



# Real-time Artificial Intelligence Accelerates the Future of Home Security

Xilinx Alveo™ U250 Accelerator Cards Power SK Telecom’s Real-Time, AI-based Commercial and Home Security

**AT A GLANCE:**

**Customer:** SK Telecom is the largest mobile operator in Korea with nearly 50 percent market share. Building on its strength in mobile services, the company is also creating unprecedented value in diverse ICT-related markets including AI enabled services for media, security, and commerce.

**Industry:** Cloud and Telecommunications

**Employees:** 5,377

**Location:** South Korea



**CHALLENGE:**

Monitoring over a million commercial and home camera systems in real-time is an ideal application of increasingly accurate AI capabilities but creates excessive strains on the data center. Analyzing video also represents yet another unstructured data type to process in real-time. At the core of SK Telecom’s services, there is a single AI inference accelerator called AIX to handle services spanning speech recognition to video analytics, which requires a single underlying compute platform.

**SOLUTION:**

SK Telecom chose Xilinx to accelerate their real-time AI inference stack utilizing Xilinx Alveo™ U250 data center cards, providing up to 10X higher throughput performance and 16x better power efficiency for AI-based speech translation and over 3X higher throughput for video analytics pipelines as compared to GPUs.

**RESULTS:**

Improved data center throughput and accuracy enabled SK Telcom to provide more customers with real-time AI-based security services, at a lower total cost of ownership (TCO), where all were built on a programmable hardware and software platform to handle the evolving workloads of today and tomorrow.

**CHALLENGE:**

SK Telecom’s Real-Time AI-based Physical Intrusion and Theft Detection Service, TView™, monitors over a million of commercial and in-home camera systems in real-time and dispatches security guards under physical intrusion circumstances.

AI technology enables the automatic detection of images that can potentially represent a security breach, sending alerts to homeowners, security monitoring services or law enforcement, allowing for a more rapid response. In addition, AI can rule out false positives by utilizing camera image situation analytics to identify possible intruders from pre-identified images reducing the rate of false alarms. Further, AI makes it easier to scan through security footage to identify details, such as facial images or license plate numbers, increasing the likelihood of capturing the offender and recovering stolen property.

However, processing large volumes of data from thousands of cameras over deep neural networks necessitates a powerful AI accelerator to provide the necessary throughput and accuracy.

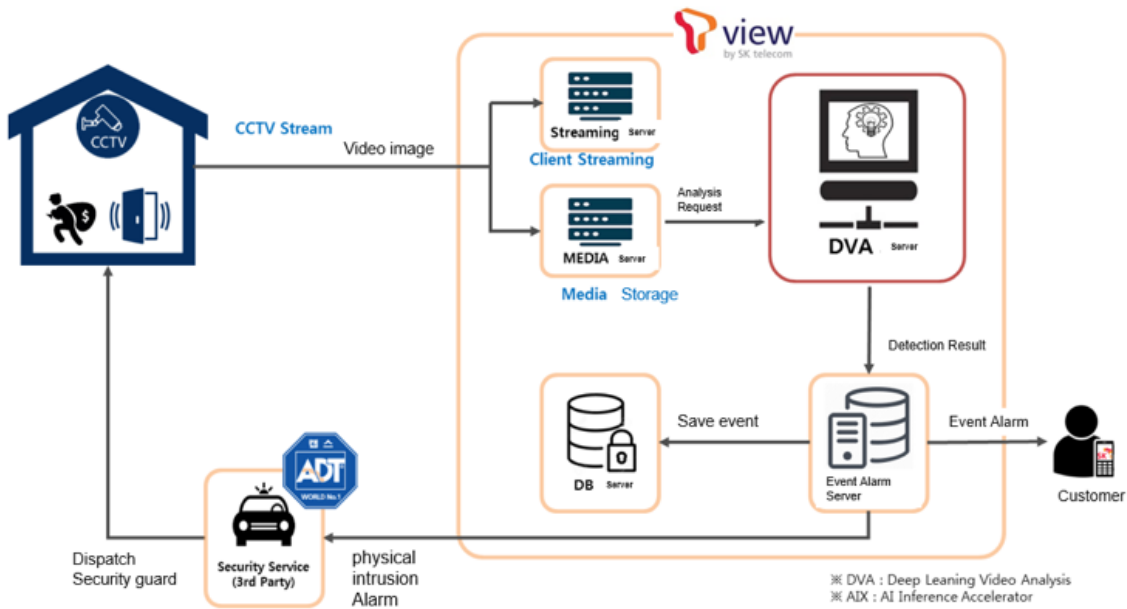


Figure 1. This diagram highlights the structure of SK Telecom’s AI-based Tview service.

To further complicate the situation, it will be necessary to build a single AI inference stack called AIX that needs to be able to handle real-time analysis of both video analysis as well as speech recognition, which requires a single underlying compute platform.

**SOLUTION:**

After the successful integration of Xilinx FPGAs to accelerate SK Telecom’s AIX inference stack that handles automatic speech-recognition (ASR) applications to accelerate NUGU, its voice-activated assistant, the mobile operator again turned to Xilinx to accelerate their data center.

Utilizing AIX based on Xilinx Alveo™ U250 accelerator cards that are designed to meet the performance and flexibility needs of data center AI workloads, SK Telecom takes advantage of 10X throughput improvement and 16x power efficiency for AI-based speech translation, and more than 3X higher throughput for video analytics pipelines, as compared to GPUs.

Built on the Xilinx 16nm UltraScale+™ architecture, Alveo accelerators are adaptable to change algorithms and acceleration requirements, enabling domain specific architectures to optimize performance for a range of workloads without changing hardware, while reducing overall cost of ownership.

“In the era of Artificial Intelligence, where new services are being deployed at unprecedented rates, we keep pursuing to innovate our cloud systems to deliver more value to our customers with more reliable and efficient services across diverse segments. AIX in collaboration with Xilinx represents one of our efforts to streamline the cloud system for AI services.”

**Park Jin-hyo, Head of ADT Caps and Head of Security Division of SK Telecom**



Figure 2. Alveo U250

**RESULTS:**

Running on servers in SK Telecom’s data center, Alveo U250 cards have demonstrated improved throughput and increased accuracy for Tview theft detection services, enabling the company to provide more customers with access to real-time, AI-based security services, and a more reliable defense against security threats.

**ADDITIONAL RESOURCES:**

[Learn More About Alveo Accelerator Cards](#) | [Press Release](#)

Corporate Headquarters  
Xilinx, Inc.  
2100 Logic Drive  
San Jose, CA 95124  
USA  
Tel: 408-559-7778  
www.xilinx.com

Xilinx Europe  
One Logic Drive  
Citywest Business Campus  
Saggart, County Dublin  
Ireland  
Tel: +353-1-464-0311  
www.xilinx.com

Japan  
Xilinx K.K.  
Art Village Osaki Central Tower 4F  
1-2-2 Osaki, Shinagawa-ku  
Tokyo 141-0032 Japan  
Tel: +81-3-6744-7777  
japan.xilinx.com

Asia Pacific Pte. Ltd.  
Xilinx, Asia Pacific  
5 Changi Business Park  
Singapore 486040  
Tel: +65-6407-3000  
www.xilinx.com

India  
Meenakshi Tech Park  
Block A, B, C, 8th & 13th floors,  
Meenakshi Tech Park, Survey No. 39  
Gachibowli(V), Seri Lingampally (M),  
Hyderabad -500 084  
Tel: +91-40-6721-4747  
www.xilinx.com