SOLUTION BRIEF

EFFICIENT MEMORY FOR REAL-TIME BROADCAST AV SYSTEMS: AMD VERSAL™ PREMIUM GEN 2 MoP

AMD
together we advance_AV

OVERVIEW

Modern Broadcast and Professional AV systems face a fundamental architectural constraint. Resolutions climb to 8K and beyond, frame rates increase, IP-based workflows emerge, and real-time AI becomes standard. The bottleneck is no longer compute or I/O – it's memory bandwidth.

Professional video pipelines can now easily sustain 100+ Gb/s of data throughput, but they also impose strict requirements on latency, determinism, power efficiency, and system integration.

Many real-world AV system deployments are constrained by board complexity, thermal design, and long-term component availability. As a result, system architects are seeking more balanced approaches that align performance with practical deployment considerations.

Integrating memory directly on-package with AMD Versal™ Premium Gen 2 Memory on Package (MoP) adaptive SoCs offers a compelling AV processing platform, enabling high-performance video and AI processing within a more efficient, scalable, and deployment-friendly architecture, while minimizing memory supply risks.

THE MEMORY ON PACKAGE ARCHITECTURE ADVANTAGE

AMD Versal Premium Gen 2 MoP device integrates up to 32 GB of LPDDR5X DRAM directly into a single adaptive SoC package, delivering up to a projected 288 GB/s of memory bandwidth in 60% less board area,[1] so engineers can build smarter, more compact systems from cloud to edge without the complexity, risk, and time cost of board-level memory design.

By using LPDDR5X instead of technologies such as HBM, the Versal Premium Gen 2 MoP device decouples memory availability from data center refresh cycles, aligning product longevity with the 15+ year lifecycles[2] that FPGA-based Broadcast AV projects require. The Versal Premium Gen 2 MoP architecture also eliminates routing complexity for high-speed memory interfaces. Single-package integration removes multi-layer PCB trace routing for LPDDR5X, freeing PCB layers and routing channels for other critical interfaces and reducing board stack-up complexity and manufacturing costs.

DETERMINISTIC LOW-LATENCY PERFORMANCE

Deliver frame-accurate video processing and switching with predictable latency.

SIMPLIFIED HARDWARE DESIGN & FASTER TIME TO MARKET

Reduce PCB complexity to speed development and minimize engineering risk.

OPTIMIZED FOR REAL-TIME AI VIDEO PIPELINES

Process AI inference alongside video streams with low latency and optimum energy efficiency.

KEY BENEFITS

HIGH-DENSITY VIDEO PROCESSING

Multiple video channels, AI streams, and IP flows per device within constrained form factors

HIGH PERFORMANCE-PER-WATT

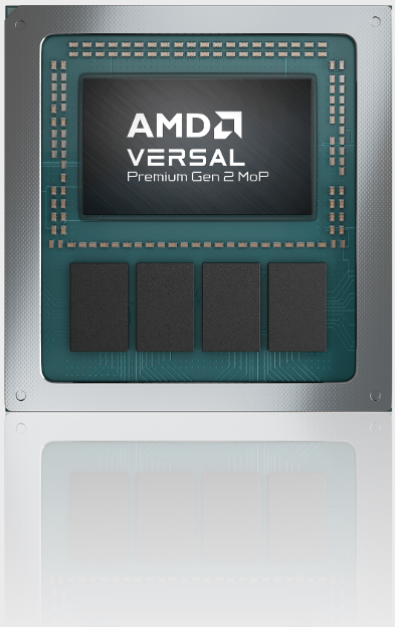
Ideal for real-time AV and edge AI applications

GREATER SUPPLY CHAIN STABILITY

15+ year longevity suited to extended broadcast equipment lifecycles[2]

