IDC

Delivering Profitable Hosting Services at Lower Prices

How Developing Services Using Entry-Level Server CPU Platforms Can Help Grow Your Hosting Business

JULY 2024

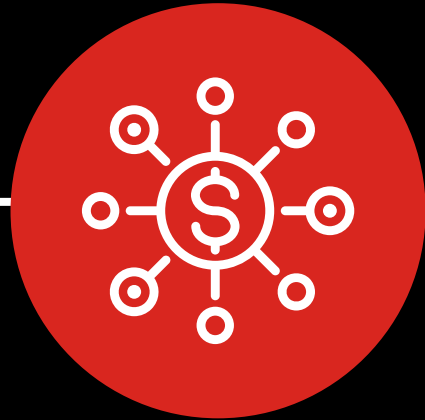Author:
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Senior Research Director, IDC

AMD

Executive summary

Tap in to a growing but cost-sensitive market

- There is a growing market opportunity for infrastructure hosting services as companies continue to digitally enable their business models, products, and services, and as digital activities make up more of our private lives.

- Therefore, many more small businesses and consumers need to house and run digital infrastructure than in the past. They need help and support to do so but without breaking the bank.

Test once and deploy everywhere with a consistent server platform

- If you have a diverse infrastructure, it can be time consuming and expensive to test and certify that applications or workloads are compatible with different server CPU designs.

- With a consistent CPU design and feature set from the cheapest entry-level server CPU to the most scalable high-end server CPU, you can deploy and support all your customers' workloads across your portfolio with confidence — without having to spend time and money testing and retesting.

Enhance profitability by lowering your operating costs

- Reducing operating costs is crucial to long-term business success and profitability — a careful choice of server platform provider can help hosters achieve this.

- By choosing an entry-level server platform that integrates low purchase cost with class-leading performance per watt, integrated ECC memory support, and integrated baseboard management controller for efficient remote management focused on the lowest operating cost, hosters can offer competitive and profitable pricing for their customers.

Leading Hosting Companies Are Using Entry-Level Platforms to Deliver Services

In Q2 2024 IDC interviewed leading hosting service providers about their adoption and use of entry-level server CPUs and platforms to provide a more flexible and cost-effective range of services to their customer base.

