows the existing DVR application to be unaffected by the analytics routines running on the DM642 processors.

## Secure Location

Axeon Analytix is designed to be installed “in the box” at the central server or individual DVR unit. This provides a more secure physical location of the analytics device than with using edge devices such as an intelligent camera or IP converter.

## Reduced Cost

By putting the analytics in the DVR or server, per channel costs are also reduced since each DM642 can accommodate two channels of real-time video processing. The four Texas Instruments DM642 video processors on the Analytix 800 can accommodate eight channels of real-time embedded video analytics.

## Expandability

Adding additional channels of video analytics is possible by simply installing additional Axeon Analytix boards. Users can also choose to use only part of the available video inputs on a particular Axeon Analytix model for analytics and activate those channels at a later time.

## SYSTEM INTEGRATION

### Connecting Video

Integrating the Axeon Analytix into a DVR is simple. Video can be connected externally through BNC connectors on the bracket or internally through a video header connector. If the BNC connectors are used, an available BNC Expansion Bracket is used for the additional four inputs of the Axeon 800. Figure 1 below shows the Axeon Analytix 800 board.

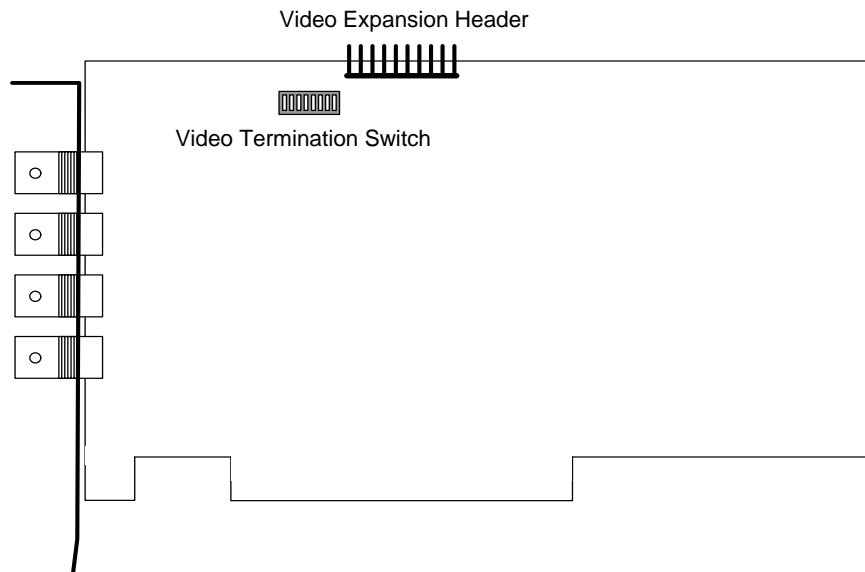
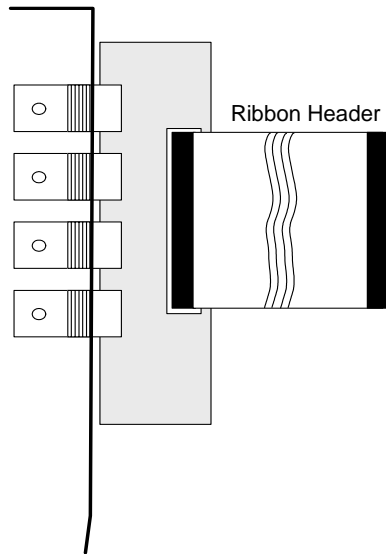


Figure 1. Axeon Analytix 800 Expansion Header

Figure 2 below shows the available BNC Expansion Bracket. This bracket is installed in an empty slot in the DVR and the ribbon connector is attached to the Aexeon Analytx.



**Figure 2. Aexeon Analytx Expansion Bracket**

### **Selectable Video Termination**

Aexeon Analytx products provide selectable video terminations per camera input for flexibility in system configuration. Users can select to loop video through the Aexeon Analytx or select to terminate. The termination switch will provide the  $75\Omega$  impedance needed for proper video levels.

## OBJECTVIDEO ONBOARD

ObjectVideo OnBoard is the industry-leading video analytics software for digital signal processors that incorporates award-winning technology as an application embedded inside DVRs. Axeon Analytix fully supports the entire feature set of the ObjectVideo OnBoard Software Suite.

By incorporating ObjectVideo OnBoard onto Axeon Analytix, integrators and OEMs can provide focused, vertical market products and allow end-users an easy upgrade path through feature activation. Features of the ObjectVideo OnBoard Software Suite include ...

