

ADVANCING BROADCAST & PRO AV WITH AMD VERSAL™ PRIME SERIES GEN 2 ADAPTIVE SoCs

The silicon platform for processing, encoding,
and streaming video at 8K and beyond



KEY BENEFITS

**CONNECT TO ANY BASEBAND
VIDEO INTERFACE**

**CUSTOMIZABLE REAL-TIME
8K VIDEO PROCESSING**

**ADAPT TO ANY AV-OVER-IP
STANDARD**

**INTEGRATED PROFESSIONAL
MEDIA CODECS**

ALL IN A SINGLE DEVICE

OVERVIEW

Versal™ Prime Series Gen 2 adaptive SoCs are the eagerly awaited successors to the Zynq™ UltraScale+™ MPSoC product line that has been widely adopted in equipment that powers the Broadcast and Pro AV industries. Unleashing creativity by offering up to 2X the performance in video-related metrics,¹ Versal Prime Series Gen 2 adaptive SoCs are the silicon platform of choice for the development of multi-channel 4K and 8K content capture, production, and distribution equipment.

HIGHLIGHTS

RECEIVE AND TRANSMIT MEDIA OVER VIRTUALLY ANY NETWORK

- Baseband Video over 12G-SDI, HDMI™ 2.1, and DisplayPort™ 2.1
- AV-over IP from 1 Gb/s to 100 Gb/s Ethernet
- Support for Dante AV Ultra, IPMX, NDI, and SMPTE ST 2110

THE RIGHT ENGINES FOR EACH TASK

- Multi-core Arm® Cortex®-A78 for demanding software workloads
- Arm Mali™-G78 GPU for rendering 2D and 3D graphics
- Programmable logic fabric for customized, low-latency, high-throughput, real-time video processing and mezzanine codecs

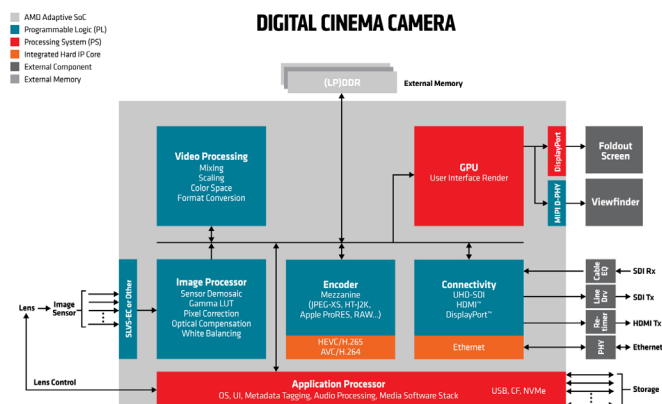
DEDICATED HARDWARE ACCELERATION & INTERFACES

- Dedicated video codec units (VCU) for simultaneous AVC or HEVC encoding and decoding of video streams up to 4k60 4:4:4 with 12-bpp; combine two VCUs for 8k30 HEVC encoding
- Read from and write to storage media over NVMe, PCIe®, UFS, and USB 3.2 Gen 2
- Peak memory bandwidth of 136 GB/s distributed to video processing functions throughout the programmable logic via a programmable network on chip (NoC) and four 32-bit LPDDR5X-8500 channels

TARGET APPLICATIONS

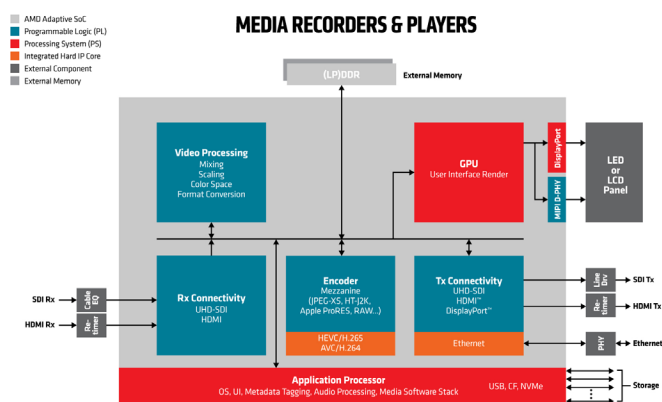
DIGITAL CINEMA CAMERAS

The Versal Prime Series Gen 2 XC2VM3654 adaptive SoC with Arm Cortex-A78 is the ideal choice for the implementation of next-generation digital cinema cameras supporting resolutions of 8K and beyond. High-speed transceivers can be easily interfaced to next-gen multi-lane image sensors. Designers can implement customized Image Sensor Processing (ISP) and video processing pipelines in the programmable logic. The integrated broadcast-grade video codecs can be used to produce AVC or HEVC proxy video streams along with simultaneous encoding of high-quality RAW video, and the compressed AV streams can be recorded directly to NVMe drives or sent over Ethernet. An intuitive user interface (UI) can also be implemented with the integrated Arm Mali-G78 GPU.