IDC looked at several key areas across workloads, platform cost, operating cost, reliability, scalability, platform capabilities, and customer perception.
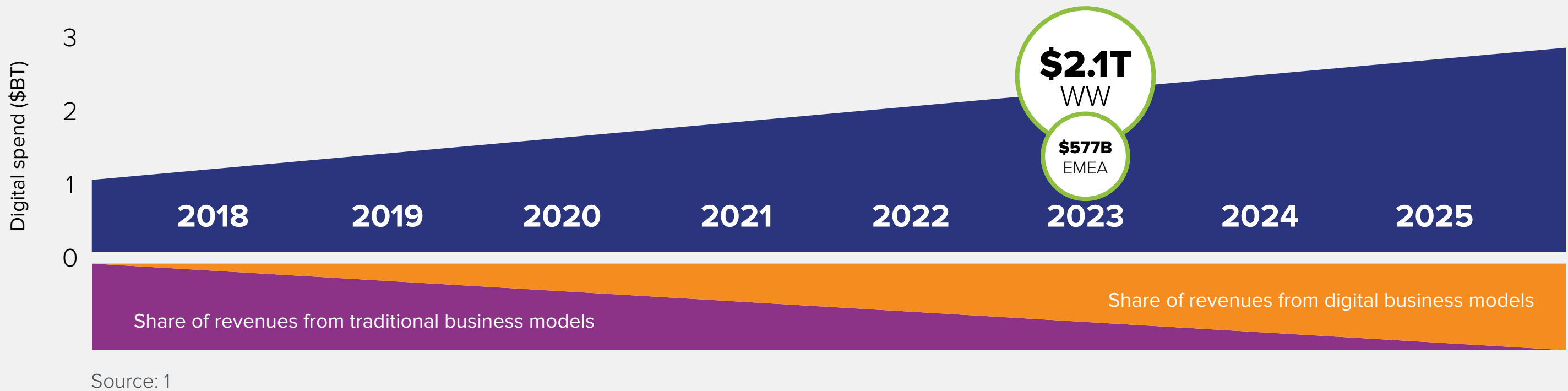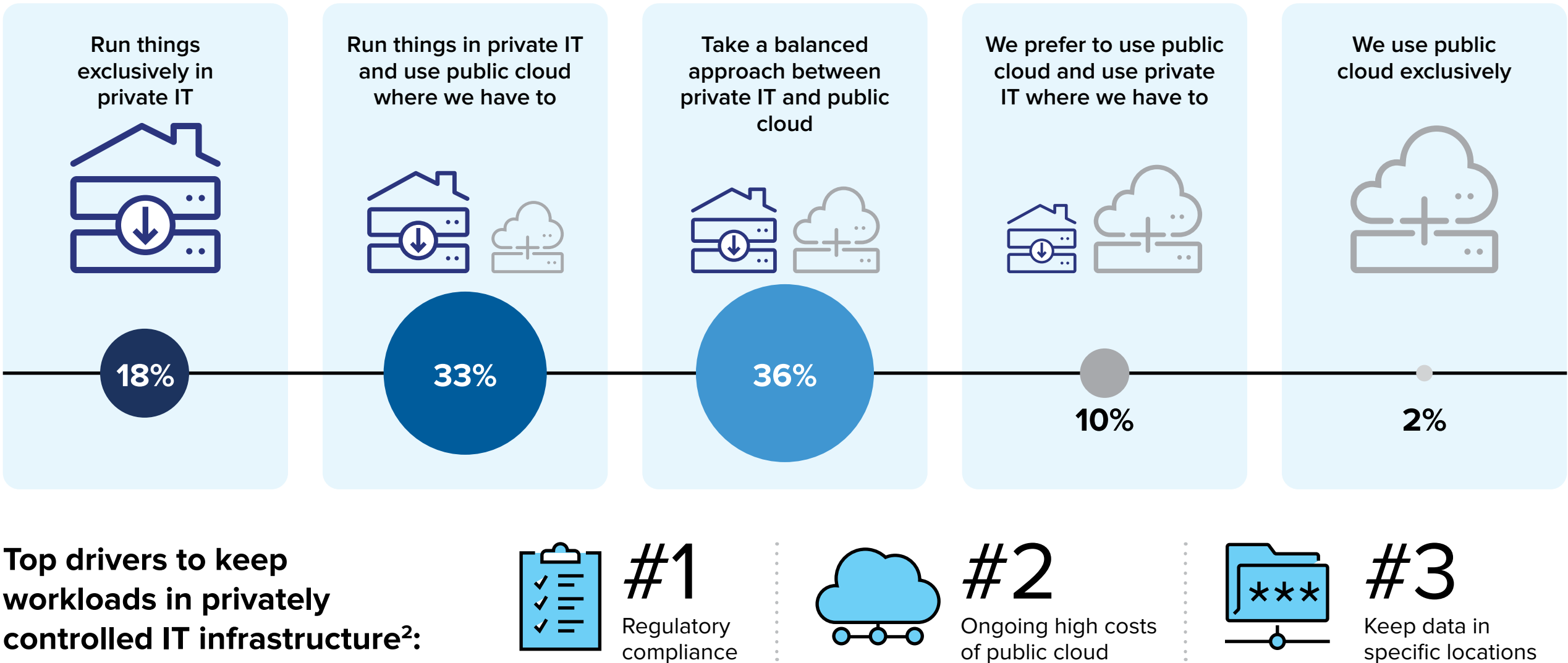
There's an Emerging Market if You Have the Right Platform to Deliver

There is a transition happening as the global economy shifts toward digitally enabled business models, content, and services. Many businesses, skilled employees, and content creators are finding they have a need for high-performance and dependable infrastructure and services, but do not have the skills and upfront budget to build and run this themselves.

This is leading to new market opportunities for hosting companies that can help customers master this change as the digital platform increasingly shifts to being consumption based.

$2.1T WW
$577B EMEA

Digital spend ($BT)

3
2
1
0

2018 **2019** **2020** **2021** **2022** **2023** **2024** **2025**

Share of revenues from traditional business models

Share of revenues from digital business models

Source: 1

European businesses prefer private control of their IT infrastructure

Run things exclusively in private IT	Run things in private IT and use public cloud where we have to	Take a balanced approach between private IT and public cloud	We prefer to use public cloud and use private IT where we have to	We use public cloud exclusively
18%	**33%**	**36%**	**10%**	**2%**

Top drivers to keep workloads in privately controlled IT infrastructure[2]:

#1 Regulatory compliance

#2 Ongoing high costs of public cloud

#3 Keep data in specific locations

European companies are not migrating to hyperscale public cloud en masse. Instead, they are choosing to use these services to augment rather than replace their own IT infrastructure.

Driven by security concerns, data sovereignty requirements, and concerns about the ongoing cost of public cloud, the majority favor running workloads in privately controlled infrastructure.

This trend is particularly apparent in the cost-sensitive SMB market, which strongly prefers private IT infrastructure. This presents an ideal opportunity to build hosted infrastructure that can match the price points they demand but with the quality and reliability they need.

For companies looking for tight control of their data, local hosting companies with facilities located within a reasonable travel window enable companies to personally inspect facilities and understand the infrastructure they are using as part of a hosting service. This can allay concerns and ease the process of moving from private datacenters to hosting facilities.