- OBJECT DETECTION, CLASSIFICATION, & TRACKING
- FLEXIBLE FEATURE SETS
- EASY UPGRADE PATH
- RULE-SPECIFIC INTELLIGENCE
- EVENT COUNTING SUITE

### Software Development Kit

The open architecture of the ObjectVideo system empowers OEMs to quickly and easily integrate ObjectVideo technology within their Axeon Analytix DVRs. The ObjectVideo SDK includes functionality for re-branding existing interfaces, designing and building new GUIs, or integrating with existing user applications.

### Standalone or Remote Configuration

Axeon Analytix can be installed in either a standalone DVR or in a networked configuration. The standalone configuration is when the Axeon Analytix with ObjectVideo OnBoard processing and the ObjectVideo Software is installed in a single machine. Figure 3 below shows the standalone configuration.

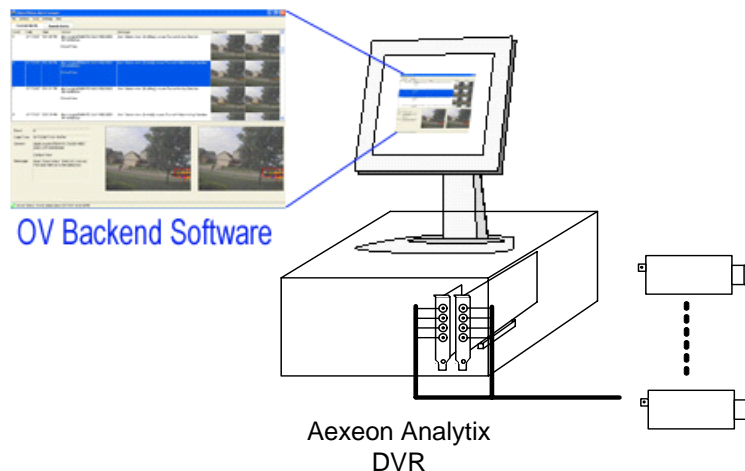


Figure 3. ObjectVideo OnBoard Remote Usage

Accessing the Axeon Analytix remotely is accomplished by the Analytix Communication Provider. This software allows for the analytics data and accompanying video to be viewed by a client machine over a TCP/IP network. Figure 4 below shows the network diagram of Axeon Analytix DVRs.

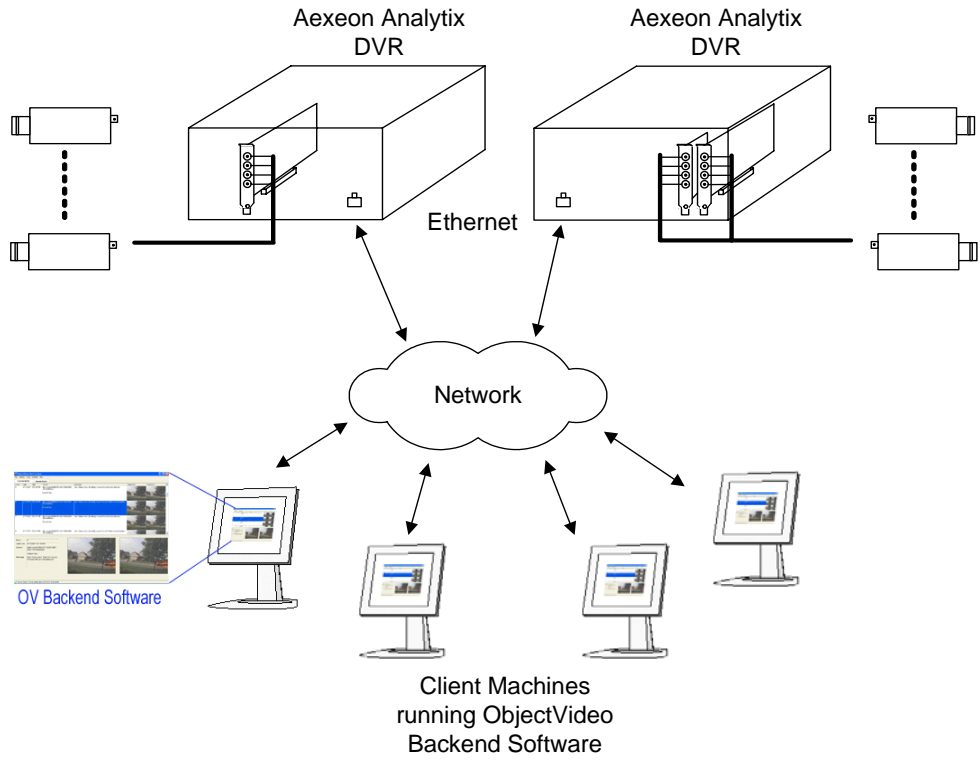


Figure 4. ObjectVideo OnBoard Remote Usage