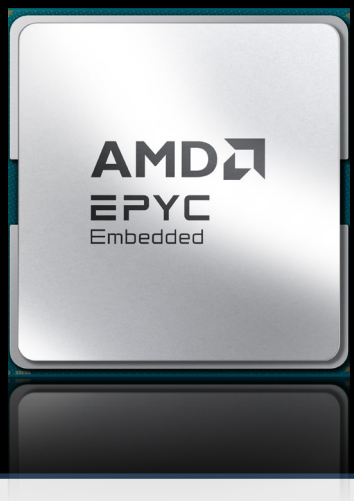
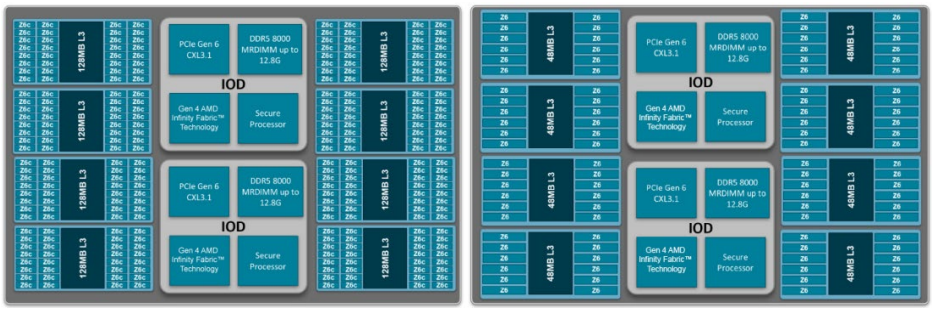
AMD EPYC™ EMBEDDED 9006 SERIES SP7 PROCESSORS

PRODUCT OVERVIEW



AMD EPYC™ Embedded 9006 Series SP7 CPUs bring data center class compute to embedded systems that need high throughput, fast data movement, and a long deployment horizon. Built on the "Zen 6" architecture (supporting "Zen 6" or "Zen 6c" cores, shown below), the SP7 family scales up to 256 cores and 512 threads, delivering an estimated 1.8x throughput uplift[1], vs. the previous-generation device. The processor is offered in six configurations, helping customers meet their specific compute requirements.



6th Gen AMD EPYC™ Embedded CPU chiplet for "Zen 6c" and "Zen 6"

The EPYC Embedded 9006 architecture features up to 16 channels of DDR5 memory, delivering up to 2.7x higher peak memory bandwidth[2] with MRDIMM and 1.7x higher with RDIMM compared to the previous generation device. It also supports up to 96 PCIe® Gen 6 lanes at 64 GT/s and CXL® 3.1 for high-speed connectivity to network interfaces, accelerators, and other devices.

Hardware security features include AMD Root of Trust, AMD confidential compute, virtual machine isolation, and LMS post-quantum signature verification. Reliability and serviceability features help identify and contain faults, while seven-year product availability and software support address the planning needs of embedded deployments.

The series targets test & measurement equipment, enterprise storage controllers, and next-generation firewalls. Its combination of compute density, I/O, and long-term support lets designers build and sustain systems for these demanding applications.

KEY APPLICATIONS

TEST & MEASUREMENT
Semiconductor Automated Test Equipment

NETWORKING & STORAGE
Next-gen Firewalls
Enterprise Storage Controllers

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BUILT FOR EMBEDDED SYSTEMS

TEST & MEASUREMENT

Test platforms must process and analyze growing volumes of data as semiconductor innovation booms. One key application is semiconductor automated test equipment (ATE), where memory vendors can now test next-gen, high-speed memory devices with AMD EPYC Embedded 9006 processors as part of their test flow.

- Up to 96 PCIe Gen 6 lanes support high-speed connections to instruments.
- 16 DDR5 channels help feed data-intensive workloads.
- CXL 3.1 supports compatible memory expansion.
- Read the Solution Brief: www.amd.com/content/dam/amd/en/documents/products/embedded/epyc/test-measurement-solution-brief-epyc-9006-series.pdf

NETWORKING & STORAGE

Enterprise storage controllers and next-generation firewalls need concurrent processing, memory bandwidth, and fast links to network and storage devices.

- Up to 1.3x uplift in packet-processing performance [3]
- Core density supports services, packet handling, and security.
- PCIe Gen 6 links operate at 64 GT/s, twice the 32 GT/s signaling rate of PCIe Gen5.

