HIGHLIGHTS

- **NO CHIPSET REQUIRED**
  - System on chip (SoC)
  - CPU, memory, I/O, Server Controller Hub, and security in one package
- **MAXIMUM PERFORMANCE AND FLEXIBILITY**
  - Up to 32 cores per SoC
  - Simultaneous Multithreading (SMT)
  - 8-, 16-, 24-, or 32-core variants for rightsizing
- **BEST MEMORY CAPACITY**
  - 8 memory channels per socket
  - 16 DIMMs per socket
    - Up to 2 TB in 1-socket server
    - Up to 4 TB in 2-socket server
- **INDUSTRY-LEADING I/O**
  - 128 PCIe 3.0 lanes per socket
    - Enables greater drive density
    - Enables greater GPU density
- **UNPRECEDENTED SECURITY**
  - AMD Secure Root-of-Trust Technology
  - AMD Secure Run Technology
    - Secure Memory Encryption
    - Secure Encrypted Virtualization
  - AMD Secure Move Technology
- **INDUSTRY'S ONLY NO-COMPROMISE 1-SOCKET SERVER**

AMD EPYC™ 7000 Series Processors: Leading Performance for the Cloud Era

THE CHANGING DEMANDS OF THE DATACENTER

Datacenters have rapidly evolved, with software innovation greatly surpassing the ability of hardware technology to efficiently support it. The Internet of Things, the Cloud, and an ever increasing mobile workforce have transformed datacenters of all sizes to become service providers, providing intelligible data on demand in a secure manner.

Over the past decade, there have been major advances within the software ecosystem, while the x86 server CPU has seen only incremental and comparatively nominal improvements, leaving the modern datacenter constrained and starved for innovation. This new era of computing demands a new breed of processor, one with the power to efficiently support the workloads of today's software-defined datacenter while providing protection from the silicon level up against sophisticated threats.

To achieve optimized performance for today's datacenter applications, a processor that delivers more performance, flexibility, and security through a better balance of resources is essential. AMD offers the innovation required for the cloud-era datacenter with AMD EPYC—a system on chip (SoC) that is designed from the ground up to deliver real innovation to efficiently support the needs of existing and future datacenters.

POWERING THE DATACENTER

The modern datacenter needs more cores, more memory, more I/O, and more security. AMD EPYC powers the datacenter with 32 cores, 64 threads, 8 memory channels with up to 2 TB of memory per socket, and 128 PCIe-3 lanes coupled with the industry's first hardware-embedded x86 server security solution. With servers built on EPYC technology, cloud environments can drive greater scale and performance, virtualized datacenters can further increase consolidation ratios while delivering better performing virtual machines and Big Data, and analytics environments can collect and analyze larger data sets much faster. High performance applications in research labs can solve complex problem sets in a significantly accelerated manner. EPYC, with all the critical compute, memory, I/O, and security resources brought together in the SoC with the right ratios, delivers industry-leading performance and enables lower TCO.

OPTIMIZING PERFORMANCE

AMD EPYC provides breakthrough processing power balanced with the industry-leading memory and I/O capacity needed to substantially eliminate performance bottlenecks. With the flexibility to choose from 8 to 32 cores, EPYC enables you to deploy the right hardware platforms to meet your workload needs from virtualized infrastructure to large-scale big-data and analytics platforms and legacy line-of-business applications. You can rightsize your infrastructure using EPYC with fewer cores without sacrificing memory capacity or I/O. EPYC provides the memory capacity and bandwidth to processor cores to efficiently run memory-intensive workloads. With EPYC you can leverage industry-leading I/O bandwidth that matches the capability of the CPU cores to move data to and from the network while supporting I/O-intensive workloads. EPYC, with a balanced set of resources, offers you an unprecedented opportunity to rightsize your datacenter infrastructure for enhanced performance and cost efficiency.

