THE FOUNDATION OF DATA CENTER MODERNIZATION
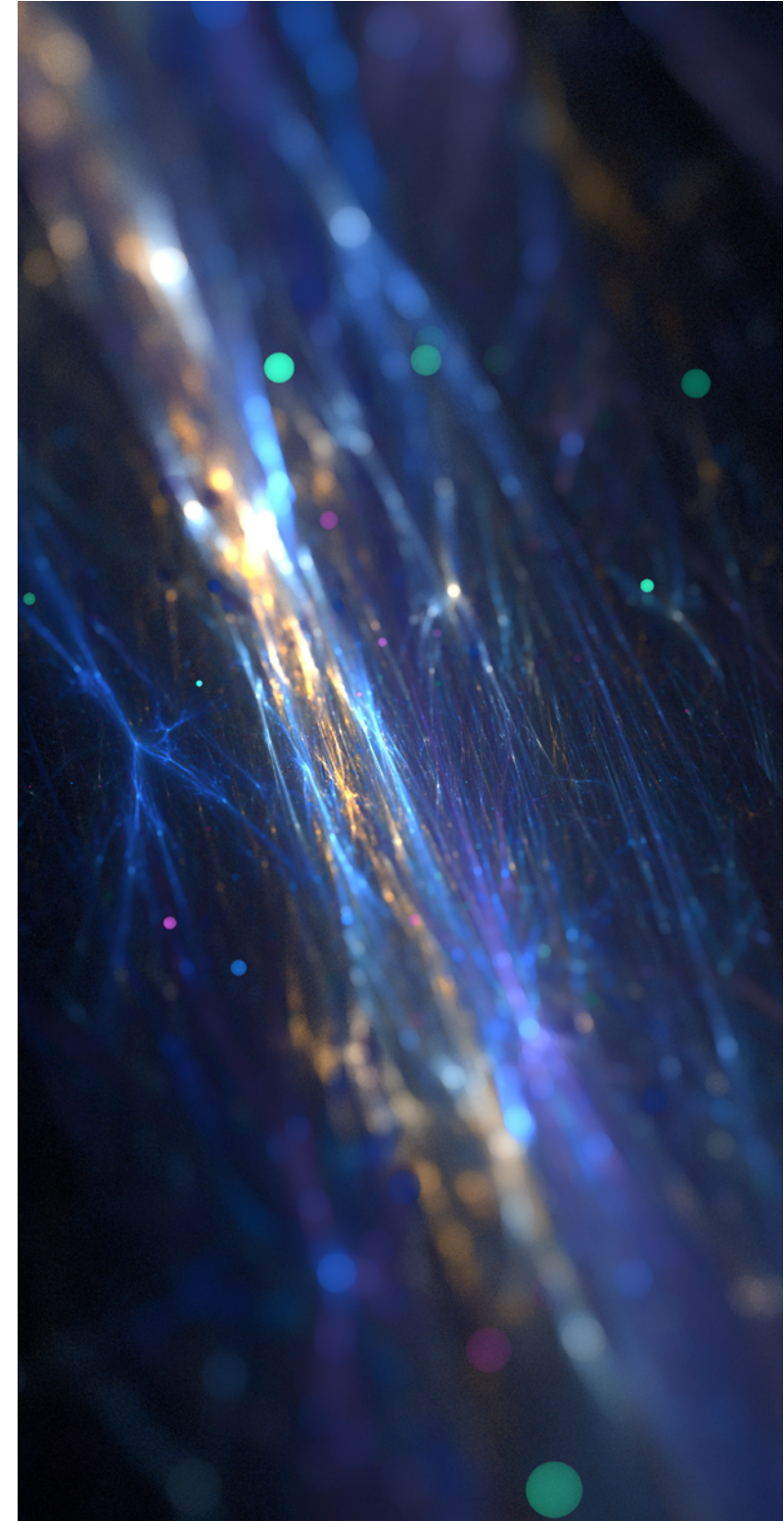
**Choosing the right processor
is more important than ever**

AMD

together we advance_

AMD

TABLE OF CONTENTS

INTRO

CIOs and IT infrastructure decision makers everywhere, and from companies of all stripes, will recognize the dilemma. Data center demands are rising, with new workloads and the rise of AI requiring more performance. Yet, at the same time, IT budgets are being heavily compressed and companies are looking to rein in data center energy costs.

