Save up to $1.7 million per new server

with 49.2% lower TCO over 5 years*

Get up to 3.17x the database performance per server

for strong consolidation of existing systems**

Cut costs when you improve energy efficiency

with up to 49.6% better performance per watt**

Consolidate aging servers with the new Supermicro H14 Hyper Dual Processor servers featuring AMD EPYC™ 9474F processors and save as much as $1.7M over five years

If the hardware running your transactional database applications is five years old, now is the time to explore the benefits of refreshing with newer, more powerful servers. Investing in new technology strengthens performance, allowing you to support more users, and can even reduce the number of servers you must store, manage, and maintain—which can help you slash operating costs and save money over the next five years.

Principled Technologies evaluated the potential savings from migrating to newer technology. To do that, we started by testing the performance of a five-year-old Supermicro Ultra DP server (AS -2124US-TNRP) with older AMD EPYC™ 7532 processors and a new Supermicro H14 Hyper DP server (AS -2126HS-TN) featuring 4th Generation AMD EPYC™ 9474F processors. We then used that information to determine how many older servers a single newer one could replace.

In our tests, a new Supermicro H14 Hyper DP with AMD EPYC 9474F processors supported 3.17x the database transactions of the legacy server, offering a consolidation ratio of roughly 3:1. By doing the work of three older servers, the H14 Hyper DP could save organizations up to $1.7M over 5 years by reducing ongoing costs in software licensing, power utilization, rack and data center space, and maintenance. Consolidating with the Supermicro H14 Hyper DP can also free up rack space and reduce power consumption in your data center, leaving room to grow your AI infrastructure and support other cutting-edge business initiatives.

*Comparing 5-year TCO of 3x Supermicro Ultra DP servers with previous-generation AMD EPYC 7532 processors vs. 1x new Supermicro H14 Hyper DP server featuring AMD EPYC 9474F processors
**Comparing 1x new Supermicro H14 Hyper DP server featuring AMD EPYC 9474F processors vs. 1x legacy Supermicro Ultra DP server with previous-generation AMD EPYC 7532 processors

The time to move on from aging hardware is now

It's easy to get caught up in the technological inertia of sticking with a successful, though aging, database server infrastructure. If your existing servers generally meet the needs of your current user base, you may put off purchasing new servers—though making such an investment could actually reduce your overall costs over time.

New hardware can perform at such a level that you can do the work of multiple older servers on a single new powerful system. Shrinking your existing server footprint via consolidation can give your business big savings in operating costs over the next five years. It's time to explore how you might gain savings through server consolidation in the following areas:

- **Licensing:** Reduce costs for software with per-core licenses (e.g., VMware® vSphere®, Windows Server, and SQL Server), because fewer servers mean fewer cores to license.
- **Power:** Power-efficient features on new servers and running fewer servers overall save both active and idle power, which also reduces power costs related to server cooling. Admins can use the data center power they save to expand support for new workloads, such as GPU-supported artificial intelligence (AI).
- **Space:** Free up rack and floor space, maximizing the computing productivity of existing footprints without incurring additional rack or expansion costs. Organizations supporting larger data center configurations will see greater gains from data center rack consolidation.
- **Maintenance:** Fewer servers are easier to manage and maintain for IT staff. Plus, new technology typically fails less often, freeing IT resources for innovation while lowering labor costs.

Your servers aren't young anymore. This means that they don't have the latest features that can bolster security, ease maintenance burdens, and meet the ever-expanding customer needs of your growing business. Hardware and software incompatibilities may creep up, and hardware can begin to physically break down, forcing your IT staff to spend more and more time troubleshooting and maintaining old tech. Plus, new technology utilizes higher-performing CPUs, may incorporate GPUs, and features other updated server components that older hardware just can't compete with.