# Entry-Level Hosting Platforms Target New Business Opportunities

Public cloud and hosting providers have traditionally relied on midrange and high-end server CPUs and platforms — such as AMD EPYC™ 8000 and 9000 series processors — to build and deliver their portfolio of services.

While providing the ultimate in scalability and reliability, the sheer scale and capabilities of these platforms means that the price point can end up being a bit too high to be attractive for smaller customers or workloads that need the performance and quality of a server, but without the big-ticket prices.

The needs of entry-level customers can be optimally addressed with smaller, more cost-efficient infrastructure based on entry-level server CPU platforms such as the AMD EPYC™ 4000 series.

> Driven by our customers use cases, market demands and a strong AMD technological partnership - we are extremely happy to offer our bare metal platforms with AMD EPYC 4004 series processors, the most relevant and economically attractive choice for strong performance and scalability.

Yaniv Fdida, Chief Product and Technology Officer

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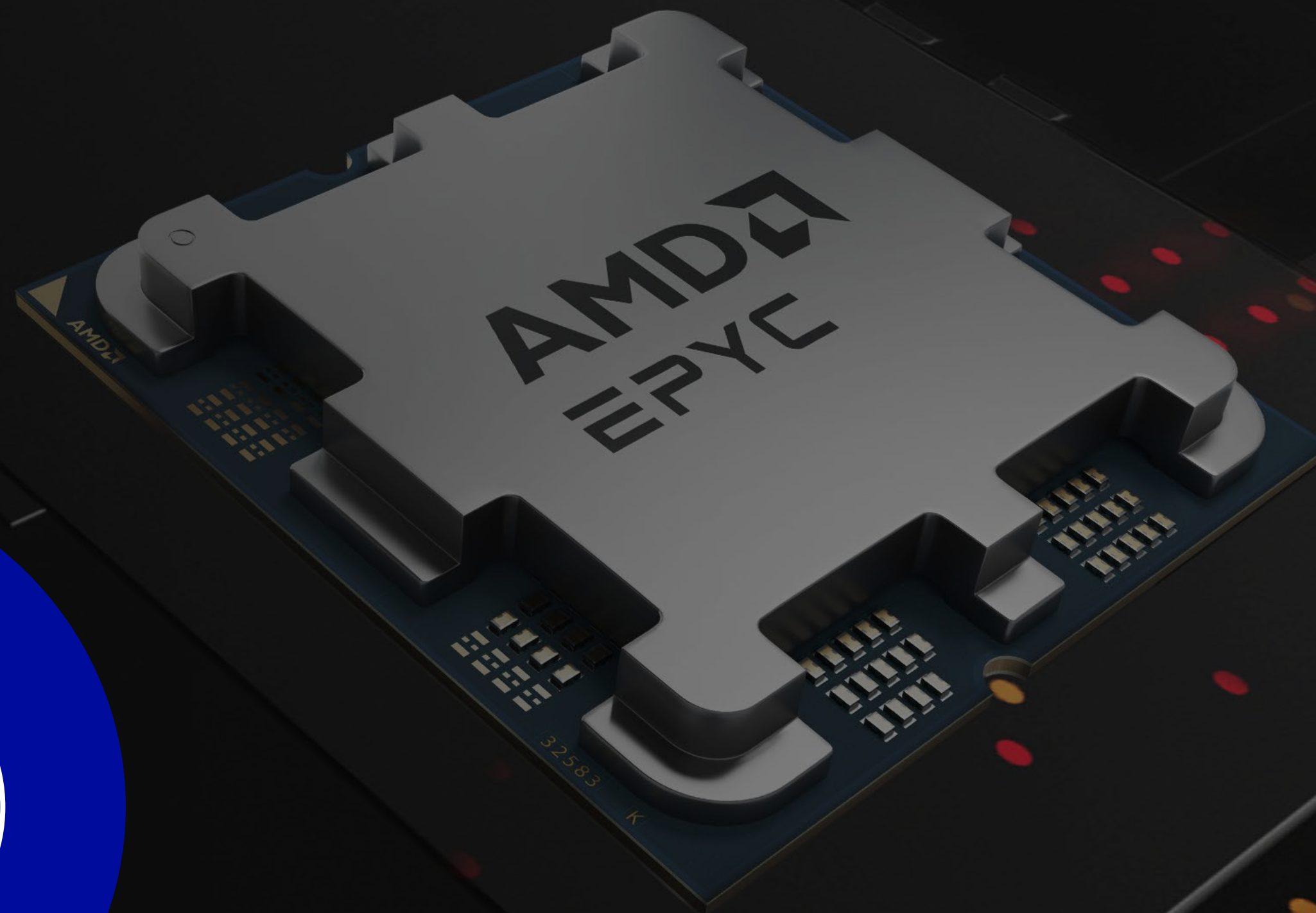
The Key Ingredients of Successful Entry-Level Hosting Server

Turning an entry-level CPU into a potent hosting platform is not a matter of putting run-of-the-mill PC parts into a datacenter. While customers want **low prices**, they still want **great performance** and **reliability**.

