

APPLICATION BRIEF

SCALABLE AV-OVER-IP INFRASTRUCTURE WITH AMD ADAPTIVE COMPUTE



together we advance_AV

OVERVIEW

Professional AV and broadcast are undergoing a fundamental transition to IP, but the path forward is not always clear. AMD adaptive computing gives OEMs a single hardware platform that evolves with the IP protocols, so operators get IT-native infrastructure without compromising broadcast-grade performance.

Broadcast AV is shifting from proprietary matrix switches and baseband connections to IP networks, driven by scalability, flexibility, and IT convergence. But the transition is fragmented – a mix of open standards like ST 2110 and IPMX alongside proprietary protocols like NDI and Dante AV, each serving different market segments, all continuing to evolve. Every customer deployment may demand a different protocol mix, and designing fixed-function hardware for each combination is unsustainable.

AMD adaptive computing spans this entire landscape. FPGA and adaptive SoC designs make the protocol layer fully programmable in hardware, while software-only implementations bring protocols like IPMX, NDI and Dante to AMD x86 embedded processors. Whether the implementation runs in programmable logic or in software, operators get IT-native infrastructure such as standard Ethernet switches, IP routing, and familiar management tools, with the quality and timing that broadcast demands.

THE AMD ADAPTIVE ADVANTAGE

AMD offers field-reprogrammable AV-over-IP silicon that runs multiple protocol stacks on a single device, letting OEMs address a fragmented market with one hardware platform.

AMD adaptive SoCs integrate Arm® processing cores and programmable FPGA fabric on a single die. The Arm subsystem handles network management, discovery, and the control plane, while the FPGA fabric runs real-time codec pipelines, transport encapsulation, and deterministic I/O in parallel. Where an Arm subsystem is not required, the MicroBlaze™ V soft processor can be instantiated directly in the FPGA fabric to provide the full network stack and control-plane functions entirely in programmable logic.

Either approach lets a single board ship as an ST 2110 encoder, an IPMX endpoint, or a Dante AV node differentiated by firmware rather than PCB layout, giving OEMs one bill of materials, a leaner supply chain, and faster time to revenue.

KEY BENEFITS

PROTOCOL AGILITY

Support ST 2110, IPMX, NDI, or Dante AV as protocols evolve, without hardware redesigns.

IT-NATIVE INFRASTRUCTURE

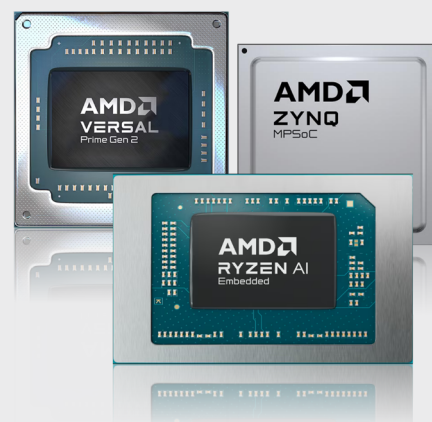
Leverage standard Ethernet switches, IP routing, and existing network management tools.

BROADCAST-GRADE PERFORMANCE

Hardware-accelerated codec pipelines and precision timing deliver low-latency, high-quality AV-over-IP.

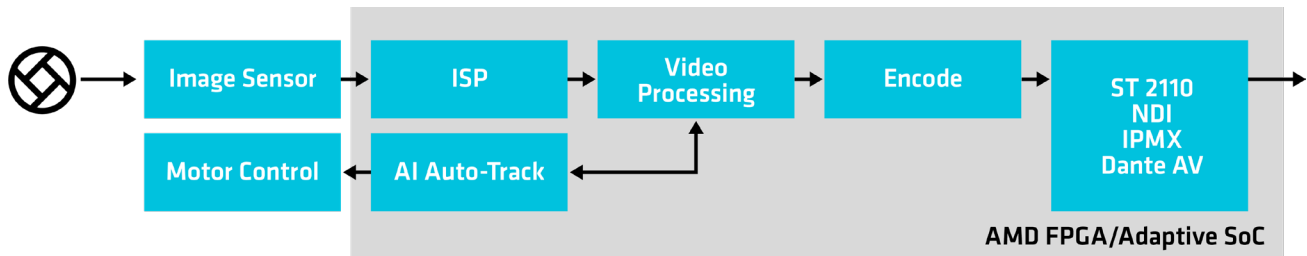
FLEXIBLE ARCHITECTURE

Choose Arm processor-based adaptive SoCs, MicroBlaze V soft processors in FPGA, or software-only stacks on x86.