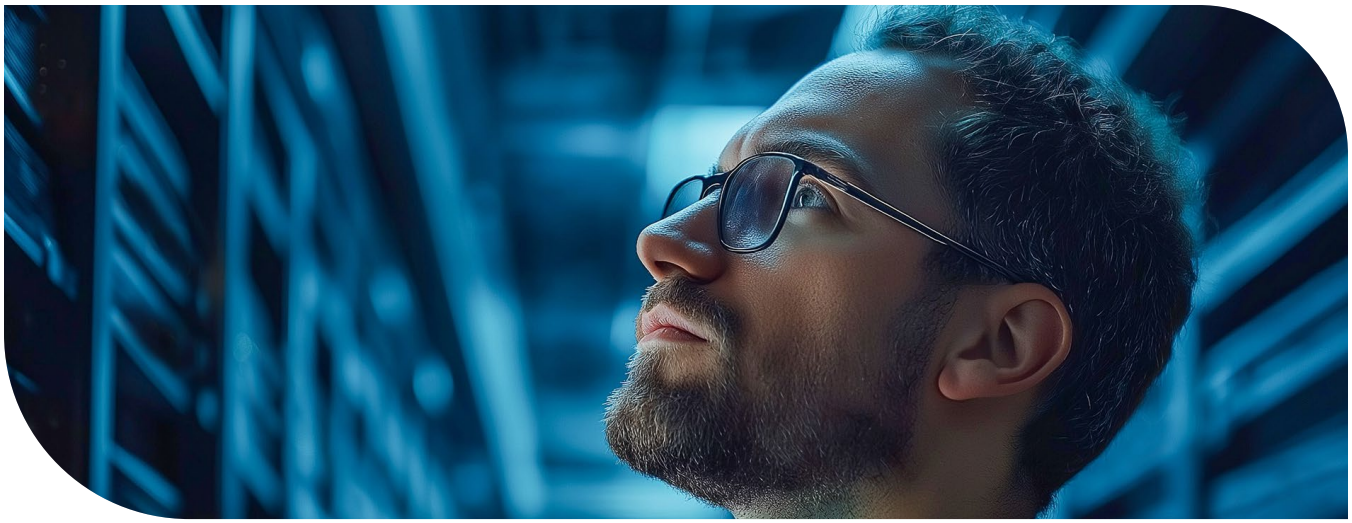
Moving on from your aging servers and reaping the benefits of consolidation can help you set up your IT department for success in all these areas while allowing you to better serve growing customer demand.

About the Supermicro H14 Hyper DP server

The Supermicro H14 Hyper DP is a 2U, dual-socket server featuring 4th Generation AMD EPYC 9005 Series processors. It has space for 24 DIMMs of DDR5-6400 memory and supports NVMe®, SAS, SATA3, and M.2 drive options. According to Supermicro, "With the H14 Hyper systems, the flexible selection of density and storage capacity gives you a high-performance server for every purpose, including:

- Virtualization and cloud, including virtual desktop
- Infrastructure with GPU acceleration
- Scale-out, clustered software-defined storage"[1]

To learn more about the Supermicro H14 Hyper DP server, visit https://www.supermicro.com/en/products/hyper.



Move to new Supermicro H14 Hyper DP servers with AMD EPYC 9474F processors and realize big savings through consolidation

The new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors can support 3.17 times the database transactions of a single Supermicro Ultra DP server, which means that you can consolidate three legacy servers onto a single new one.

Figure 1 shows the 5-year TCO we calculated for these near-equivalent-performing solutions. Consolidating three older Ultra DP servers onto a single H14 Hyper DP server with AMD EPYC 9474F processors can reduce costs by $1.7 million over five years, a 49.2 percent reduction.