For an entry-level server CPU to be a platform for hosting success, it needs to bring together seven key ingredients to truly deliver on the promise.

> We sell a whole platform, not just a CPU. We need to find the platform with the best price to performance on the market, and AMD EPYC 4000 based platforms really helps here, with a broad range to deliver a variety of attractive servers.

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Competitive system price

Cutting-edge performance

Low system power consumption

Long term stable platform and availability

Ease of design, build, and customization

Consistent features and capabilities

Reliability in operation

Move Customers to Opex-Based IT Consumption Without Breaking Their Bank — Or Yours

Entry-level servers for dedicated bare metal (BM) services

- Versatile enough to support a variety of customer workloads with just one platform
- High single thread performance
- Leadership performance per system dollar
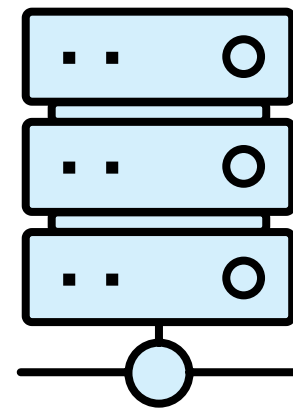
Entry-level virtual private servers (VPS)

- Utilizes the same Bare Metal infrastructure in combination with 12- and 16-core CPU options to host Linux®-based low-count virtual-machine and container environments
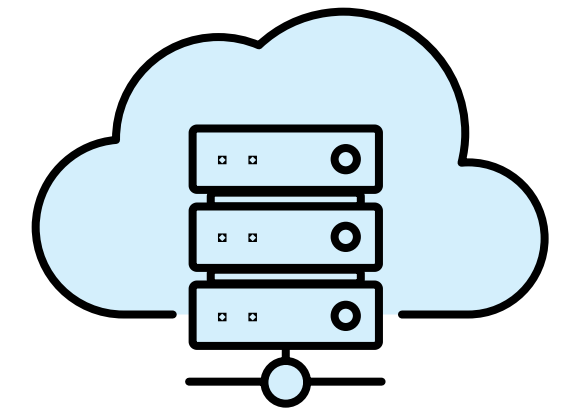
Unified system platform approach

Entry-level server CPU platform positioning:

- A range of core counts to cover multiple BM and VPS configurations
- Sub-100W CPU socket default TDP options for efficient performance
- 3GHz minimum base frequencies for low latency response
- Shares microarchitecture and extended instruction sets with midrange and high-end server CPUs
- Three-year minimum socket life to support at least two CPU generations
- Low price points starting from under $150

Entry-level server platform positioning:

- 1U shallow depth enclosure or microcloud options
- Under $1,500 price per node
- Total system power draw under 350W
- Inexpensive ECC DIMMs (supporting 8GB memory per core or more)
- Up to 4 SATA drive bays and/or 2+ NVMe slots
- 1-2PCIe slots, LAN-on-Motherboard options
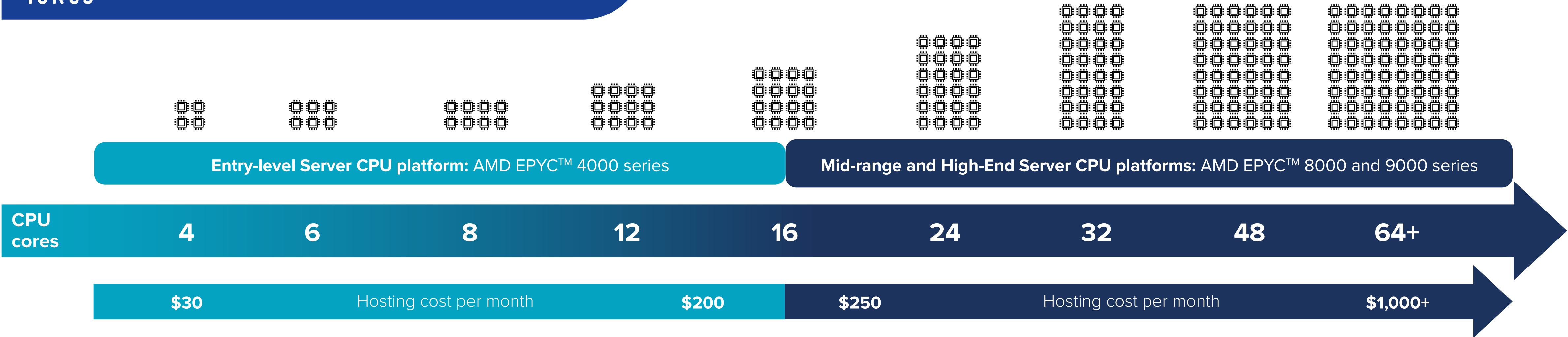- Out-of-band network-based manageability (IPMI, iKVM)

AMD CPU-Based Platform Strategy That Can Scale Whatever Your Customers Demand

> We can offer flexibility of configuration with AMD EPYC 4000, with similar and predictable performance. We can scale different amounts of cores with no adjustments needed as the architecture is exactly the same.
>
> **IONOS**

Hyperscalers are focused on building large, scalable enterprise-class offerings using mid-range and high-end server platforms.

