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AEWIN Empowers Customers to Overcome Edge Data Growth with the Latest Processors

AEWIN SCB-1836 and SCB-1741 edge network appliances deliver the higher performance of 13th Gen Intel® Core™ processors to help customers overcome data growth hurdles for the applications that matter most.

Continued data growth at the enterprise edge is driving the need for higher compute power so businesses can generate faster, more-relevant insights and stay competitive.

More-advanced edge workloads in cybersecurity, AI, video processing, and virtualized functions are allowing businesses to act on new opportunities and are generating tremendous market value for the technologies underpinning these solutions.

Challenge: Edge appliances need to process and secure massive amounts of data

Data growth is impacting edge technology in three key areas: business cybersecurity, healthcare AI, and industrial automation. Enterprises are contending with a vastly larger and more complex attack surface with more touchpoints and remote workers than ever before. Current and planned deployments demand high compute power to drive fast encryption, next-gen firewalls (NGFWs), and unified threat management (UTM) platforms. Healthcare providers are looking to deploy AI in devices for ultrasound, diagnostics, and patient monitoring to help boost worker efficiency and assist practitioners in improving patient outcomes. To meet rising global demands, factories need to increase output by implementing Industry 4.0 paradigms that enable greater automation and machine vision on the production line. And these data-intensive use cases all require more compute resources at the edge, where physical space is at a premium and power constraints limit data throughput.

Solution: AEWIN network edge appliances with the latest Intel® Core™ processors

AEWIN, an industry leader in the IoT edge and software-defined networking market, offers two network appliances designed to meet the data-intensive needs for cybersecurity, AI, and automation at the edge. Powered by 13th Gen Intel® Core™ processors, the AEWIN SCB-1836 and SCB-1741 1U rack-mount systems deliver more cores, more cache, up to DDR5 memory, PCIe 5.0 connectivity, hardware-enabled AI acceleration, and security features that businesses need now to succeed. Both solutions are designed for enhanced network security, but their efficient data transmission and processing make them well suited to intelligent manufacturing and smart healthcare applications.

"As we talk about data growth and more-innovative applications, enterprises will always seek the newest devices. Intel® processors in the SCB-1836 and SCB-1741 support outstanding multithread performance with better power management in small form factors to ensure high value from capital investments at a low operating budget."

—Tiana Shao, Product Marketing at AEWIN

Key use cases for AEWIN SCB-1836 and SCB-1741 solutions

The 13th Gen Intel Core processor platform brings higher processing power and AI capabilities to support rigorous cybersecurity and other data-intensive use cases at the edge.

SD-WAN uCPE, next-gen firewall (NGFW), unified threat management (UTM) systems

Industrial automation, industrial PCs (IPCs), human-machine interfaces (HMIs)

Ultrasound imaging, AI-enabled diagnostics, clinical devices

AEWIN SCB-1836 and SCB-1741 solution details

AEWIN SCB-1836

- High performance in 510 mm width
- Four module bays (2x PCIe 5.0 x8 signals in x8 slots and 2x PCIe 4.0 x4 signals in x8 slots)
- Up to 512 GB DDR5 UDIMM memory (two DIMMs per channel, two channels), up to 5,600 MHz
- 2x 2.5" SATA or 1x 3.5" SATA, 1x mSATA, 1x mPCIe
- Support for Intelligent Platform Management Interface (IPMI v2.0)

AEWIN SCB-1741

- Smaller footprint in 450 mm width
- Two module bays (2x PCIe x8 signals in x8 slots)
- Up to 128 GB DDR4 UDIMM memory (two DIMMs per channel, two channels), up to 3,200 MHz
- 2x 2.5" SATA, 1x mSATA, 1x M.2 M key

Key features in both systems:

- 13th Gen Intel® Core™ processor in LGA1700 socket, featuring performance hybrid architecture,[1] embedded use conditions,[2] and long-life availability[3]
- 2x RJ45 1GbE ports, one console port
- Support for Intel® Trusted Platform Module (Intel® TPM)
- 300W redundant power supply

How it works

The SCB-1836 enhances traffic management and virtualized network security, with support for PCIe 5.0 connectivity, DDR5 memory modules, Intelligent Platform Management Interface (IPMI), and up to four network interface card (NIC) slots for higher network bandwidth. The SCB-1741 prioritizes flexibility by offering up to two NIC slots and a shorter width of 450 mm compared to the SCB-1836's width of 510 mm, allowing customers to deploy the system in more-space-constrained areas.

To help speed deployment, AEWIN can pretest systems with multiple software applications and hardware configurations on the customer's behalf. Customers can specify the software they will be running, such as Red Hat Enterprise Linux and Red Hat Virtualization, and select from the AEWIN portfolio of NICs and memory modules, and the AEWIN testing team will do the legwork for them.