Against this backdrop, the business is looking to those same CIOs and IT decision makers to find ways to process massive amounts of data to accelerate business insights and results, while delivering this capability in a low-cost, low-power, and low-space footprint.

An important differentiator in meeting these goals is processor selection. Not all CPUs are the same, and choosing a processor built to help with these challenges can not only address your data center needs, but help your organization thrive. 4th Gen AMD EPYC™ processors are designed to deliver accelerated business results by driving at three key pillars at the foundation of data center modernization:

1. Infrastructure consolidation by reducing both CAPEX and OPEX for a lower total cost of ownership (TCO)
2. Energy efficiency
3. Increasing performance

DATA CENTER MODERNIZATION PILLAR #1: EFFICIENCY

HOW THE RIGHT SERVER CPU CAN HELP COMPANIES GET TO GRIPS WITH IT ENERGY CONSUMPTION

KEY TAKEAWAYS

As data centers are required to provide new and expanding workloads, energy consumption and data center efficiency is becoming an even more important consideration for modernization efforts.

4TH GEN AMD EPYC™ PROCESSORS:

- ✓ POWER THE MOST ENERGY EFFICIENT X86 SERVERS[1]

- ✓ OFFER HIGH CORE COUNTS AND COMPUTE DENSITY

- ✓ PROVIDE BETTER PERFORMANCE PER WATT VS. COMPETING PROCESSORS[2]

DATA CENTER MODERNIZATION PILLAR #1: EFFICIENCY

Most companies have made public commitments to decarbonize their operations. And 90% of CEOs now say sustainability is important to their companies' success.[3]

Servers are already major consumers of electricity, both for power and cooling, and are responsible for a growing share of businesses' energy consumption. Meanwhile, commercial energy prices are soaring worldwide.

In fact, the numbers speak for themselves when it comes to the scale of the challenge.

DATA CENTERS ARE A MAJOR CONSUMER OF ELECTRICITY

6%

THE SHARE OF ALL ENERGY CONSUMPTION IN THE UNITED STATES OF U.S. DATA CENTERS IN 2019.

According to a study by 451 Research, part of S&P Global Market Intelligence, that is more energy than the entire country of Mexico

>3x

The Uptime Institute reported that average rack power density in U.S. data centers more than tripled from 2.4 kilowatts per rack in 2011 to 8.4 kilowatts per rack in 2020[6]

2.2%

Compound annual growth rate of data center energy consumption in the US since 2019, compared to 0.3% total growth in demand for power[5]

IN EUROPE, DATA CENTER ENERGY USE IN 2025 IS FORECAST TO BE:

21%

Above 2018 levels[8]

THE AMD ENERGY EFFICIENCY ADVANTAGE

One way to make a data center more energy efficient is to reduce the server footprint.

Top of the line 4th Gen AMD EPYC™ processors contain up to 96 cores in a single CPU. That means businesses selecting 4th Gen EPYC™ processors to power their data centers can consolidate their infrastructure, improve performance and lower energy consumption.

4TH GEN AMD EPYC™ PROCESSORS VERSUS THE TOP-OF-THE-LINE INTEL COMPETITOR[7]

SERVERS REQUIRED TO RUN 2,000 VIRTUAL MACHINES:

17 Intel
Intel 8490H 17

11 AMD
AMD EPYC™ 9654

THAT RESULTS IN UP TO 35% FEWER SERVERS, REQUIRING UP TO...

36%
Less power over 3 years

INFRASTRUCTURE CONSOLIDATION BENEFITS OF 4TH GEN AMD EPYC™ PROCESSORS COMPARED TO THE COMPETITION

UP TO
47%
Lower CAPEX

UP TO
21%
Lower 1st year cost per VM

DATA CENTER MODERNIZATION PILLAR #2: PERFORMANCE

BRINGING HIGH PERFORMANCE COMPUTING TO ENTERPRISE WORKLOADS

KEY TAKEAWAYS

Increasing pressure on data center performance is driving a need for increasingly more compute needed to power the services and devices that impact every aspect of our daily lives. In this context:

- ✓ EPYC™ PROCESSORS ARE THE WORLD'S BEST DATA CENTER CPU[8]
- ✓ EPYC™ IS DEPLOYED WITH LEADING CLOUD SERVICE PROVIDERS FOR BOTH INTERNAL WORKLOADS AND CUSTOMER-FACING INSTANCES
- ✓ EPYC™ IS DEPLOYED IN SOME OF THE WORLD'S MOST POWERFUL AND EFFICIENT SUPERCOMPUTERS

DATA CENTER MODERNIZATION PILLAR #2: PERFORMANCE

The tech-enabled services and devices that are now a feature of our daily lives are built on complex, constantly evolving models that ask a lot of today's data center infrastructures. As those services and devices have become more entrenched, few companies have been left untouched by the need for high-performance compute.