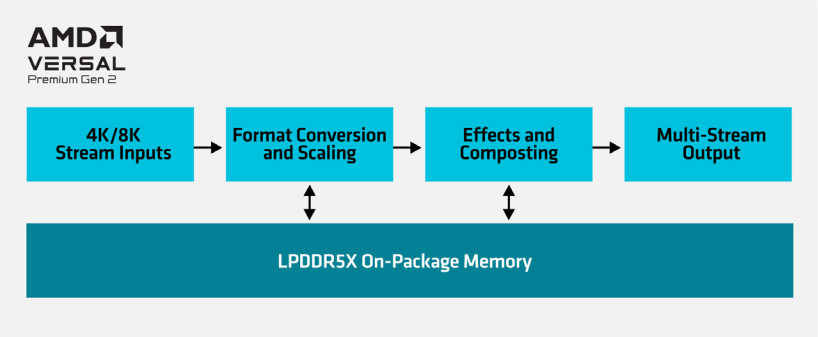
CONVERGED WORKFLOWS

Run video processing, AI inference, and IP networking simultaneously on a single SoC



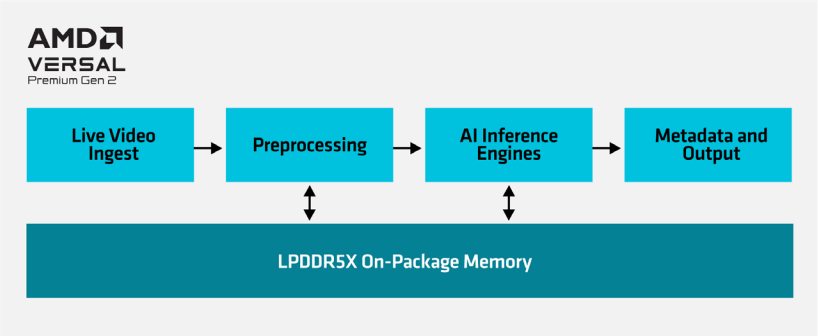
MULTI-CHANNEL VIDEO PROCESSING

Modern AV systems must handle higher resolution video streams, but they are often constrained by power, thermals, board space, and cost, not by raw bandwidth. AMD Versal Premium Gen 2 MoP adaptive SoCs deliver predictable, high-throughput access with lower PCB complexity and footprint. The result is high channel density in compact, power-efficient designs, with fast development and high system reliability for next-generation AV deployments.



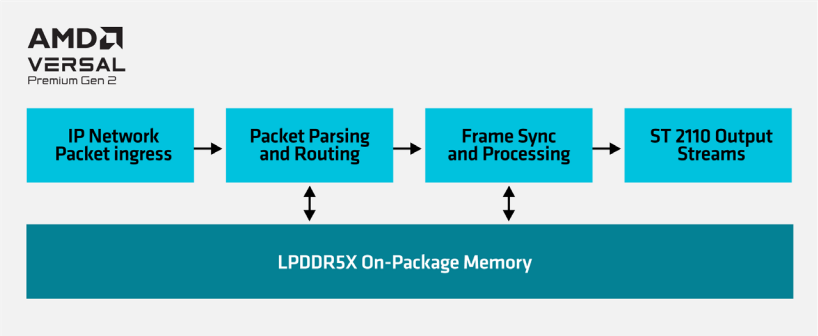
REAL-TIME AI VIDEO PROCESSING

Real-time AI video applications demand low-latency, deterministic memory access at the edge. Many workloads such as object detection and tracking can benefit from the Versal Premium Gen 2 MoP architecture, which tightly couples compute and memory, helping reduce latency and enabling deterministic data movement. Versal Premium Gen 2 MoP devices deliver low end-to-end latency, scalable AI video processing, and leadership performance-per-watt in constrained environments such as control rooms and live production workflows.



