AMD

5 REASONS TO CHOOSE
AMD EPYC™ PROCESSORS OVER ARM®
SEAMLESS HYBRID AND MULTI-CLOUD DEPEND ON x86

There is a lot of buzz about hyperscalers installing homegrown Arm® processors for their specific lines of business, like web hosting, shopping, and ad serving. Cloud vendors also rent their Arm-based instances to enterprise customers, but these custom processors may not be a good fit for your workloads. Here are five important considerations for evaluating Arm server CPUs versus x86 CPU offerings. After all, with the growing importance of IT to nearly every facet of modern business, it is crucial to build a seamless hybrid multi-cloud IT deployment.

1

AMD EPYC™ PROCESSOR-POWERED INSTANCES CAN BE MORE COST-EFFECTIVE

Performance and cost are integrally related. While Arm-based instances may have lower prices than comparable AMD EPYC processor-based instances, don't ignore the performance gap between them. Arm processors often take longer to finish general computing tasks, which means they can cost more to complete a given workload. Even lower-priced Arm-based instances can be more expensive per task than AMD EPYC CPU-based instances.

According to Phoronix, 4th Generation AMD EPYC 9004 CPU-based AWS R7a instances deliver roughly 25% greater overall performance than AWS Graviton4 R8g Arm-based instances across 48 real-world cloud benchmarks (geomean).

That can translate to 75% better price/performance.[1]

2

AMD EPYC PROCESSORS MAY BE MORE ENERGY EFFICIENT

For servers, performance requires power. While most cloud vendors do not publish energy consumption metrics, other offerings based on the Arm Neoverse™ core technologies have published results that help debunk the Arm processor energy efficiency myth. In reality, AMD EPYC processors consume less power at idle and complete much more work per watt of energy expended when under load.

Plus, the lower performance of these Arm-based options means workloads may take longer to execute, driving up overall energy consumption.

The NVIDIA Grace™ Superchip performs 13,218 operations per watt, while AMD EPYC 9965 performs 44,168 operations per watt—3.3X more performance per watt than the Grace Superchip.[2]

3

x86 COMPATIBILITY SIMPLIFIES HYBRID AND MULTI-CLOUD

Modern business is built on the foundation of x86-based systems on-premises and perhaps trillions of lines of software. Arm-based platforms are incompatible with x86. Moving from x86 to a cloud vendor's Arm instance will likely require software development, testing, debugging, and ongoing support to resolve architecture-specific issues. x86 processors also deliver a wide range of core counts and frequencies, plus technologies like multi-threading, turbo modes, and AVX-512—capabilities that Arm simply doesn't have.

The cloud is about flexibility. Recent data published in the Flexera 2025 State of the Cloud Report reveals that over 20% of workloads, once placed in the cloud, have been brought back on-premises.[3] Keeping a common x86 architecture can simplify moves between the cloud and on-prem.

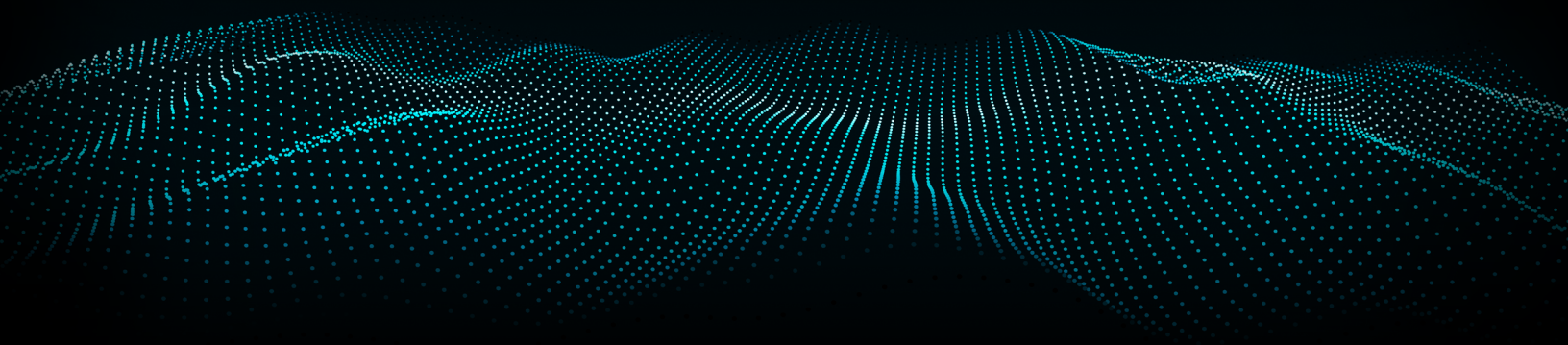
4

x86 IS THE FOUNDATION OF SEAMLESS MULTI-CLOUD PORTABILITY

Arm cloud offerings use custom chips, which means AWS Graviton, Google Cloud Axion, Microsoft Azure Cobalt, and NVIDIA Grace™ Superchip are incompatible with each other and x86.