Even smaller organizations are tapping into high performance computing to perform essential functions, from online transaction processing (OLTP) to drive blazing-fast application performance, to enhanced query performance for faster time-to-insight. At the same time, in conjunction with AI and data analytics, HPC is powering entire industries that depend for their existence on performing large-scale mathematically intensive computations, from algorithmic financial trading to machine learning-powered online advertising.

And, behind it all, servers, storage capacity, memory, and bandwidth all must be at peak performance, all the time.

NOTHING IS MORE CENTRAL TO HIGH PERFORMANCE THAN PROCESSOR CHOICE

The latest 4th Gen AMD EPYC™ processors are ideal for data-intensive tasks across commercial industry sectors.

They offer exceptional performance in:

TRANSACTION PROCESSING

A server powered by a 4th Gen AMD EPYC™ 9654 compared to the Intel Xeon 8380 delivers approximately a 2.3x performance advantage for online business transactions.[9] On query performance, the EPYC™ 9654 delivers about a 2.7x median performance improvement over the Intel offering.[10]

VIRTUALIZATION PERFORMANCE

In a head-to-head between 2P servers, the 4th Gen AMD EPYC™ processors outscored the Intel Xeon-based solution by 1.7x using VMmark Benchmark, an accepted measure of performance, scalability and power consumption of virtualization platforms.[11]
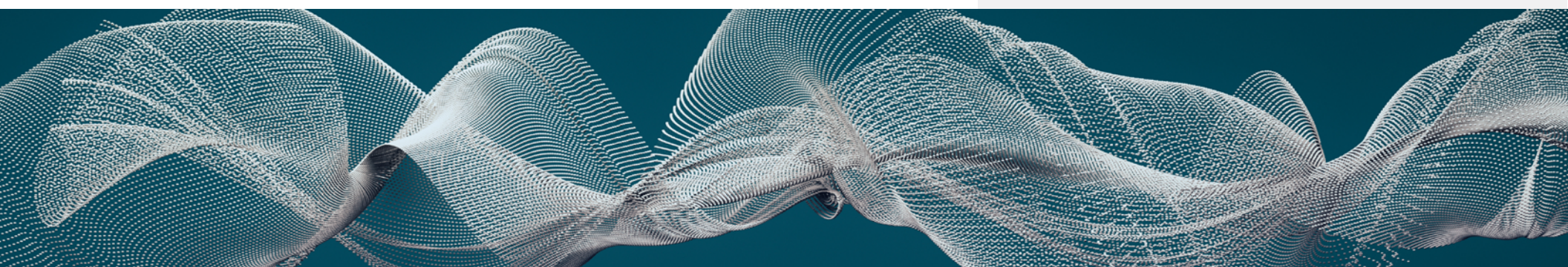
CUSTOMER SUCCESS SPOTLIGHT:

DATA CENTER TRANSFORMATION AT DBS

Servers powered by AMD EPYC™ processors enabled DBS, one of Asia's leading banks, to reduce costs and power consumption, while also implementing a new, more flexible infrastructure.

"We adopted virtualized general-purpose compute at massive scale, instead of expensive specialized hardware that is built for resiliency but often at a much higher cost," said Choon Boon Tan, managing director and head of cloud engineering and services at DBS. "Most organizations only virtualize about 50% of their workloads. DBS now has 99% virtualization."

DBS also aggressively automated its infrastructure, resulting in a 50% reduction in power consumption. And, with more efficient servers, DBS was also able to reduce the footprint of its data center to a quarter of its original size. "When we moved from our traditional infrastructure to the new virtualized commodity server-based one, we reduced the cost by 75%," Tan said.