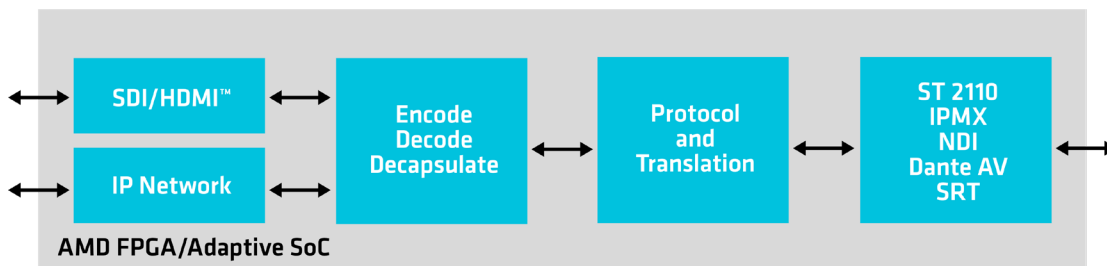
PTZ CAMERA

An IP-native point-tilt-zoom (PTZ) camera built on an AMD adaptive SoC handles the complete imaging pipeline on a single chip, from sensor interface to image signal processing, encoding and network transport, while running AI-powered auto-tracking and auto-framing directly on-device. The FPGA fabric accelerates real-time person and object detection, driving pan, tilt, and zoom motors to follow subjects without an external controller. The programmable logic layer lets the same hardware output ST 2110, NDI, Dante AV, or IPMX streams, selectable by firmware rather than board redesign, so operators can deploy one camera model across mixed-protocol facilities.



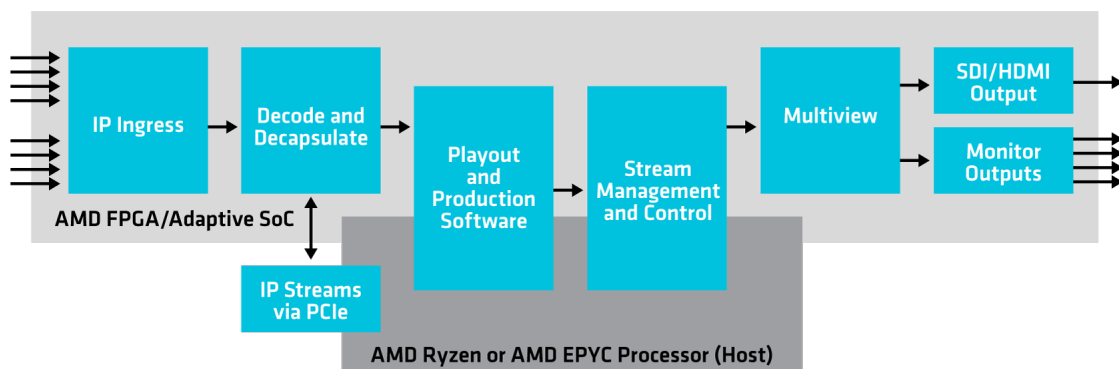
AV-OVER-IP ENDPOINT / GATEWAY

Compact AV-over-IP endpoints bridge SDI and HDMI sources onto the IP network, encoding or decoding video streams while an FPGA-based media gateway translates between protocol domains, converting ST 2110 to NDI or Dante AV to IPMX for example. Both device types share the same AMD adaptive SoC platform, so a single hardware design and bill of materials can ship as an ST 2110 encoder, an IPMX endpoint, or a Dante AV node, differentiated entirely by firmware. This “one BOM, many protocols” approach lets OEMs address the fragmented AV-over-IP market without maintaining separate hardware SKUs for each standard.