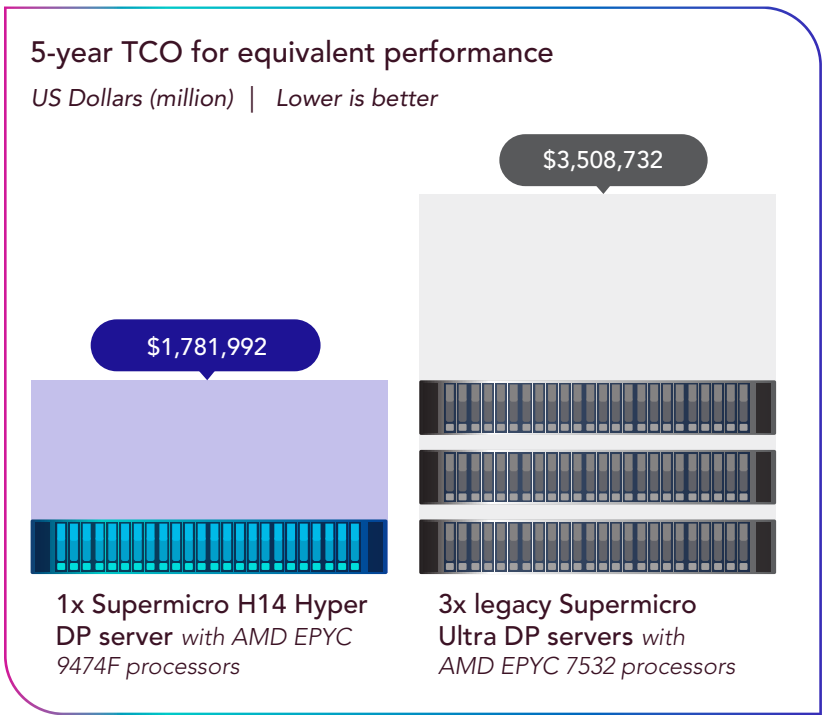


Figure 1: TCO, in USD, for solutions with near-equivalent database performance: three legacy Supermicro Ultra DP servers and a single new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors. Source: PT.

Table 1 breaks down our 5-year cost calculations for both solutions. For further details, including the specific assumptions we made to arrive at these calculations, see the science behind the report. Note: As with any TCO estimate, your cost savings will vary depending on several factors.

Table 1: 5-year TCO comparison summary for near-equivalent-performing legacy servers and the new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors. Lower costs are better. Source: PT.

5-year TCO summary for upgrade to the Supermicro H14 Hyper DP		
	Legacy Supermicro Ultra DP server with AMD EPYC 7532 processors	Supermicro H14 Hyper DP server with AMD EPYC 9474F processors
Number of systems required for equivalent performance	3	1
Purchase price	$0 (existing)	$30,000
Licensing	$3,480,753	$1,740,376
Power	$6,995	$4,621
Data center space	$1,428	$476
Maintenance	$19,555	$6,518
5-year TCO	$3,508,732	$1,781,992

Licensing costs include several software suites that are licensed per physical core: VMware vSphere Standard, SQL Server 2022 Enterprise Edition, and Windows Server 2022 Datacenter Edition. Though the H14 Hyper DP has 96 cores per server, the three legacy servers for near-equivalent performance require licensing for a total of 192 cores, a significantly higher licensing cost compared to consolidating onto and licensing a single server.

To calculate the costs of **power consumption**, we used the active and idle wattage we measured in our testing, and calculated 5 years of power using the average energy cost in the US as of March 2025: $0.1327 per kWh. Again, the costs for the legacy solution were significantly higher, because a single new H14 Hyper DP uses just 29.3 percent of the power used by three legacy servers.

To determine **space savings**, we compared data center footprint cost by rack, adjusted to consolidation ratio and rack space required. Because the legacy solution takes up 6U of space versus the 2U of rack space for the Supermicro H14 Hyper DP, rack space would cost three times as much. These data center costs include any data-center-level cooling infrastructure.

Maintenance (administration) costs we use in our calculation include the assumption that a single IT admin is responsible for 100 servers, and divide the number of servers for the H14 Hyper DP solution (1) and legacy Ultra DP solution (3) to arrive at the number of admins needed. We then multiplied this number by an average salary of $100,580 for a network and computer systems administrator to determine labor costs/admin burden.[4]

Have more, save more: How consolidation savings grow with deployment sizes

While our hands-on database testing looked only at the results for a single Supermicro H14 Hyper DP server, it's not hard to extrapolate and determine the kind of savings consolidating larger server deployments could bring. Moving three legacy servers onto a single new server could save an organization as much as $1.7 million over 5 years—how much could a consolidation of, say, 18 older servers save?

Extrapolating from our TCO calculations, continuing to run those 18 servers would cost approximately $21,052,392 over the next five years. Purchasing six new H14 Hyper DP servers to consolidate the 18 legacy servers would cost $10,691,957. This means that organizations consolidating 18 servers could save over $10.3M over the next 5 years by refreshing their data center with Supermicro H14 Hyper DP servers with AMD EPYC 9474F processors.

Improve database performance with the new Supermicro H14 Hyper DP

Using the HammerDB benchmark, we compared the performance of a single new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors to a single legacy Supermicro Ultra DP with AMD EPYC 7532 processors. As Figure 2 shows, the new Supermicro H14 Hyper DP delivered 3.17 times the new orders per minute (NOPM) of the legacy system.