With multiple Arm variants in your multi-cloud, workloads must be compiled and recompiled, constraining portability and making operations more complex, costly, and resource intensive. Sticking with a common x86 approach can provide flexibility and operational ease.

82% of organizations use a hybrid cloud or multi-cloud environment according to a recent 2025 Cloud Security Report by Cybersecurity Insiders and Fortinet.[4] As more companies adopt multi-cloud IT, compatibility and seamless portability become a critical consideration.



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5

AMD EPYC CPUs DELIVER PROVEN x86 LEADERSHIP AND FLEXIBILITY

Compared to hyperscaler Arm platforms, the ubiquitous x86 ecosystem offers unmatched benefits. AMD EPYC CPUs provide valuable flexibility for IT, delivering record-breaking performance and efficiency for on-premises infrastructure and public clouds.

Work with the integrators, OEMs, and cloud providers you trust, and choose from over 350+ OEM platforms and over 1,000 public cloud instances to build a flexible, efficient, high-performance hybrid multi-cloud on AMD EPYC CPUs.

Rely on the leadership performance and efficiency of AMD. Over five generations, AMD EPYC CPUs' raw performance has improved 11.3X and performance per watt has increased by 4.1X.[5]

CHOOSE AMD EPYC™ CPUs
FOR HYBRID AND MULTI-CLOUD IT INFRASTRUCTURE

Make the best of both worlds. Skip the migration hassles and move workloads through your IT infrastructure seamlessly with fast, efficient AMD EPYC CPUs on-premises and in the cloud.

See how AMD EPYC CPUs stack up against Arm

1. Phoronix, "AWS Graviton4 Benchmarks Prove to Deliver the Best ARM Cloud Server Performance," page 7, July 12, 2024. Performance per dollar calculated as geometric mean performance divided by total cost to complete workloads. On-demand pricing shown is for general-purpose cloud compute instances in the US East region, based on rates from July 2024 and last checked in June 2025. No changes were observed during this period. Pricing may change at any time.
2. As of May 29, 2025, a 2P AMD EPYC™ 9755 system (128 cores) delivers a 2.41x SPECpower_ssj® 2008 overall ssj_ops/watt uplift versus a 2P NVIDIA Grace™ CPU Superchip system (144 cores), and a 2P AMD EPYC™ 9965 system (192 cores) delivers a 3.34x uplift versus the same Grace system. Configurations: 2P EPYC 9755: 31,874 overall ssj_ops/watt, (https://www.spec.org/power_ssj2008/results/res2024q4/power_ssj2008-20240923-01453.html). 2P EPYC 9965: 44,168 overall ssj_ops/watt (https://www.spec.org/power_ssj2008/results/res2025q2/power_ssj2008-20250407-01522.html) versus a 2P NVIDIA Grace Superchip: 13,218 overall ssj_ops/watt (https://www.spec.org/power_ssj2008/results/res2024q3/power_ssj2008-20240515-01413.html). SPEC® and SPECpower_ssj® 2008 are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information. (9xx5-217)
3. Flexera, "Flexera 2025 State of the Cloud Report," © 2025 Flexera Software LLC, used under Creative Commons CC BY 4.0.
4. Fortinet, "2025 Cloud Security Trends," page 4, 2025.
5. SPECrate®2017_int_base comparison based on published scores from www.spec.org as of 10/10/2024. Generational scores are based on highest published scores from www.spec.org from respective launch years. 2P AMD EPYC 9965 (3100 SPECrate®2017_int_base, 384 Total Cores, 500W TDP, 6.200 SPECrate®2017_int_base/CPU W, https://spec.org/cpu2017/results/res2024q4/cpu2017-20241004-44979.html) 2P AMD EPYC 9654 (1790 SPECrate®2017_int_base, 192 Total Cores, 360W TDP, 4.972 SPECrate®2017_int_base/CPU W, https://www.spec.org/cpu2017/results/res2022q4/cpu2017-20221024-32607.html) 2P AMD EPYC 7763 (861 SPECrate®2017_int_base, 128 Total Cores, 280W TDP, 3.075 SPECrate®2017_int_base/CPU W, https://www.spec.org/cpu2017/results/res2021q4/cpu2017-20211121-30148.html) 2P AMD EPYC 7742 (701 SPECrate®2017_int_base, 128 Total Cores, 225W TDP, 3.116 SPECrate®2017_int_base/CPU W, https://www.spec.org/cpu2017/results/res2019q4/cpu2017-20191125-20001.html) 2P AMD EPYC 7601 (275 SPECrate®2017_int_base, 64 Total Cores, 180W TDP, 1.528 SPECrate®2017_int_base/CPU W, https://www.spec.org/cpu2017/results/res2017q4/cpu2017-20171211-01594.html) SPEC®, SPEC CPU®, and SPECrate® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information. (9xx5-069B)

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