AMD EPYC: Leading Performance for the Cloud Era

1-SOCKET SERVERS THAT CAN DELIVER 2-SOCKET SERVER PERFORMANCE

Today, the vast majority of servers populating the datacenter are two-socket servers, and the majority of these servers are greatly underutilized. Datacenters are full of expensive underutilized two-socket servers purchased for the additional memory, I/O, or enterprise management features not available in single-socket servers. EPYC processor-based no-compromise single-socket servers with up to 32 multithreaded cores, 8 memory channels offering up to 2 TB of RAM, 128 PCIe-3 lanes, and the industry's first hardware-embedded x86 server security solution can meet the needs of your applications by enabling better resource utilization and greater flexibility. AMD EPYC processor-based no-compromise single-socket servers with a better balance of resources enable you to efficiently run many former two-socket-server workloads and provide real-world performance gains while enabling lower total cost of ownership.

SECURING THE DATACENTER

Securing data and software has never been more challenging or more important. As attack surfaces increase, companies of all sizes struggle to protect themselves and their customers. A sound security strategy does not end at a firewall. Companies of all sizes face increasing risks of hacking that lead to data theft, ransomware, and other forms of exploitation. Security threats have become more complex as the number of attack vectors increase among more and more attack surfaces—both external and internal. AMD EPYC processor-based servers shield the datacenter from external and internal threats, helping keep software and data safe while booting, running, and moving from server to server. The AMD Secure Root-of-Trust technology, with a secure root of trust, ensures that only cryptographically signed software is booted, depending on your server vendor's implementation. AMD Secure Run Technology encrypts all software and data in memory, guarding against unauthorized snooping and cold boot attacks while supporting secure VM isolation. AMD Secure Move technology also enables secure migration of virtual machines and containers between EPYC processor-based servers. AMD EPYC, with the industry's first hardware-embedded x86 server security solution, provides unprecedented security for your datacenter software and data, keeping them safe while booting, running, and moving between EPYC processor-powered servers.

AMD EPYC can help you better match your datacenter resources to your workloads with a system on chip that delivers more performance, flexibility, and security through a better balance of resources at a lower TCO.

AMD EPYC PRODUCT FAMILY AND WORKLOAD AFFINITY

Model #	Cores	Threads	Base Freq. (GHz)	All Core Boost Freq. (GHz)	Max. Boost Freq. (GHz)	TDP (W)	L3 Cache (MB)	DDR Channels	Max DDR Freq. (1DPC)	2-Socket Theoretical Memory Bandwidth (GB/s)	PCIe®	2P/1P	Workload Affinity
7601	32	64	2.20	2.70	3.20	180	64	8	2666	341	x128	2P/1P	• DBMS and Analytics • Capacity HPC
7551	32	64	2.00	2.55	3.00	180	64	8	2666	341	x128	2P/1P	• VM Dense • VDI • DBMS and Analytics • Capacity HPC
7551P												1P	
7501	32	64	2.00	2.60	3.00	155/170	64	8	2400/2666	307/341	x128	2P/1P	• VM Dense • VDI • DBMS and Analytics • Web Serving
7451	24	48	2.30	2.90	3.20	180	64	8	2666	341	x128	2P/1P	• General Purpose
7401	24	48	2.00	2.80	3.00	155/170	64	8	2400/2666	307/341	x128	2P/1P	• General Purpose • GPU/FPGA Accelerated • Storage
7401P												1P	
7351	16	32	2.40	2.90	2.90	155/170	64	8	2400/2666	307/341	x128	2P/1P	• General Purpose • GPU/FPGA Accelerated • Storage
7351P												1P	
7301	16	32	2.20	2.70	2.70	155/170	64	8	2400/2666	307/341	x128	2P/1P	• General Purpose • License Cost Optimized
7281	16	32	2.10	2.70	2.70	155/170	32	8	2400/2666	307/341	x128	2P/1P	• General Purpose • License Cost Optimized
7251	8	16	2.10	2.90	2.90	120	32	8	2400	307	x128	2P/1P	• License Cost Optimized