MEDIA RECORDERS & PLAYERS

The ability to ingest up to 8k video from HDMI 2.1 makes the Versal Prime Series Gen 2 XC2VM3654 adaptive SoC perfect for the heart of new professional monitors and recorders as a companion for the latest prosumer DLSR and mirrorless cameras. Real-time encoding and recording in formats such as AVID DNxHR, JPEG XS, or RAW is made possible by mezzanine codecs implemented in the programmable logic, and a captivating user experience is delivered by the adaptive SoCs integrated 8k-capable embedded DisplayPort (eDP) output. As AV-over-IP grows in popularity, streaming over Ethernet at rates from 1 Gb/s to 100 Gb/s can also be achieved with the multiple built-in MACs.



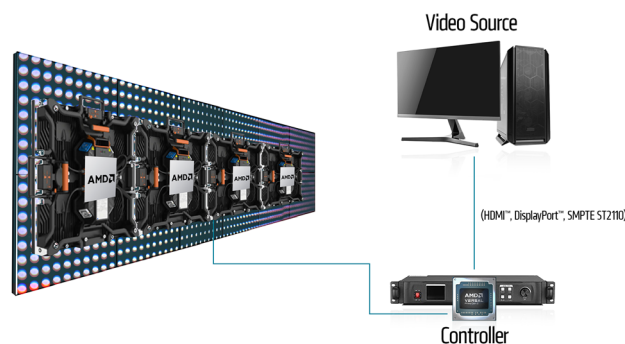
VIRTUAL PRODUCTION INFRASTRUCTURE

Receiving 8K graphics from professional GPU-based graphics cards over multiple ports of HDMI 2.1 or DisplayPort 2.1 to create 16K or larger canvases for display on LED walls via AV-over-IP standards like SMPTE ST 2110 and IPMX, blending the graphics with live camera feeds, and ensuring system-wide synchronization via SMPTE ST 2059 are all possible in a single-chip thanks to the capabilities of the Versal Prime Series Gen 2 XC2VM3654 adaptive SoC.

LIVE EVENT SWITCHERS & PROJECTORS

Mixing and blending of live UltraHD camera feeds with prerecorded content, overlaying graphics, performing real-time warping and correction of video projected onto non-planar surfaces, delivering AV streams over IP to multiple synchronized LED walls and multi-array speaker systems—implement all of these functions and more with a single Versal Prime Series Gen 2 adaptive SoC at the center of new live event switchers & projectors to enable ever more captivating experiences.

AMD IN LED VIDEO WALL CONTROL SYSTEMS



FEATURES

FEATURE HIGHLIGHTS	
Second generation Versal adaptive SoC	<ul style="list-style-type: none"> Arm Cortex-A78s, dedicated peripherals, and programmable logic in one chip Create custom video pipelines that best suit your application requirements Process video with latencies measured in pixels or lines—not frames
Flexible I/O & transceivers operating up to 32 Gb/s	<ul style="list-style-type: none"> Ingest and transmit multiple ports of baseband video Support for HDMI 2.1, DisplayPort 2.1, and 12G-SDI Directly connect to high-resolution sensors via SLVS-EC and MIPI C/D-PHY
Up to four 32-bit LPDDR5X-8500 memory controllers	<ul style="list-style-type: none"> Delivering 136 GB/s of raw bandwidth Distributed to clients throughout the device via a programmable NoC Create frame buffers for multiple channels of 8k video
Compress and decompress in real-time	<ul style="list-style-type: none"> Up to two dedicated video codec units for AVC & HEVC @ 4k60 4:4:4 12bppc Combine two VCUs for HEVC encoding @ 8k30 Implement visually lossless mezzanine codecs in programmable logic
Flexible delivery of content	<ul style="list-style-type: none"> Transport uncompressed AV over IP at 10 Gb/s, 25 Gb/s, 50 Gb/s, or 100 Gb/s Stream compressed AV over IP at 1 Gb/s, 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s,50 Gb/s, or 100 Gb/s Build products with support for Dante AV Ultra, NDI, IPMX, and/or SMPTE ST 2110

TAKE THE NEXT STEP

- To learn more about AMD Versal Prime Series Gen 2, visit www.amd.com/versal-prime-gen2
- To learn more about AMD in Professional AV and Broadcast, visit www.amd.com/broadcast

FOOTNOTES

1. Based on AMD internal pre-silicon performance estimates for the Versal Prime Series Gen 2 2VM3654 device compared to AMD internal system performance projections and power estimates for the Zynq UltraScale+ ZU7EV MPSoC device, assuming the smallest available package sizes. Actual performance will vary when final products are released in market. Performance projections as of March 2024. (VER-042)

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