



## AMD Storage Networking Solutions:

### **AMD Server and Datacenter Processors**

AMD EPYC™ 7000 Series

optimized for scale-out enterprise and cloud storage infrastructure

### **AMD Embedded Processors**

AMD EPYC™ Embedded 3000

optimized for entry-level and midrange storage systems

### **AMD Embedded SOCs for Multimedia, Transcoding and Streaming**

AMD Embedded G-Series

optimized for low power

AMD Embedded R-Series

optimized for performance and power efficiency

AMD Ryzen™ Embedded V-Series

optimized for ultra-high performance

## Application Brief: AMD Storage Networking

# Expansive I/O Flexibility and High-Performance Processing for Breakthrough Storage Networking Scalability

In every IT environment – from the SMB to the cloud datacenter – flexible storage scalability is crucial for enabling management and cost efficiencies amid extreme data growth and storage capacity requirements. Continued advancements in storage networking invite a fresh look at the processing platforms targeted to underpin established and next-generation storage architectures, spanning from network attached storage (NAS) and storage area networks (SAN) to hyperconverged and software-defined storage infrastructure.

At the system level, storage appliances and arrays are evolving quickly to keep pace with increasingly demanding data availability and service delivery requirements. Innovations in all-flash and hybrid SSD/HDD storage systems are providing newfound agility to dynamically manage workloads across the best-suited storage media – a capability that hinges on a robust processing platform with expansive I/O connectivity options and the processing efficiency to meet aggressive performance-per-watt targets.

## The AMD Advantage

AMD processing solutions provide an ideal balance of I/O flexibility and storage media configurability, with performance and power profiles optimized for highly-scalable storage systems and networking infrastructure. From entry-level to enterprise and datacenter-class solutions, AMD helps system designers achieve advanced data storage and management capabilities that help lower their customers' total cost of ownership.

For designers seeking uncompromising processing speeds and I/O connectivity, AMD EPYC™ Embedded 3000 and AMD EPYC™ 7000 Series processors harness the breakthrough performance- benefits of AMD's pioneering Zen architecture while enabling scalable performance spanning from 4 to 32 cores.

For designers targeting multimedia storage and streaming applications, AMD Embedded G-Series and R-Series SOCs, and AMD Ryzen™ Embedded V1000 SOCs combine the benefits of a

CPU and GPU on a single die to enable seamless transcoding of stored video and audio content.

## Key AMD Benefits:

### Expansive I/O Options

AMD processing solutions provide robust, highly integrated support for new and established interconnects, enabling expanded support for NVMe, SAS and SATA-connected storage devices. AMD EPYC™ Embedded 3000 processors support up to 64 PCIe lanes in two-die, 16-core configurations, with up to 4 memory controllers for increased memory bandwidth. For scale-out enterprise and cloud storage infrastructure, AMD EPYC™ 7000 Series processors support up to 128 PCIe lanes in 32-core configurations, with up to 8 memory controllers for unrivaled IOPS performance.

### Breakthrough Performance

AMD EPYC™ Embedded 3000 processors and AMD EPYC™ 7000 Series processors deliver a 52% improvement in instructions per clock (IPC) compared to legacy CPU architectures<sup>1</sup>, to help meet the most demanding storage throughput requirements.

### Power Efficiency

AMD processing solutions support a wide range of thermal design profiles (TDPs), with embedded processors that scale as low as 10W and below, helping designers achieve the optimal performance-per-watt, and minimize thermal constraints and associated system size and cost penalties.

### Advanced Security

AMD processing solutions feature an independent on-board AMD Secure Processor, with available capabilities including Secure Encrypted Virtualization (SEV) for securely isolating hypervisors and virtual machines (VMs) in virtualized storage environments, and secure Memory Encryption (SME) for defending against unauthorized memory access.

### Enterprise-caliber Dependability

AMD EPYC™ Embedded 3000 processors and AMD EPYC™ 7000 Series processors provide enterprise class reliability, availability and serviceability features, with advanced error detection, correction, recovery and containment capabilities designed for superior data integrity.

### Supply Longevity

AMD's planned processor availability extends to up to 10 years, providing customers with a long-lifecycle support roadmap.

For more information about the specific features and specifications supported by select products in AMD's processor portfolio, or to learn more about AMD's storage networking solutions, visit [www.amd.com](http://www.amd.com)

## AMD.com/embedded

1. Updated Feb 28, 2017: Generational IPC uplift for the "Zen" architecture vs. "Piledriver" architecture is +52% with an estimated SPECint\_base2006 score compiled with GCC 4.6 -02 at a fixed 3.4GHz. Generational IPC uplift for the "Zen" architecture vs. "Excavator" architecture is +64% as measured with Cinebench R15 1t, and also +64% with an estimated SPECint\_base2006 score compiled with GCC 4.6 -02, at a fixed 3.4GHz. System configs: AMD reference motherboard(s), AMD Radeon™ R9 290X GPU, 8GB DDR4-2667 ("Zen")/8GB DDR3-2133 ("Excavator")/8GB DDR3-1866 ("Piledriver"), Ubuntu Linux 16.x (SPECint\_base2006 estimate) and Windows® 10 x64 RS1 (Cinebench R15). SPECint\_base2006 estimates: "Zen" vs. "Piledriver" (31.5 vs. 20.7 | +52%), "Zen" vs. "Excavator" (31.5 vs. 19.2 | +64%). Cinebench R15 1t scores: "Zen" vs. "Piledriver" (139 vs. 79 both at 3.4G | +76%), "Zen" vs. "Excavator" (160 vs. 97.5 both at 4.0G | +64%). GD-108