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Choose wisely — How technology decisions drive data center efficiency

Presented by AMD

The modern data center hinges on technologies that drive high performance, robust security and ample flexibility. In recent years, however, another key component has started to consume significant mindshare for IT leaders: energy efficiency.

As the issue of climate change becomes more pressing, businesses across the globe are understanding their responsibility to reduce their carbon footprints. To address this imperative, business leaders are adopting and acting upon formalized corporate sustainability and efficiency-related goals.

The data center, as the computational heart of an organization, presents a unique opportunity to drive efficiencies and propel organizations towards meeting these goals.

Reconsidering energy efficiency in the data center

With the volume of company data swelling and application demands intensifying, computing systems and the processors that underlie these systems must bear the brunt of the workload. More computational tasks need to be executed, likely necessitating a higher number of servers and more power. Concurrently, as these tasks generate heat, yet more power may be needed to support the cooling mechanisms that keep the data center running smoothly.

Because of this, data centers have traditionally been viewed with suspicion when it comes to environmental sustainability; they are often seen as power hungry. IT organizations have had to fight against this negative perception of the data center as inherently environmentally burdensome. But choosing the right technology can help organizations address some of these environmental concerns.

Power your data center, the power-efficient way

When it comes to choosing the right technologies to power a data center, high performance has typically been the primary objective. Increasingly, however, IT leaders are being tasked with implementing solutions that "have it all" — that is, solutions that drive cost efficiency, energy efficiency and performance.

To address this trifecta of (seemingly paradoxical) mandates, choosing the right server processor is crucial. For example, energy costs in the telecom industry can range from 20% to 40% of operating costs.[1] IT organizations need processors that can deliver the necessary amount of performance to enable optimal intra-organizational and customer experiences, while not compromising on costs or energy efficiency. This includes considering the number of servers required to complete tasks, and whether a more powerful processor will allow a data center to provide the same level of compute power with a smaller footprint.

Reducing the size of a data center footprint can help lower power and cooling costs, aid in lowering both hardware investment and overall TCO. This is an easy decision to help meet challenging corporate power efficiency goals. Through their infrastructure decisions, IT leaders have a distinctive opportunity to turn sustainability goals into realities and inspire the rest of their organization.

Leaner for your budget and your power consumption

That all sounds rather abstract, so let us turn it into a more relatable scenario. Let's say your organization needs to run 1,200 virtual machines (VMs). To achieve this number of VMs, you can choose to run on either 10 AMD EPYC 7713 processor-based servers, or 15 servers based on competitive top of stack x86 processors. In this example, with AMD, you have a third fewer servers, your solution cost goes down by an estimated 44%, and your hardware TCO over three years is a projected 41% lower compared to the competitive setup. You also might reduce energy consumption by an estimated 32% — a reduction which translates to the equivalent environmental benefit provided by 28 acres of United States forest annually.

This means that by simply choosing to run these 1,200 VMs on EPYC in this scenario your data center is yielding roughly the same amount of greenhouse gas reduction as would 28 acres of U.S. forest, each year for every year across the life of the deployment. Let that sink in for a moment.[2]

Committed to data center efficiency

AMD server processors have been designed with energy efficiency in mind, making them the most energy-efficient x86 processors in the game[3] –but the path forward looks even

brighter. Last year, AMD announced an aggressive goal of increasing energy efficiency by 30X for server CPUs and GPU accelerators powering servers for HPC and AI-training from 2020-2025. If all global AI and HPC server nodes were to make similar gains, AMD projects up to 51 billion kilowatt-hours (kWh) of electricity could be saved from 2021-2025 relative to baseline trends, amounting to $6.2B USD in electricity savings as well as carbon benefits from 600 million tree seedlings grown for 10 years.[4]

Read more about AMD's ongoing commitment to driving the future of data center sustainability here.

Stay efficient today, tomorrow and beyond

Sustainability is poised to become an increasingly important part of corporate stewardship and the data center is becoming a ripe opportunity to drive energy efficiency and enable ambitious corporate sustainability goals. Choosing the right processor is a relatively simple but very important step towards unlocking this opportunity and can give IT organizations the ability to balance a set of challenging mandates: drive high performance, do it cost-effectively and help address the burden on our planet.

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[1] https://www.gsma.com/futurenetworks/wiki/energy-efficiency-2/, GSMA 2019

[2] MLNTCO-021 – https://www.amd.com/en/claims/epyc3x#faq-MLNXTCO-021

[3] As of 2/2/22, of SPECpower_ssj® 2008 results published on SPEC's website, the 55 publications with the highest overall efficiency results were all powered by AMD EPYC processors. More information about SPEC® is available at http://www.spec.org. SPEC and SPECpower are registered trademarks of the Standard Performance Evaluation Corporation. https://www.amd.com/en/claims/epyc3x#faq-EPYC-028

[4] Scenario based on all AI and HPC server nodes globally making similar gains to the AMD 30x goal, resulting in cumulative savings of up to 51.4 billion kilowatt-hours of electricity from 2021-2025 relative to baseline 2020 trends. Assumes $0.12 cents per kwh x 51.4 billion kwh = $6.2 million USD. Metric tonnes of CO2e emissions, and the equivalent estimate for tree plantings, is based on entering electricity savings into the U.S. EPA Greenhouse Gas Equivalency Calculator on 12/1/2021. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

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