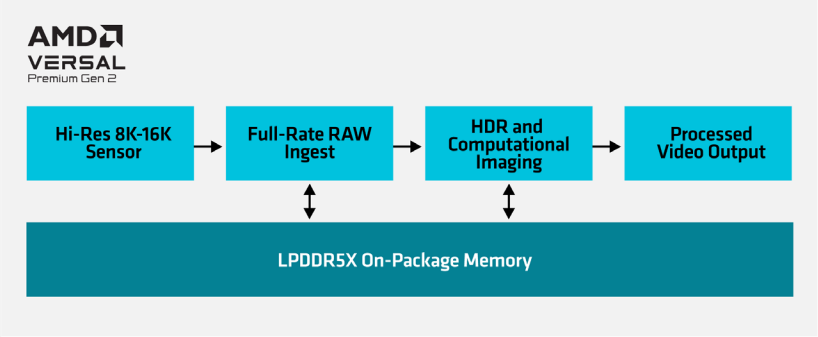
IP VIDEO SWITCHING & ST 2110 NODES

IP-based media workflows such as ST 2110 demand deterministic performance, precise timing, and high I/O density. Versal Premium Gen 2 MoP adaptive SoCs tightly couple buffering and processing with predictable low-latency, enabling frame-accurate switching and synchronization across multiple video streams. The simplified architecture reduces board-level complexity, increases port density, and enables compact, reliable, and scalable ST 2110 nodes that simplify design, validation, and deployment.



CAMERA SENSOR INGEST & COMPUTATIONAL IMAGING

Next-generation imaging systems require immediate processing of high-resolution sensor data to support features such as HDR, depth estimation, and real-time enhancement. These tightly coupled pipelines are highly sensitive to latency, where external memory access can introduce performance bottlenecks. With Versal Premium Gen 2 MoP adaptive SoCs, sensor data is buffered and processed with minimal, deterministic latency, enabling a responsive, power-efficient platform for advanced computational imaging in compact broadcast and cinema cameras.



FEATURES

PLATFORM HIGHLIGHTS	
24/7 BROADCAST-GRADE POWER EFFICIENCY	• Optimized logic utilization and FinFET process technology minimize power draw for always-on broadcast infrastructure. • Dedicated hard IP for memory controllers and 100G Ethernet MACs (with FEC) replace power-hungry soft implementations. • LPDDR5X on-package memory and extensive UltraRAM for line buffering reduce system power in dense video processing deployments.
DETERMINISTIC LIVE & REMOTE PRODUCTION	• On-package LPDDR5X delivers predictable, low-latency memory access critical for genlock, frame-accurate switching, and real-time compositing across multi-channel 4K/8K pipelines. • Combined with PCIe® Gen5/6 and 100GE connectivity, this supports both on-premise and REMI architectures with the timing precision that live broadcast demands.
FRAME-ACCURATE, DETERMINISTIC VIDEO PROCESSING	• Run AI inference alongside video processing on a single SoC, enabling automated graphics insertion, live captioning, object detection, content-aware encoding, and intelligent routing without dedicated GPU accelerators. • On-package memory bandwidth supports low-latency AI pipelines at the edge, critical for live production environments where frame-level responsiveness matters.
ACCELERATED DESIGN WITH BROADCAST-PROVEN IP	• Leverage industry-leading audio, video, and Ethernet IP from AMD and embedded partners to accelerate system design cycles and reduce integration risk.
SECURE AV-OVER-IP & CONTENT PROTECTION	• Integrated bitstream encryption, anti-cloning, secure key management, and CNSA 2.0-grade cryptography protect live AV-over-IP streams, control data, and premium content across distributed studio and remote production workflows, meeting evolving broadcast security and compliance requirements.
15+ YEAR BROADCAST LIFECYCLE ALIGNMENT	• Product longevity through 2041+ matches the extended equipment lifecycles typical in broadcast infrastructure.[2] • LPDDR5X on-package memory decouples availability from data center DRAM cycles, reducing supply chain risk for long-lived AV platforms.

NEXT STEPS

For more information on AMD Versal Premium Gen 2 Memory on Package, visit **www.amd.com/memory-on-package**

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

ENDNOTES

1. Based on AMD internal measurements taken in April 2026, of the board area of Versal Premium Series Gen 2 MoP 2VP3622 adaptive SoC, compared to the board area of a Versal Premium Series Gen 2 monolithic adaptive SoC with external memory. (VER-111)
2. Product lifecycle targets are based on AMD product program objectives and lifecycle management practices and may extend beyond the availability of individual third-party components. Component availability, including memory, is subject to supplier roadmaps and may vary. AMD may offer supply assurance options or other lifecycle management solutions to support long-term availability; contact AMD sales for details. (GD-254)

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