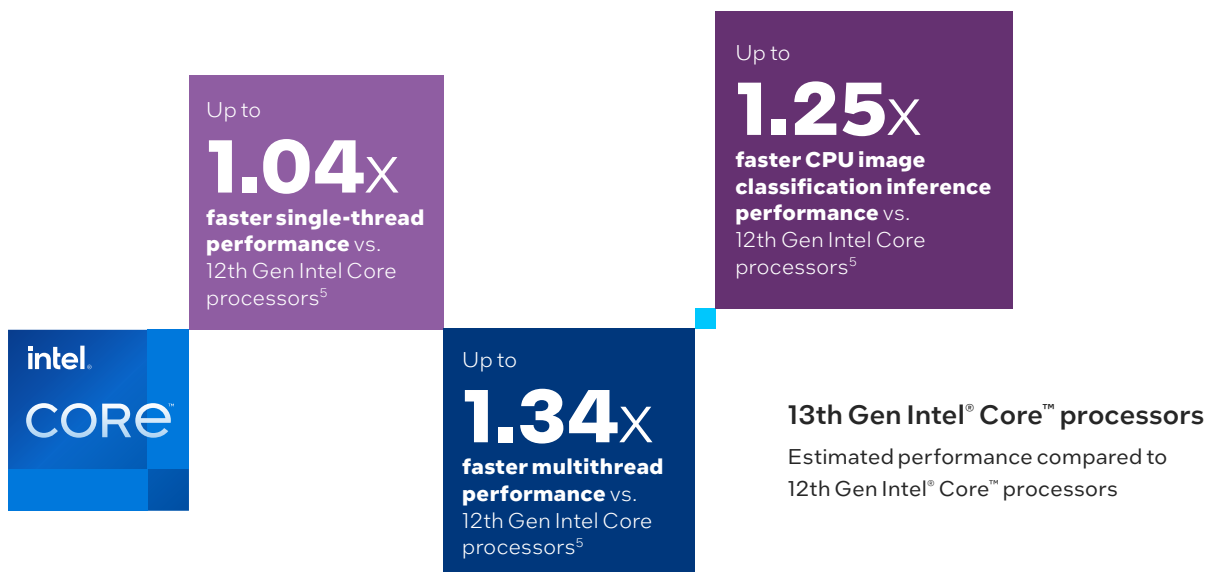### Fast AI, data processing, and encryption with performance hybrid architecture[1]

With up to 24 cores and 32 threads, 13th Gen Intel Core processors for the IoT edge deliver more performance and more L2 and L3 cache compared to previous generations. Remarkable performance levels in this latest generation help satisfy the growing compute demands of cybersecurity, AI, and video processing applications at the edge. Built with performance hybrid architecture,[1] this platform combines multithread Performance-cores, or P-cores, for primary workloads with single-thread Efficient-cores, or E-cores, for background tasks and functions. Intel® Thread Director[4] intelligently assigns workloads to P-cores or E-cores to optimize total system performance when multitasking.

Both the SCB-1836 and SCB-1741 support 13th Gen Intel Core processors, and AEWIN customers can choose the right processor SKU for their use case. In this latest generation, performance hybrid architecture is available in Intel® Core™ i9 and i7 processors and additionally in Intel® Core™ i5 processors, so customers have a wider range of choices to get the ideal performance for their specific needs.

Integrated graphics and AI acceleration drive success for computer vision applications

13th Gen Intel Core processors in the AEWIN offerings provide Intel® UHD Graphics 770 driven by Intel® X^e architecture with up to 32 graphics execution units (EUs).[3] When combined with hardware acceleration from Intel® Deep Learning Boost (Intel® DL Boost) Vector Neural Network Instructions (VNNI), the integrated GPU is suitable for computer vision applications and video analytics in industrial automation. AI builders can rely on the platform to achieve the performance levels they need while reducing the bill-of-materials (BOM) costs from consolidating computer vision functions into fewer appliances and reducing their dependence on external GPUs.

Intel maintains ecosystem relationships with numerous AI software vendors, which can give enterprises a confidence boost in developing their next-gen systems. The platform's support for the Intel® Distribution of OpenVINO™ toolkit helps optimize AI workloads for Intel-enabled AEWIN systems, ensuring that customers can unleash their hardware's potential for emerging AI-at-the-edge use cases.