PCIe® AV-OVER-IP RECEIVER CARD

A PCIe add-in card built on AMD FPGA silicon ingests multiple AV-over-IP streams directly into a playout server or production workstation, pairing hardware-accelerated decode with AMD Ryzen™ or AMD EPYC™ processors. The card handles ST 2110, NDI, Dante AV and IPMX de-encapsulation and decompression in the FPGA fabric, delivering uncompressed frames to the host over PCIe with minimal latency. This architecture ties the adaptive silicon story into the broader AMD x86 ecosystem, giving system integrators a single-vendor solution from network ingress through to application processing, monitoring, and playout.



PROTOCOL	FEATURES & REQUIREMENTS	BENEFITS OF AMD PLATFORMS
ST 2110	Ubiquitous across broadcast, ST 2110 supports uncompressed and JPEG XS compressed video, audio and data as separate IP essence flows; needs PTP timing and high bandwidth.	• Programmable logic FPGA/SoC carries ST2110 essence flows with hardware-based ST 2059 PTP for deterministic, broadcast-grade timing. • MicroBlaze V or Arm® processors provide network management layer. • AMD partners: Adeas-Nextera and intoPIX
IPMX	Open standards Pro AV profile of ST 2110 adding JPEG XS, H.264/H.265 (emerging), HDCP, EDID, PEP and NMOS with optional PTP sync.	• One AMD FPGA/SoC scales uncompressed and JPEG XS/H.264/H.265 with NMOS control and optional timing in logic, with embedded network processing in Arm or MicroBlaze V processors and dedicated hard IP for H.264/H.265 codecs. • Software-only implementations of IPMX can run on AMD x86 processors in laptops, workstations or embedded. • AMD partners: Adeas-Nextera, intoPIX, ITDev and Macnica
DANTE DANTE AV	Dante is the de facto standard for networked audio and includes AES67 compatibility, now extended by Dante AV to include low-latency 4K video distribution.	• One adaptive SoC serves the huge Dante audio install base. • Dante AV Ultra with FPGA codec offload runs in AMD adaptive SoCs. • Endpoints discover, register and route through standard Dante Controller software, slotting into existing Dante networks. • AMD partner: Audinate
NDI	Software-based, IT-friendly 4K video distribution with auto-discovery. NDI High Bandwidth is near-lossless for the LAN; NDI HX3 cuts bitrate for constrained networks.	• NDI High Bandwidth supported in AMD adaptive SoCs with SpeedHQ codec in fabric offering highest-quality and lowest-latency NDI implementation. • NDI HX3 runs as software on AMD Ryzen or AMD EPYC x86 processors in laptops, servers or embedded, or in adaptive SoCs using dedicated hard IP for H.264/H.265 codecs. • AMD partner: NDI

NEXT STEPS

For more information on Broadcast AV solutions, visit www.amd.com/broadcastav

DISCLAIMERS

The information contained herein is for informational purposes only and is subject to change without notice. While every precaution has been taken in the preparation of this document, it may contain technical inaccuracies, omissions and typographical errors, and AMD is under no obligation to update or otherwise correct this information. Advanced Micro Devices, Inc. makes no representations or warranties with respect to the accuracy or completeness of the contents of this document, and assumes no liability of any kind, including the implied warranties of noninfringement, merchantability or fitness for particular purposes, with respect to the operation or use of AMD hardware, software or other products described herein. No license, including implied or arising by estoppel, to any intellectual property rights is granted by this document. Terms and limitations applicable to the purchase or use of AMD products are as set forth in a signed agreement between the parties or in AMD's Standard Terms and Conditions of Sale. GD-18u.

COPYRIGHT NOTICE

© 2026 Advanced Micro Devices, Inc. All rights reserved. AMD, the AMD Arrow logo, EPYC, MicroBlaze, Ryzen and combinations thereof are trademarks of Advanced Micro Devices, Inc. The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc. PCIe is a registered trademark of PCI-SIG Corporation. Other product names used in this publication are for identification purposes only and may be trademarks of their respective owners. Certain AMD technologies may require third-party enablement or activation. Supported features may vary by operating system. Please confirm with the system manufacturer for specific features. No technology or product can be completely secure.