BY THE NUMBERS:
DBS's data center modernization
with AMD EPYC™ processors

99%	**50%**	**75%**
Virtualization	Reduction in Power Consumption	Reduction in Costs
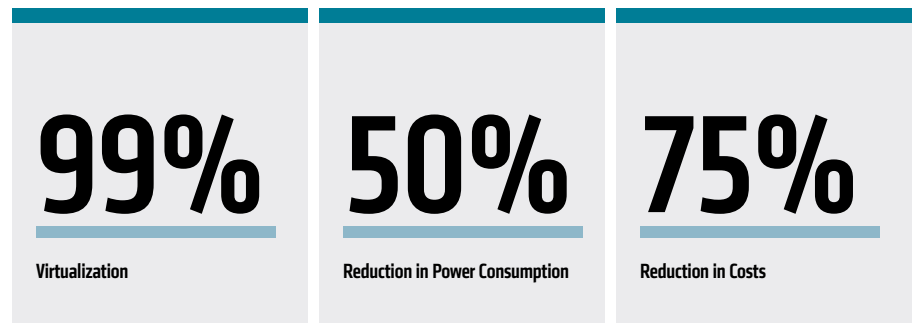
DATA CENTER MODERNIZATION PILLAR #3: INFRASTRUCTURE CONSOLIDATION

HOW THE RIGHT SERVER CPU CAN HELP COMPANIES GET TO GRIPS WITH IT ENERGY CONSUMPTION

KEY TAKEAWAYS

CIOs and IT leaders are increasingly facing calls to provide a high-performance foundational compute infrastructure across the enterprise, to develop new delivery models, and handle new use cases while balancing space and budget constraints.

✓ EPYC™ POWERED SERVERS DELIVER HIGH PERFORMANCE AND EFFICIENCY

✓ EPYC™ POWERED SERVERS CAN ALLOW FOR A SMALLER DATA CENTER FOOTPRINT

✓ WITH EPYC™, THE SAME WORKLOADS CAN BE RUN WITH FEWER SERVERS, CONSUMING LESS POWER AND AT LOWER COST – DELIVERING CAPEX AND OPEX SAVINGS

DATA CENTER MODERNIZATION PILLAR #3: INFRASTRUCTURE CONSOLIDATION

Given the dual challenges of straining CAPEX and OPEX budgets on the one hand and inflation and uncertainty on the other, CIOs and IT leaders might be tempted to hold fire for now on data center infrastructure investments.

This argument can be especially persuasive when the data center's servers are already paid for.

But, being paid for is one thing; being cost free is quite another. The performance of older equipment declines over time, while the time, cost and space needed to keep it running rises. Data center footprints can't simply grow exponentially to accommodate the increasing workloads and data needs of organizations. Older equipment will also become less able to keep pace with changing and intensifying business demands. Therefore, consolidating infrastructure during modernization efforts is important not just for cost savings, but also to ensure an enterprise is ready for the future.

Take for example, updating 5-year-old servers with the latest AMD 4th Gen processors:

When upgrading from Intel Xeon Gold 6143 to 4th Gen AMD EPYC™ 9334, organizations require 296 fewer servers, 70% fewer racks, and 65% less power over 3 years for the same workload output.[12] This kind of savings can allow for both improved costs but also flexibility for future growth and business needs.

THE COST OF WAITING IS INCREASING ALL THE TIME

THE TIME IS NOW FOR DATA CENTER MODERNIZATION

The latest AMD EPYC™ processors are more powerful and more efficient than both the competition and anything that came before. This allows IT leaders to provide the same – or greater – levels of performance with fewer servers, resulting in lower costs overall.

And, with energy prices high and even still rising in certain parts of the world choosing AMD EPYC™ processors can help organizations spend less on energy costs, and help their organizations reach broader sustainability goals.

So, as much as IT leaders are concerned about increasing CAPEX costs from servers that are already paid for, and adding to the problem with upgrades, the cost of doing nothing will very soon overtake the cost of modernizing.

That means the cost of waiting is also increasing all the time.

Connection®
we solve IT®

Contact your Connection Account Team for more information.

Business Solutions	Enterprise Solutions	Public Sector Solutions
1.800.800.0014	1.800.369.1047	1.800.800.0019

www.connection.com/AMD/server

C2556803-0324

AMD
together we advance_