Up to
1.25X
faster CPU image classification inference performance vs. 12th Gen Intel Core processors[5]

Up to
1.04X
faster single-thread performance vs. 12th Gen Intel Core processors[5]

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Up to
1.34X
faster multithread performance vs. 12th Gen Intel Core processors[5]

13th Gen Intel® Core™ processors

Estimated performance compared to 12th Gen Intel® Core™ processors

5. Compared to 12th Gen Intel® Core™ processors for IoT. See backup for configuration details. Results may vary.

Faster data movement and heavy-duty multitasking with up to DDR5 memory and PCIe 5.0

Both AEWIN appliances support high-capacity memory modules with enhanced bandwidth: the SCB-1836 supports up to 512 GB DDR5 5,200 MHz memory (two channels, two DIMMs per channel), while the SCB-1741 supports up to 128 GB DDR4 3,200 MHz memory (two channels, two DIMMs per channel). High-capacity, high-bandwidth memory helps speed up data package transmission to improve the efficiency of encryption/decryption, Data Plane Development Kit (DPDK) performance, multitasking, and more-simultaneous apps in edge use cases.

PCIe expansion in both appliances also gives customers the flexibility to add plugin cards and devices to customize their appliance's performance. For the SCB-1836, up to four modules (2x PCIe 5.0 slots, 2x PCIe 4.0 slots) are possible for maximum customization, while the smaller-footprint SCB-1741 supports up to two modules over PCIe 4.0 slots. For example, customers can plug in NICs to achieve faster network speeds, video capture cards to support computer vision and AI analytics, or accelerators to speed up encryption across the network edge.

Ensuring performance for high-priority or latency-bounded workloads

For deployments that rely on time-sensitive processing for critical operations, such as coordinating multiple devices or robotics on a production line, the AEWIN appliances support Time-Sensitive Networking (TSN) processes with Intel® Time Coordinated Computing (Intel® TCC).[2] This set of features gives system administrators the ability to reserve CPU cache and prioritize latency-bounded workloads to ensure timely data movement and signal coordination between multiple devices.

Hardware-enabled features help harden the network edge against advanced threats

Reliability and security are fundamental elements of edge appliances, and AEWIN has paid special attention to ensuring these capabilities in its systems. Both AEWIN solutions leverage the hardware-based security features in 13th Gen Intel Core processors, including Intel® Total Memory Encryption (Intel® TME) and Intel® Boot Guard. Intel TME encrypts in-flight data that's being processed through memory, a process that undermines attackers who use memory as a vector of attack.

Intel Boot Guard helps ensure a root of trust below the OS by measuring system startup processes against known parameters to flag unusual or unexpected activity, thwarting malware before it has a chance to impact the system. These systems also support Intel® Trusted Platform Module (Intel® TPM), which is an isolated, hardware-based storage for encryption keys. Intel Boot Guard uses Intel TPM keys for platform attestation as part of a measured boot process. AEWIN customers that deploy Intel-enabled SCB-1836 and SCB-1741 benefit from edge appliance security that starts at the chip level, offering a multilayered hardware/software approach to help defend against the most-advanced threats.

Easier-to-manage platforms with Intel vPro® technology[2] and IPMI

Whether on the factory floor or in branch locations spread across a wide area, remote manageability is key to reducing operating expenses—such as time-intensive truck rolls—for edge appliances installed in remote or hard-to-reach locations. Select SKUs of Intel® processors in AEWIN systems are Intel vPro eligible, with advanced remote manageability features to help IT technicians set up or restore unresponsive systems without needing to be physically in front of the device. AEWIN appliances also support IPMI, an isolated management subsystem that's separate from the CPU and gives technicians control over devices independently from the firmware or OS. Using these tools, IT departments can configure or restore downed appliances fast, helping minimize downtime and reduce the need for on-site truck rolls.

Long-life availability[3] and extending the value of embedded deployments

Healthcare providers and other regulated industries are subject to lengthy device certification processes that can take two years or longer. These processes can take up half of a standard device life cycle, reducing the value that a customer gets from new appliances. To help businesses realize maximum ROI from their investments, long-life availability[3] of select Intel processors in AEWIN appliances provides a period of approximately 10 years for replacements and upgrades. Even after a lengthy certification, customers can drive more value from their deployments with a reliable supply chain and longer intervals between new product introductions and certification.

Conclusion: Overcome data growth hurdles with more cores in a flexible edge appliance

AEWIN helps customers meet the challenges of emerging edge use cases by fast-tracking access to the latest-generation processors in a simple, flexible, and powerful edge appliance. 13th Gen Intel Core processors in the AEWIN SCB-1836 and SCB-1741 give customers raw performance, advanced efficiency, robust security features, and hardware-accelerated graphics and AI, all within a consolidated package that's designed to meet the current and future needs of cybersecurity, AI, and automation projects. Success at the edge is simple with AEWIN solutions enabled by Intel.

Get started

Learn more about 13th Gen Intel Core processors at **intel.com/13thgencore-iot**.

Explore the AEWIN solutions featured in this brief at **aewin.com/products/scb-1836** and **aewin.com/products/scb-1741**.