LEADERSHIP PERFORMANCE

AMD EPYC™ Embedded 9006 CPUs give networking, storage, and test systems the performance to handle more demanding workloads. Built on the "Zen 6" architecture, they combine up to 256 cores and 512 threads per socket with up to 1.8x generation-over-generation throughput[1] and up to 2x the performance of Intel Xeon 6 processors.[4] That performance translates into greater capacity for concurrent work, helping equipment manufacturers scale capabilities within a single system.

For semiconductor automated test equipment (ATE), more processing resources can support parallel testing of memory devices and high-speed interfaces, helping improve equipment utilization and meet growing validation demands. For firewalls and networking appliances, greater processing capacity can help systems handle increasing traffic alongside control plane tasks. This gives designers more headroom to scale network services and potentially reduce the number of appliances required. For enterprise storage, additional cores and higher throughput can accelerate software services, data protection, and orchestration, helping processing keep pace with the infrastructure it supports. The practical advantage: more work per socket, greater system capacity, and room to support increasingly complex embedded workloads.

HIGHER MEMORY BANDWIDTH AND NEXT-GEN I/O

AMD EPYC™ Embedded 9006 processors pair high core counts with the memory and connectivity bandwidth needed to keep data moving. Featuring 16 DDR5 memory channels, up from 12 in the previous generation, they deliver up to 2.7x the peak memory bandwidth[2], supporting RDIMM speeds up to 8000 MT/s and MRDIMM speeds up to 12800 MT/s.

As a leading embedded processor with PCIe® Gen 6 connectivity, the EPYC Embedded 9006 CPU provides up to 96 lanes operating at 64 GT/s, delivering up to 1.5x the peak I/O bandwidth[2] per socket vs. the previous generation. CXL® 3.1 support provides a path for compatible memory expansion as capacity requirements grow.

Together, these advances help reduce data bottlenecks and give designers room to scale. Achievable bandwidth and available device lanes depend on system configuration.

For semiconductor test equipment, these capabilities support validation of emerging memory and high-speed interfaces. For firewalls, greater memory bandwidth helps support increasingly complex policy and connection tables. For storage, it helps feed demanding RAID, compression, and caching workloads while connecting high-speed drives, networking, and storage accelerators.

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ADVANCED SECURITY ARCHITECTURE FOR PLATFORM RESILIENCE

AMD EPYC™ Embedded 9006 CPUs establish platform trust through three dedicated security engines, each with a distinct role. The AMD Root of Trust, ART, establishes the initial immutable silicon root of trust and enables secure boot by creating a chain of trust to authenticate firmware components as the system boots. ART also supports post-quantum cryptography for firmware signing, helping protect the platform against future quantum threats, along with hardware protections against physical and side-channel attacks. The AMD Security Processor, or ASP, acts as the boot orchestrator and provides key security services during system operation, including trusted execution environment. It also provides secure debug capabilities for authorized diagnostic and troubleshooting. For virtualized environments, the ASP also manages the keys used to protect VM memory. Caliptra is an open-source vendor neutral silicon root of trust that establishes the foundation for measurement and identity, which is then used for device identity and attestation. This allows a remote entity to verify that the device is genuine and that the expected firmware and BIOS are running on the platform. Together, these three engines provide complementary layers of protection, from establishing trust at boot, to securing runtime operation, to verifying platform identity and integrity.

ENTERPRISE-CLASS RAS

Reliability, availability, and serviceability (RAS) features help detect, diagnose, and contain faults. A dedicated sideband microprocessor manages RAS events, complemented by memory error correction, scrubbing, and post-package repair. PCIe® error reporting and containment help limit I/O fault impact, while platform-supported telemetry enables proactive maintenance.

DESIGNED FOR LONGEVITY

Seven-year product availability, embedded software support, and ongoing security fixes help teams plan qualification, deployment, and maintenance—supporting resilient platforms from manufacturing through long-term service. Drop-in, next-gen processor compatibility enables a streamlined upgrade path.

KEY FEATURES

COMPUTE AND ACCELERATION

- Up to 256 “Zen 6c” cores and 512 threads per socket; “Zen 6” SKUs offer up to 96 cores.
- FP16, AVX 512 and AVX VNNI INT8 instruction support, with ZenDNN for CPU AI inference.

MEMORY AND CONNECTIVITY

- 16 DDR5 channels support RDIMM and MRDIMM memory configurations at one DIMM per channel.
- Up to 96 PCIe Gen 6 lanes run at 64 GT/s; some lanes are dual use with two socket links.
- CXL 3.1 support enables compatible device and memory expansion on selected PCIe Gen 6 links.

