

CORNET ADVANCES SECURE COMMUNICATIONS SYSTEMS WITH AMD ADAPTIVE COMPUTING AND EMBEDDED PROCESSORS

CASE STUDY

Using AMD technology, Cornet develops rugged, SWAP-optimized platforms for mission-critical and high-reliability environments



Secure, reliable communication systems are essential in mission-critical environments where voice, video, and data must be processed in real time under demanding conditions. These systems require high performance, long product lifecycles, and strict size, weight, and power (SWAP) efficiency.

Cornet Technology India designs and manufactures communications equipment and embedded computing platforms that deliver secure data, video, and voice capabilities for high-reliability operations. The company works with AMD to develop single-board computers, communication switches, FPGA-based signal processing platforms, and rugged embedded systems built on AMD Artix™ FPGAs, AMD Kintex™ FPGAs, and AMD Ryzen™ Embedded processors. Together, these technologies support a scalable computing architecture designed for long-term deployment in secure operational environments.

A subsidiary of Cornet Technology USA, the company became an independent Indian entity in 2023 in alignment with the national “Make in India” initiative. Initially operating as a design house with products manufactured in the United States, the company developed switches for ship-to-ship and ship-to-shore communications before transitioning to local development and manufacturing to better serve domestic requirements.

Today, Cornet works with public-sector organizations and national research laboratories to support secure communications infrastructure and advanced system development. The same SWAP-optimized platforms are also positioned to support applications in transportation, airport safety and first-responder systems. Cornet Technology India is an ISO 9001:2015 certified company specializing in the design, development, and manufacturing of rugged embedded computing systems, FPGA-based signal processing platforms, AI-enabled edge solutions, and secure communication infrastructure for mission-critical and high-reliability environments.

CHALLENGE

Secure communication and embedded computing systems operating in high-reliability environments must meet strict SWAP requirements. Platforms deployed in ships, aircraft, and mobile ground units must be compact, rugged, and energy efficient while sustaining consistent processing performance. These systems are typically fielded within long-duration, public-sector programs that require processors and programmable logic devices with extended availability and stable roadmaps to reduce redesign risk over time.

Cornet solutions are built for applications that demand high-performance signal processing for communication switching, secure data handling, sonar audio encoding and decoding, and real-time data tracking. These hardware designs must support standard 3U and 6U board form factors, line-replaceable units (LRUs), and modular

INDUSTRY

Aerospace & Defense

AT A GLANCE

1. AMD adaptive SoCs and embedded processors enable secure, high-performance signal processing in constrained environments.
2. Cornet delivers rugged, SWAP-optimized embedded platforms for mission-critical communications and sonar/radar systems.
3. Supports secure communications infrastructure across naval and defense platforms.
4. Architecture extends to transportation, airport safety, and other high-reliability environments.

CHALLENGE

Cornet required a SWAP (Size, Weight, and Power)-optimized embedded platform capable of high-performance signal processing for mission-critical communications systems.

SOLUTION

Cornet’s solution combines AMD programmable logic for deterministic signal processing with x86 processing for embedded AI workloads.

RESULTS

The AMD-based architecture enables deployment of SWAP-optimized embedded systems with long program lifecycles, while integrating AI inferencing at the edge.

AMD TECHNOLOGY AT A GLANCE

AMD Ryzen™ Embedded 8000 series
AMD Ryzen™ Embedded V3000 Series
AMD Artix™ FPGAs
AMD Kintex™ FPGAs

payload configurations to enable maintainability and system integration into operational platforms. Many must also include AI capabilities at the edge.

To address these demands, today’s advanced embedded platforms are increasingly expected to support AI inferencing workloads, such as object detection and anomaly detection for real-time analysis and operational decision making.

“The main thing we were looking for is a processor that gave us long lifecycle support,” said Rohan Rajkumar, strategic business manager at Cornet. “We needed a platform that would allow us to build multiple products around a stable architecture.”

The company required a scalable computing foundation capable of meeting current secure communications requirements while remaining adaptable to support future industrial and transportation applications.

SOLUTION

Cornet uses AMD adaptive computing devices across its broad product portfolio to establish a consistent, long-lifecycle computing architecture. The company has used AMD FPGAs in its single-board computers for more than a decade, beginning with AMD Spartan™ FPGAs and transitioning to AMD Artix™ and AMD Kintex. Future designs are expected to incorporate AMD Versal™ adaptive SoCs and x86 embedded processors.

These same adaptive platforms are also used in communications switches, signal-processing boards, and sonar audio encoding and decoding systems and delivered in rugged 3U and 6U embedded form factors designed for harsh operational environments.

Cornet has also developed embedded systems based on AMD Ryzen™ Embedded 8000 and AMD Ryzen™ Embedded V3000 processors.

“The AMD Ryzen Embedded 8000 and V3000 families give us many years of support, and they are SWAP optimized, so

we can develop a lot of products around them,” said Rajkumar. “The Ryzen Embedded 8000 also has both a GPU and NPU on board that we use for AI inferencing work, such as object detection and anomaly detection. We haven’t seen this feature in other embedded processors.”

These AMD-based Cornet solutions drive rugged single-board computers, human-machine interface (HMI) consoles for sonar and data tracking systems, line-replacement units (LRUs) with deployable payloads, and embedded computing platforms deployed across maritime, airborne, and ground-based systems.

RESULTS

Since choosing AMD adaptive computing devices and embedded processors, Cornet has been able to establish a unified embedded architecture across its communications and signal processing portfolio. This approach has enabled the deployment of scalable, SWAP-optimized computing platforms designed for secure operational environments. Additionally, the integration of on-device AI acceleration enables embedded inferencing capabilities within rugged systems.

“We’ve found that a standardized platform provides flexibility beyond current secure communications deployments,” said Rajkumar. “We can use these same rugged, SWAP-optimized computing systems for a variety of applications from transportation infrastructure and airport safety systems to first-responder applications where compact, power-efficient processing is required.”

Rajkumar added that beyond finding great technology, working with AMD has been very rewarding as well. “Compared to other companies, AMD support has been continuous. We always receive very quick responses, and the entire team gets involved in helping us solve problems.”

Learn more about AMD Embedded Computing Solutions [here.](#)

ABOUT CORNET

Cornet Technology India designs and manufactures communications equipment and embedded computing systems for secure and mission-critical applications. The company develops communication switches, FPGA-based signal-processing boards, and rugged single-board computer platforms. Originally established as a subsidiary of Cornet Technology USA, Cornet Technology India now operates as an independent Indian entity and is ISO 9001:2015 certified.

ABOUT AMD

For more than 50 years AMD has driven innovation in high-performance computing, graphics, and visualization technologies. Billions of people, leading Fortune 500 businesses, and cutting-edge scientific research institutions around the world rely on AMD technology daily to improve how they live, work and play. AMD employees are focused on building leadership high-performance and adaptive products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) website, blog, LinkedIn, and Twitter pages.

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