This enables hosting providers to **build differentiated infrastructure offerings** using a range of entry-level server components such as AMD EPYC™ 4000 series CPUs.

Entry-level Server CPU platform: AMD EPYC™ 4000 series					Mid-range and High-End Server CPU platforms: AMD EPYC™ 8000 and 9000 series			

CPU cores	4	6	8	12	16	24	32	48	64+

$30	Hosting cost per month	$200	$250	Hosting cost per month	$1,000+

> We started off by adopting AMD EPYC 9000 server platforms, but with the rapid increase in performance with AMD EPYC 4000 platforms this just naturally fell into place once this platform was available.
>
> **OVHcloud**

This helps you to deliver flexible **dedicated or bare-metal infrastructure** at **lower price points** than hyperscalers can profitably offer.

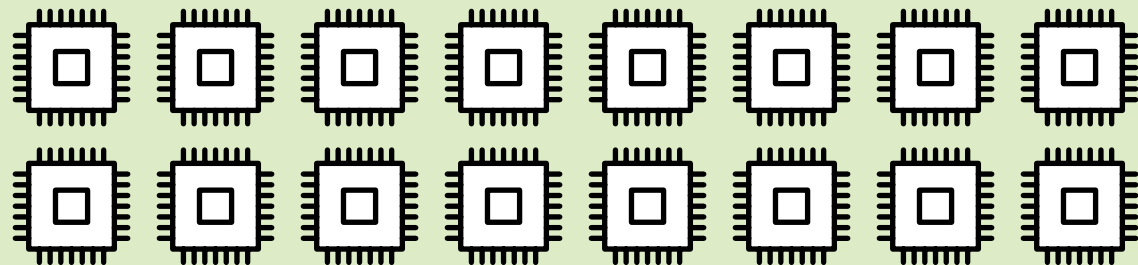# Entry-Level CPUs Can Provide Both High Performance and Adaptable Scalability

Single-thread performance
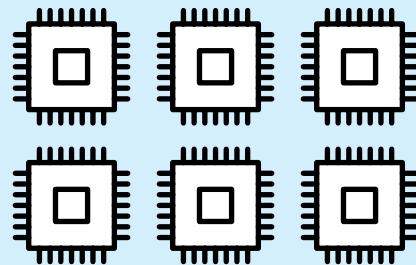
For single-application or low-thread-count workloads, entry-level server CPUs can boost to **high frequencies** for the ultimate in compute responsiveness.
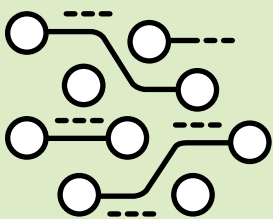
Multithread scalability

To run multiple applications or highly multithreaded workloads simultaneously, entry-level server CPUs **can scale up to 16 cores** to deliver high throughput — bridging the gap to where server-based CPUs make sense.

With the high-density core count of AMD EPYC™ 4004, we could move to one socket and a shorter board resulting in a cheaper system and much lower cooling costs.

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Across all our customers — from gamers to content creators to editors — we have a lot of variety and having a scalable entry-level server platform is one of the biggest reasons for us to work with AMD.

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Key Workloads Driving Demand for High-Performance, Lower-Cost Server Hosting Infrastructure

App development and DevOps

12- and 16-core CPU options with ECC memory support and high-performance NVMe drives to support both individual developers or developer teams working on complex software projects with lower compilation times and the resources needed to spin up containers or VMs

Media streaming

12- and 16-core high-frequency CPU cores with ECC memory support and fast I/O to quickly encode high-resolution video content into the demanding H264, HEVC, and AV1 formats
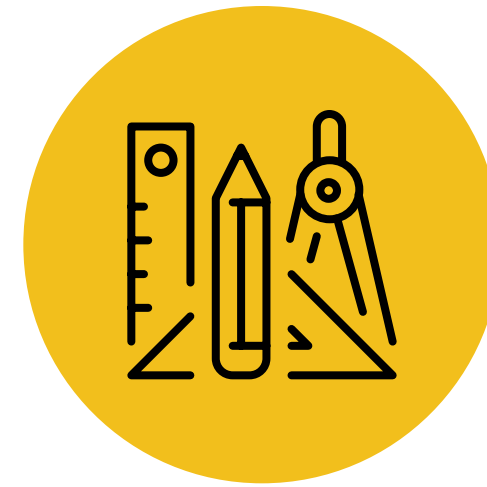
Design and engineering