SECURITY AND MANAGEABILITY

- AMD Root of Trust, secure boot, AMD Memory Guard, and virtual machine isolation provide layered platform protection.
- LMS post-quantum signature verification supports firmware authentication workflows.

RELIABILITY AND AVAILABILITY

- ECC, error reporting, fault containment, scrubbing, and predictive telemetry support fault diagnosis and serviceability.
- Seven-year product availability, software support, and ongoing security fixes.,

EPYC™ EMBEDDED 9006 SERIES SP7 PRODUCT SKUs

Model	CPU Base Freq. (GHz)	CPU Max Freq. (GHz)	# CPU Cores	# of Threads	Total L3 Cache (MB)	Default PPT	Core type
9976	2.55	4.1	256	512	1024	600W	Zen 6c
9946	3.05	4.1	192	384	768	600W	Zen 6c
9846	2.9	4.1	168	336	768	500W	Zen 6c
9756	3.2	4.1	128	256	512	500W	Zen 6c
9656	2.85	4.1	96	192	512	400W	Zen 6c
9556	3.6	5.1	64	128	192	400W	Zen 6

Preliminary model specifications. PPT is default maximum package power tracking..

SUMMARY

AMD EPYC Embedded 9006 Series CPUs bring high core counts, 16 channel DDR5 memory, PCIe Gen 6 connectivity, and CXL 3.1 to embedded designs that need sustained throughput and room to expand. Security and RAS features support the operation of long-lifecycle systems, while seven-year availability and software support provide a planning horizon for deployment. Across test & measurement, storage, and networking applications, the SP7 family gives developers multiple compute options for systems that must process more data, attach faster devices and remain serviceable over time.

For more information about the AMD EPYC Embedded 9006 Series processor family, please visit:
https://www.amd.com/en/products/embedded/epyc/9006-series.html

ENDNOTES

1. SPECrate®2017_int_base comparison based on AMD internal estimates for a 2P 6th Generation EPYC Embedded processor as of 11/26 and 2P 5th Gen EPYC measurements as of 7/26. 2P AMD EPYC 9976, 512C total, 16x64GB 12800 MT/s MRDIMM, AOCC 6.0, SPECrate®2017_int_base 4900. 2P AMD EPYC 9965, 384C total, 12x64GB DDR5-6400, AOCC 5.0, performance determinism, SPECrate®2017_int_base 2740. SPEC®, SPECint®, and SPECrate® are registered trademarks of Standard Performance Evaluation Corporation. Learn more at spec.org. SPECrate® 2017 will be a retired benchmark on November 17, 2026, and SPEC will no longer review or publish SPECrate 2017 results.(EES7-008).

2. Based on AMD internal estimates for the AMD EPYC Embedded 9756 processor as of 11/26 and published product specifications for AMD EPYC 9005 Series Processors as of 6/26. Estimated results are subject to change when products are released in market (EES7-004)

3. DPDK L3 forwarding performance based on AMD testing conducted in October 2026, using the DPDK L3FWD benchmark. 6th Gen AMD EPYC™ Embedded 9756 (128 cores) and 5th Gen AMD EPYC™ 9755 (128 cores) platforms were each configured with 400 Gb/s aggregate NIC bandwidth (2 × 200 Gb/s). 6th Gen AMD EPYC™ Embedded 9756 platform was configured with 32 × 128 GB DDR5 RDIMMs operating at 8000 MT/s. 5th Gen AMD EPYC 9755 system was configured with 24 × 24 GB DDR5 RDIMMs operating at 6400 MT/s. Performance reflects a comparison of the two processors using DPDK packet-forwarding throughput, with both configurations tested using one core and one thread per port. Estimated results are subject to change when products are released in market. Results may vary due to factors including system configurations, software versions and BIOS settings (EES7-003).

4. SPECrate®2017_int_base comparison based on AMD internal estimates for 2P 6th Generation EPYC Embedded processor as of 11/26 and published 2P Intel Xeon 6980P processor (128 cores) measurements see https://spec.org/cpu2017/results/res2025q4/cpu2017-20251126-50522.html. System configurations: 2P AMD EPYC 9976, 512C total, 16x64GB 12800 MT/s MRDIMM, AOCC 6.0, 4900. 2P Intel Xeon 6980P, 128C,2510. Preliminary performance estimates based on AMD engineering projections and subject to change. SPEC® and SPECint® are registered trademarks of Standard Performance Evaluation Corporation. Learn more at spec.org. SPECrate® 2017 will be a retired benchmark on November 17, 2026, and SPEC will no longer review or publish SPECrate 2017 results (EES7-009).

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