This significant jump in transactional database performance means that your organization can support dramatically more users per server, which sets up your business for continued growth.

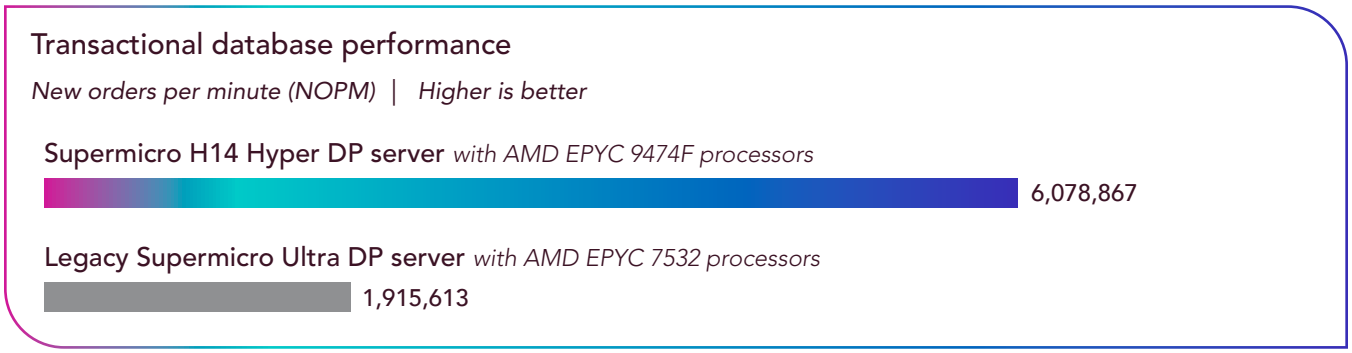


Figure 2: Transactional database performance, in new orders per minute, using the HammerDB TPROC-C workload for a single legacy Supermicro Ultra DP server and a single new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors. Source: PT.

Because the new Supermicro H14 Hyper DP server can support over 3x the performance of the legacy server, your organization can replace older servers with fewer new ones via consolidation. As Figure 3 shows, you would need three legacy Supermicro Ultra DP servers to match the approximate performance of a single Supermicro H14 Hyper DP server with AMD EPYC 9474F processors.

Moving three legacy servers onto a single new server with a consolidation ratio of ~3:1 offers big savings in operating costs. Fewer servers means less rack and data center space you have to pay for as well as fewer systems to manage and maintain. This opens up possibilities for administrators who are looking to support new, more demanding projects such as AI—because they now have the space and the time to innovate in this area.

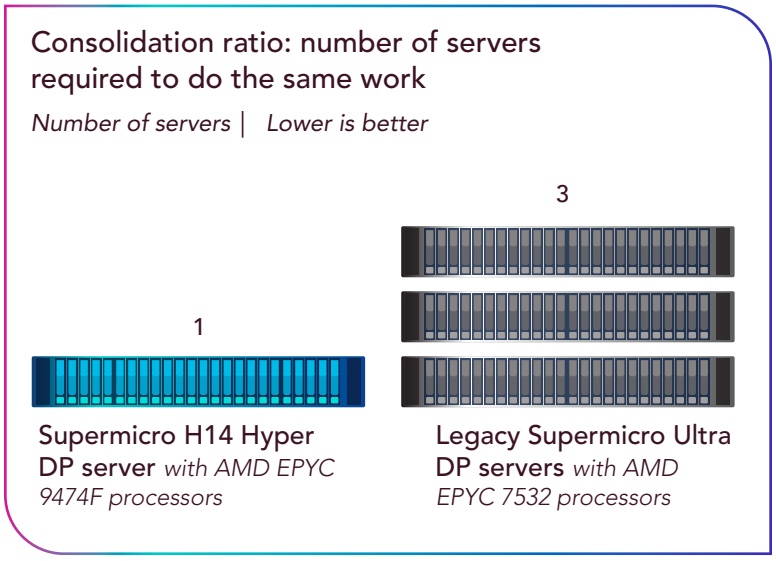


Figure 3: Consolidation ratio based on HammerDB performance. The new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors handled 3.17x the database transactions of the older server, which means three legacy servers would be required to meet the performance of a single new one. Source: PT.

