

Symetrix Cognio is Next-Gen CPU-based Audio/Visual Platform

Cognio platform is decentralized, cost effective, flexible and delivers crystal-clear sound using Intel® architecture processors



Professional audio-visual control (AVC) systems are embracing IT technologies to meet the requirements of emerging conferencing use cases and to offer better design and workflow flexibility.

With virtual conferences increasingly augmenting face-to-face meetings, AVC systems are needed to deliver a meeting experience that ensures all attendees can contribute regardless of location, or the size of the conference room or the number of participants.

The Pro-AV industry is moving from hardware-defined to software-based AV supported by audio and video moving into the IP network. This transformation is accelerating a convergence of IT and AV using commercial off-the-shelf PC hardware or SOCs. Symetrix exemplifies this transition through its Intel® architecture-based platform.



AVC systems have been well served to date by legacy hardware-based proprietary architectures with specialized processors because they delivered a quality AV experience. But companies now have access to AVC systems based on Intel® architecture processors that deliver improved performance with dramatically better extensibility. These systems serve corporate conference rooms, lecture halls and other applications and can evolve, grow and improve over time.

They also offer scalability, can use cost-effective processing hardware, and enable simplified and flexible system design workflows that speed project delivery and reduce risk. In practice, this means that compared to legacy DSPs and alternative CPU architectures, Intel® processors deliver a unique combination of deterministic performance, integrated AI/media acceleration, and a standardized x86 software ecosystem—enabling faster innovation, easier scaling, and long-term platform consistency.

These new systems also fit better in an IT environment with system-wide management, commissioning, cybersecurity and maintenance. Open architecture processing-based servers are cost-effective enough to design redundant systems that remove single points of failure.

Symetrix, an Intel® Industry Solutions Builders Partner, meets these needs with Cognio, a fundamentally different, software-defined architecture built on Intel general-purpose processors.

Instead of relying on fixed, centralized DSP hardware, Cognio distributes processing, control, and audio functionality across servers, appliances, endpoints, and controllers, allowing capabilities to be deployed where they are needed and scaled incrementally over time. This is enabled by a shared firmware model running on standard Intel® processors, which allows the same capabilities—including DSP, control, and AV-over-IP—to exist across the entire system.



Figure 1. Cognio solution including C20 Smart Processor, DesignOps, TC Series Smart Touchscreens, and network endpoints.

Cognio is a Software-Based AVC System

By connecting its modern software application with distributed, network-connected smart devices, Cognio has perfected the streamlined workflows that unify design, configuration, commissioning, control, and ongoing operation into a single device. The system flexibility extends to powering multiple spaces, or multiple devices allowing systems to scale across rooms, buildings, or entire campuses.

Figure 1 shows the complete system, which includes:

C20 Smart Processor: Powered by the Intel® Atom® x7433RE processor, the C20 features Cognio’s software / firmware providing signal processing, audio bridging, and playback. The C20 supports up to 64 x 64 Dante AVoIP audio channels and eight acoustic echo cancellation (AEC) channels. If that capacity is consumed, then a new controller can be added to expand the system capacity. The processor features dual RJ-45 Gigabit Ethernet ports so that the processor can be connected to a network and discovered and managed via network-connected computers running DesignOps.

The solution provides crystal-clear sound with the processing capability to correct factors that can impact audio processing such as large glass windows in a conference room. It can also

be used to conference with AEC or to bridge with conferencing software like Teams or Zoom.

DesignOps: Users can easily route and configure audio directly using the Cognio DesignOps software. This simplifies setup and enhances usability. DesignOps software provides complete design, programming and configuration for the C20. With DesignOps, users can design modular networks that flexibly include different spaces across a campus. For example, a large space, a zone or other configurations can be easily configured. These zones operate autonomously and will stay running even if another part of the system is down. DesignOps also enables local offline “emulation” reducing errors and on-site troubleshooting time.