Entry-level workstation performance with ECC memory support and high-performance NVMe drive options for demanding applications that need high fidelity

Content creation

High single core frequency, with options for 12 and 16 cores for multithreaded performance to enable 4K+ photo-realistic real-time digital content editing and publishing

Game servers

High CPU frequencies and large cache enable excellent single-thread performance and low-latency response in game hosting

For more information on AMD EPYC™ 4000 series server applications and OS performance results, please visit https://**www.phoronix.com/review/amd-epyc-4004**

Entry-Level Server Platforms Can Lower Energy Bills to Help Build an Energy Efficient and Profitable Hosting Business

The cost of energy has greatly increased: CPU power consumption makes up a significant portion of the server power consumption which influences the infrastructure OPEX budget. Any savings that can be made here can directly contribute to keeping prices low for customers while maintaining profits.

> We need good power consumption to save costs. The lower the TDP, the lower the price for the customer. **AMD EPYC 4000 is a very efficient platform.**
>
> **IONOS**

Keep OPEX low: Entry level server CPUs offer leading performance with low power consumption1, helping to keep monthly operating costs competitively low for both hosting providers and end customers — even as energy costs rise.

Max Boost Clock ●
Base Clock ●

|	4-core	6-core	8-core	12-core	16-core
170W Default TDP • Very high single thread performance • Very high multithread performance					5.7 GHz 4.5 GHz EPYC 4564P
120W Default TDP • Very high performance of memory-bound and cache-sensitive applications				5.6 GHz 4.4 GHz EPYC 4484PX	5.7 GHz 4.2 GHz EPYC 4584PX
105W Default TDP • High single thread performance • High multithread performance			5.4 GHz 4.5 GHz EPYC 4364P		
65W Default TDP • High single thread performance • Good multithread performance	5.1 GHz 3.8 GHz EPYC 4124P	5.1 GHz 3.8 GHz EPYC 4244P	5.3 GHz 3.8 GHz EPYC 4344P	5.4 GHz 3.7 GHz EPYC 4464P	

Source: AMD Specifications and Datasheets for AMD EPYC™ 4000 series processors

Max boost for AMD EPYC™ 4000 series processors is the maximum frequency achievable by a single core on the processor running a bursty single-threaded workload. Max boost will vary based on several factors, including, but not limited to: thermal paste; system cooling; motherboard design and BIOS; the latest AMD chipset driver; and the latest OS updates. GD-150.
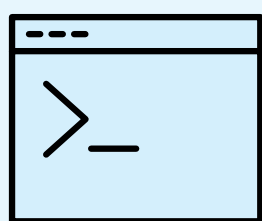
# Low-Cost Services Still Need Great Reliability and Manageability
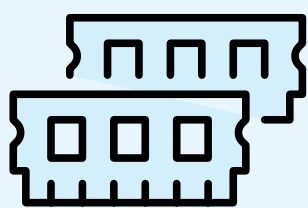
ECC memory support[1]
Greatly increases the reliability of demanding applications.
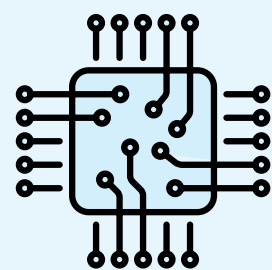
Integrated BMC and iKVM support
Enables easy remote monitoring and troubleshooting.

Operating system support[2]
Windows Server, Red Hat®, SUSE & Ubuntu® operating system support, stable drivers & software raid capabilities.
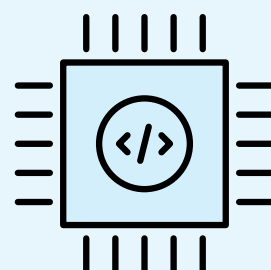
Mature and proven firmware
enabled by a stable multiyear and multigeneration socket and chipset strategy means predictable workload delivery and less time troubleshooting intermittent issues.

We see AMD EPYC 4000 as a really solid platform. We would know when customers complain or something goes wrong, but it doesn't.

IONOS

The CPU is only part of the story. AMD EPYC 4000 platform is very reliable and this is why customers continue to choose it, time over time.