While running our database workloads, we also captured both active and idle power utilization to help determine these operating costs for both solutions. The Supermicro H14 Hyper DP server with AMD EPYC 9474F processors had significantly greater power efficiency than the legacy server, offering 49.6 percent better performance per watt (see Figure 4). To arrive at this statistic, we took the NOPM each server achieved and divided it by watts consumed.

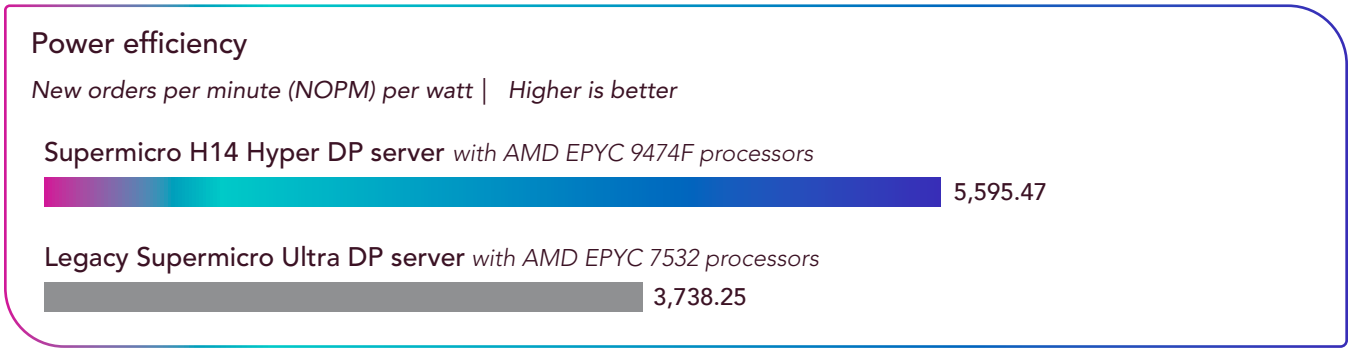


Figure 4: Power efficiency, in NOPM per watt, for a single legacy Supermicro Ultra DP server and a single new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors. Source: PT.

Figure 5 directly compares the active power consumption of the new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors vs. the estimated power usage for three legacy Supermicro Ultra DP servers. We estimate that a single H14 Hyper DP consumes 29.3 percent less power than three legacy Ultra DP servers would.

Again, reducing power consumption also reduces costs associated with both power and related cooling. Freeing up the data center's overall power consumption rates can give administrators the resources they need to support power-hungry AI workloads, offering businesses the flexibility to embark on new paths.

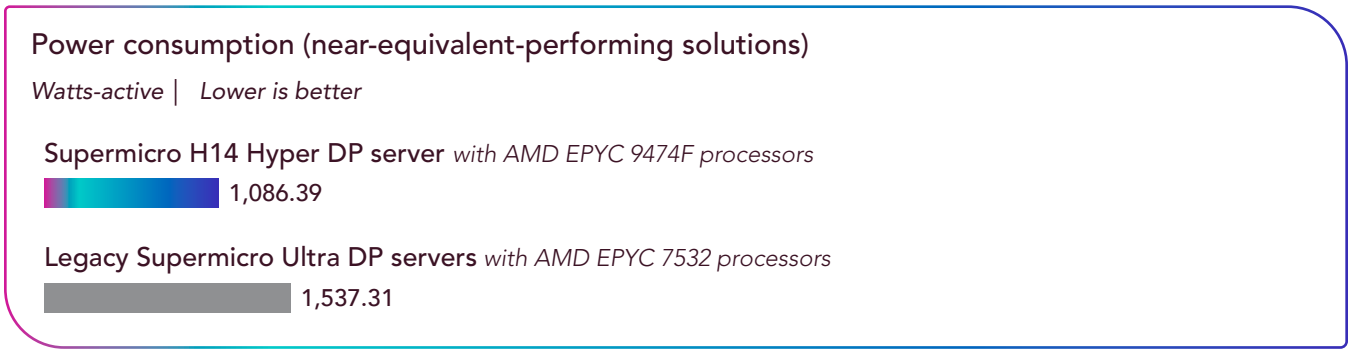


Figure 5: Power usage, in watts, for a new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors vs. estimated power usage for three legacy Supermicro Ultra DP servers based on readings during our HammerDB testing. Source: PT.