TC Series Smart Touchscreens: These portable control screens provide signal processing, AVoIP channel configurations, and customized system control for all AV environments. Once on the network, the TC Series touchscreens can be located anywhere that is convenient for users to access their AV systems.

Endpoints: These are connected to the network and allow devices to connect to the system using Bluetooth, RCA or XLR connectors.

“Designing next-generation learning environments requires platforms that can evolve with both pedagogy and infrastructure. By leveraging Intel’s general-purpose processor, Cognio provides the flexibility, processing power, and architectural control we need to continuously refine how audio supports collaborative learning at scale. It’s a foundational technology that’s helping us shape the future of learning and teaching across Monash.”

- Peter MacLean, Monash University

Intel Atom® Processors Power C20

The Cognio C20 is powered by the Intel Atom® 7433RE processor that features four cores each with Max Turbo frequency of 3.4GHz. Designed for embedded use cases, the processor operates at a very low thermal design power (TDP) of 9W. These processors provide a strong balance of performance-per-watt, predictable real-time processing, and integrated graphics and media capabilities—reducing the need for additional components while maintaining flexibility.

In the C20 application, workloads such as Dante networking, acoustic echo cancellation, and audio DSP can be assigned to dedicated cores to enable deterministic performance.

Other processor features that are available for future product capabilities include Intel® UHD Graphics with a graphics max dynamic frequency of 1GHz. The GPU features 32 execution units and 4K max resolution and supports multiple displays, with up to 4K resolution.

The Intel Atom® x7000RE processor series also features the Intel® Image Processing Unit (Intel® IPU), an integrated image signal processor with an advanced hardware implementation that improves image and video quality of cameras.

AV Success at Monash University

Monash University, a top-50 global institution with over 90,000 students, deployed Symetrix Cognio as part of its transition to collaborative, student-centered learning environments. The new system replaced a legacy DSP platform, and Monash selected Cognio for its exceptional audio quality, flexibility, and ability to simplify deployment and support at scale.

Initially piloted across collaborative learning spaces supporting between 60 and 150 students, Cognio now underpins a growing number of classrooms, labs, and large-scale environments. The university plans to expand across campuses. The platform enables high-intelligibility, natural audio that supports active, discussion-based learning, critical in spaces where multiple conversations and hybrid participation occur simultaneously.

Cognio’s web-based configuration and remote management capabilities have significantly reduced system complexity, enabling rapid deployment, simplified customization, and efficient support, even within Monash’s complex IT environment. As a result, AV teams can deliver consistent, high-quality outcomes while minimizing commissioning time and operational overhead.



Symetrix D100 Pioneers AVoIP

Symetrix pioneered the use of Intel architecture processors for AVC applications with the D100 AVoIP DSP Server.

This rack-mount system is designed for complex system design and features the performance of a server-class Intel® Xeon® Scalable processor, which provides the performance, reliability and control needed to support highly concurrent AV workloads and sustained operations—delivering greater system headroom and consolidation versus alternative CPU platforms. The D100 is designed for the most demanding large-scale installations and features a maximum of 384 x 384 Dante I/O, 96 channels of AEC and 128 media playback channels with eight media record channels.

Both Cognio and the D100 products share a common, optimized software platform built on Linux, with Audinate's Dante Embedded Platform (DEP) running for networked audio transportation.

Conclusion

Symetrix Cognio was developed with a next-generation system architecture that provides benefits today with the ability to grow with future demands and use cases. With the distributed C20 Smart Processor, powered by Intel architecture processors, Cognio can build AV systems in flexible configurations that were not possible with legacy systems. And the system fits into an enterprise IT environment for improved management and cyber security, with Intel® architecture aligning natively to enterprise IT standards—simplifying integration, strengthening security, and enabling scalable, future-ready AV deployments.

Learn More

[Cognio Product Page](#)

[Server D100 Product Page](#)

[C20 Product Page](#)

[Intel Atom® x7433RE Processor](#)

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