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1 - ECC guide from Ionos - https://www.ionos.co.uk/digitalguide/server/know-how/ecc-ram-memory-solution-for-secure-data/
Memory errors and data integrity for ZFS: https://research.cs.wisc.edu/adsl/Publications/zfs-corruption-fast10.pdf
Advantages of ECC memory: https://www.pugetsystems.com/labs/articles/advantages-of-ecc-memory-520/

*2 - https://www.amd.com/en/processors/epyc-minimum-operating-system*

# Your Entry-Level Hosting Servers Need to be Easy to Design and Build

A lower purchase cost can translate into lower subscription costs for customers, reduce time to reach profitability, and increase ROI.

Off-the-shelf components can reduce design and verification costs and shorten time to deployment.
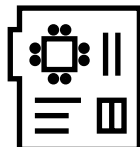
A choice of compact or standard size motherboards, 1U platforms, and multi-node system options to enable higher expandability or rack density.
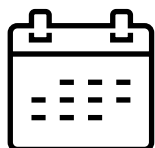
A long platform life helps drive down lifetime costs by enabling significant performance and scalability upgrades throughout the lifespan of the platform with enhanced reliability.

> A lot of customers do not need enterprise price points and scalability but do need quality. AMD EPYC 4000 has filled a void in the industry, allowing board manufacturers to create 'server-grade' motherboards for entry- level server CPUs at much lower price points.
>
> **OVHcloud**

Hosters have a growing ecosystem of AMD EPYC™ 4000 series server platform partners to choose from:

Brand	AMD EPYC 4000 series - Socket AM5 (2024-2027)		
	System Board	1U Platform	Multi-node Platform
ASRock	✓	✓	✓
GIGABYTE	✓	✓	
MSi	✓	✓	
Supermicro	✓	✓	✓
Tyan	✓	✓	✓

Platform availability as of May 2024. Please reach out to hardware vendors for the latest status

AMD EPYC 4000 CPUs

LGA socket

65W to 170W TDP

AVX2, AVX-512 ext. instructions

Fast DDR5 memory with ECC support

PCIe Gen 4/5 options

B650 chipset variants

Options available with AMD 3D V-Cache™ technology

AMD Socket AM5 Platform advantages

Fast performance and throughput

Long platform life

Large choice of boards and platforms

Applications using AVX-512, Bfloat16 and VNNI vector instructions

High-frequency CPU models with large 3D V-Cache integrated within the CPU package

Consistent Feature Sets Help Avoid Silos of Infrastructure, Enabling Flexible Utilization of Available Capacity
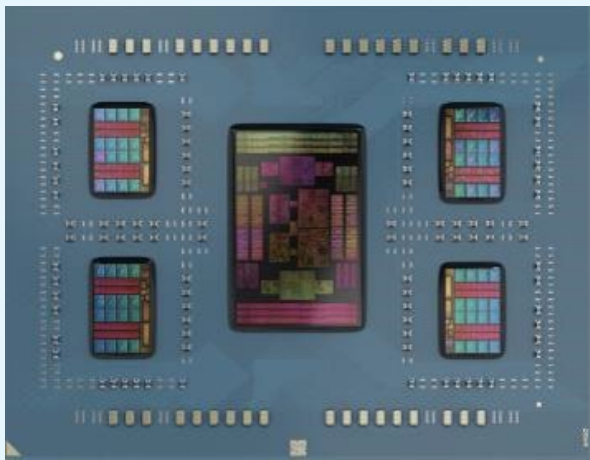
AMD EPYC™ Server CPUs have consistent features within a generation, helping ease workload migration and certification
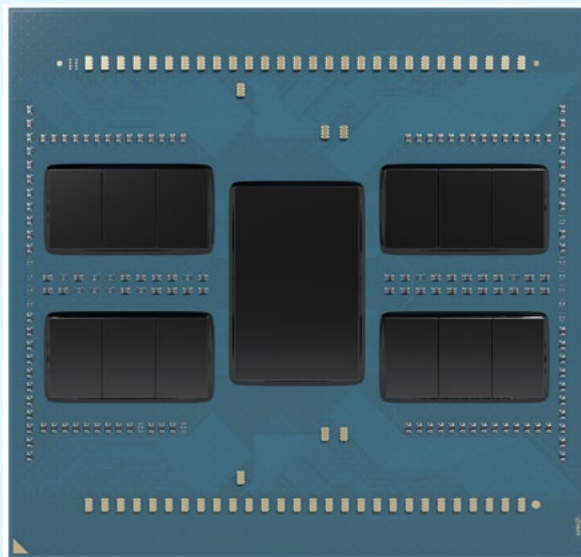
Entry-level server CPU platform
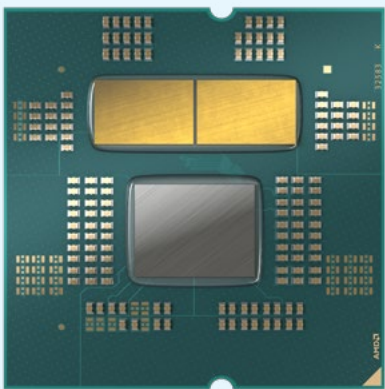
AMD EPYC™ 4000 - 4 to 16 cores
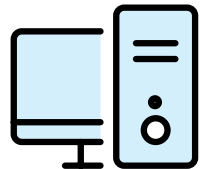
Midrange server CPU platform
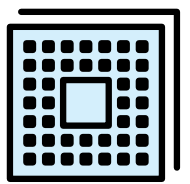