How we tested

We compared the transactional database performance of two servers:

- Five-year-old Supermicro Ultra DP server (model number AS -2124US-TNRP) with AMD EPYC 7532 processors (previously codenamed "Rome")
- New Supermicro H14 Hyper DP server (model number AS -2126HS-TN) with AMD EPYC 9474F processors (previously codenamed "Genoa")

To measure transactional database performance, we used the HammerDB TPROC-C workload to determine the maximum online transaction processing (OLTP) workload each server could support. During our tests, we also measured CPU and power utilization to ensure we taxed the systems appropriately and to compare energy efficiency. We pushed both servers to at least 80 percent CPU core utilization, at which point the legacy system experienced a performance bottleneck due to its older SATA-based storage.

Using our median HammerDB results, we calculated a consolidation ratio, determining the number of older servers it would take to equal the work of a single new H14 Hyper DP. Using this ratio, we calculated the expected five-year costs for licensing, power, space, and maintenance for the near-equivalent-performing solutions. For our test results and details of our TCO assumptions and calculations, continue reading.

To learn more about the servers we tested and see our step-by-step test methodology, read the science behind the report.

About AMD EPYC 9474F processors

Part of the AMD EPYC 9004 Series, the AMD EPYC 9474F processor features 48 cores, 96 threads, a base clock speed of 3.6 GHz, and max boost clock speed of up to 4.1 GHz. It supports AMD Infinity Guard and AMD Infinity Architecture, with target workloads that include analytics, VDI, VM density, application development, and more.

According to AMD, these 4th Gen AMD EPYC processors are "power optimized high-performance x86 servers for the most demanding general purpose and AI-enabled data center workloads" and can "[help] you reduce energy costs and meet corporate sustainability goals."[2]

To learn more about AMD EPYC 9474F processors and how they could help accelerate your workloads, visit https://www.amd.com/en/products/processors/server/epyc/4th-generation-9004-and-8004-series.html.

About the workload we used: HammerDB

HammerDB is an open-source benchmarking tool that you can use to test the performance of many leading databases. The benchmark tool includes two built-in workloads derived from industry standards: a transactional (TPROC-C) workload and an analytics (TPROC-H) workload. We chose the TPROC-C (TPC-C-like) workload to demonstrate the online transaction processing performance capabilities of each instance, reporting results in new orders per minute (NOPM). TPROC-C runs a transaction processing workload that simulates an ecommerce business with five types of transactions: receiving a customer order, recording a payment, delivering an order, checking an order's status, and checking stock in inventory.[3] Note that our test results do not represent official TPC results and are not comparable to official TPC-audited results.

To learn more about HammerDB, visit https://www.hammerdb.com/.

Conclusion

Finding room in your budget for a new hardware purchase can seem daunting, but holding onto aging servers can not only hurt your app performance and resulting customer satisfaction, but also drain your coffers with unnecessary operating costs. New tech offers top-of-the-line features in security, management, and performance, and can outperform five-year-old servers many times over—which makes refreshing worth your while financially.

Our database tests proved that a single new Supermicro H14 Hyper DP server with AMD EPYC 9474F processors can do more work than three legacy Ultra DP servers, which means that consolidating could save your organization as much as $1.7 million over five years—an impressive 49.2 percent reduction in costs.

Consolidating three legacy servers to reach near-equivalent performance of a single new H14 Hyper DP results in significant savings in licensing, power, rack space, and maintenance costs. The time for new data center hardware is now. Refreshing legacy hardware with Supermicro H14 Hyper DP servers with AMD EPYC 9474F processors can save you money while providing the tools you need to support demanding applications such as AI and bring your business into the future.

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1. Supermicro, "H14 Hyper Systems," accessed June 3, 2025, https://www.supermicro.com/datasheet/h14/datasheet_H14_Hyper.pdf.
2. AMD, "4th Generation AMD EPYC™ processors," accessed June 4, https://www.amd.com/en/products/processors/server/epyc/4th-generation-9004-and-8004-series.html.
3. HammerDB, "Understanding the TPROC-C workload derived from TPC-C," accessed June 3, 2025, https://www.hammerdb.com/docs/ch03s05.html.
4. Average for network and computer systems administrator, BLS May 2023, accessed June 3, 2025, https://www.bls.gov/oes/current/oes_nat.htm.

Read the science behind this report at https://facts.pt/hOXjCi0 ▶

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