AMD EPYC™ 8000 - 8 to 64 cores

High-end server CPU platform

AMD EPYC™ 9000 - 16 to 128 cores

Test once and run everywhere: validation effort is accelerated due to consistent, homogeneous high-performance core designs and feature sets

Seamless portability: workloads can effortlessly move to higher-core-count CPUs as additional scalability is needed

> Having a consistent feature set across all the entry-level CPUs makes it much easier as **we don't need different CPUs and boards** for different workloads.
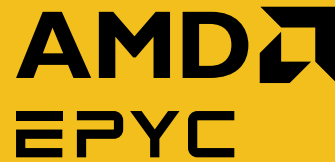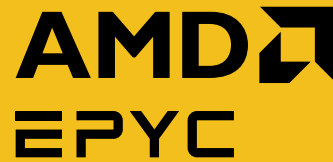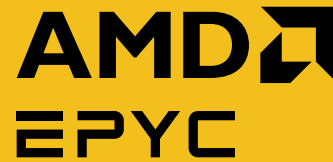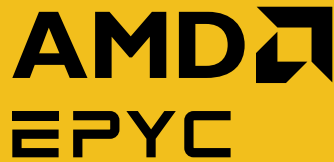>
> IONOS

> Having a single set of features across entry-level to high-end AMD EPYCTM servers means the application can be **deployed to the right server with no adjustments.** The customer benefits greatly from this flexibility.
>
> OVHcloud

Choosing the Right CPU and Server Platform for Your Services

Offering type	Dedicated hosting		Virtual private servers		Shared web hosting	Cloud native
Users per system	One		Tens		Hundreds	NA
Billing model	Fixed monthly or annual cost					Consumption based
CPU class	Entry-level **AMD EPYC 4000** 1P only	Midrange & High-end **AMD EPYC 8000 & 9000** 1P or 2P	Entry-level **AMD EPYC 4000** 1P only	Midrange & High-end **AMD EPYC 8000 & 9000** 1P or 2P	Midrange & High-end **AMD EPYC 8000 & 9000** 1P or 2P	Midrange & High-end **AMD EPYC 8000 & 9000** 1P or 2P
Typical core counts per server	4-6–8–12–16	8-16–24–32–48–64–128+	4-6-8–12–16	8-16–24–32–48–64–128+	32–128+	128+
Typical price range, $	Starting from $5 per month	$100–$1K+ per month	From $5–$10 per month		From $2–$5 per month	NA (core/hrs)
Key considerations	Attractive system cost	Performance and scalability	Low VM cost	High VM density, VM isolation	Resource isolation; scalability to enable oversubscription	Max. compute density for distributed workloads, confidentiality

Classic hosting — *Hyperscale datacenters*

IDC recommendations

Offer a differentiated platform that the hyperscalers can't offer:
With hyperscale public cloud providers concentrating on high-core-count platforms for their native cloud services, hosting providers can compete by offering entry-level bare-metal server platforms that hyperscale cloud providers are not willing to match.

Competitive costs are critical:
Choose an efficient entry-level server platform with attractive price points across a range of CPU, memory, and IO requirements to keep your upfront and lifetime costs low.

Customers and workloads are unpredictable:
Choose an entry-level server platform with consistent features that can easily scale by adding more cores as needed.

Customers demand constant availability:
Choose entry-level platforms that enable you to offer proven reliability with enhanced hardware support such as ECC memory and a long-term stable platform with extended availability and support.

Manageability is critical:
Repurposed desktop boards just do not have the features that hosters need. Choose an entry-level rackmount-oriented server platform that offers integrated BMC and iKVM capabilities.

Message from the Sponsor

AMD is the high performance and adaptive computing leader, powering the products and services that help solve the world's most important challenges. Our technologies advance the future of the data center, embedded, gaming and PC markets.

Founded in 1969 as a Silicon Valley start-up, the AMD journey began with dozens of employees who were passionate about creating leading-edge semiconductor products. AMD has grown into a global company setting the standard for modern computing, with many important industry firsts and major technological achievements along the way.

AMD EPYC™ 4000 series Processors: Solutions for Dedicated Hosting | AMD

AMD◪
EPYC

AMD◪

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With more than 1,300 analysts worldwide, IDC offers global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries. IDC's analysis and insight help IT professionals, business executives, and the investment community to make fact-based technology decisions and to achieve their key business objectives.

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