Delivering Profitable Hosting Services at Lower Prices

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

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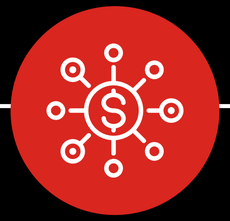
Executive summary



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 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 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 CPU designs.
- With a consistent CPU design and feature set from the cheapest entry-level to the most scalable server option, 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 platform provider can help hosters achieve this.
- By choosing an entry-level platform that integrates low purchase cost with class-leading performance per watt, server-class reliability with 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

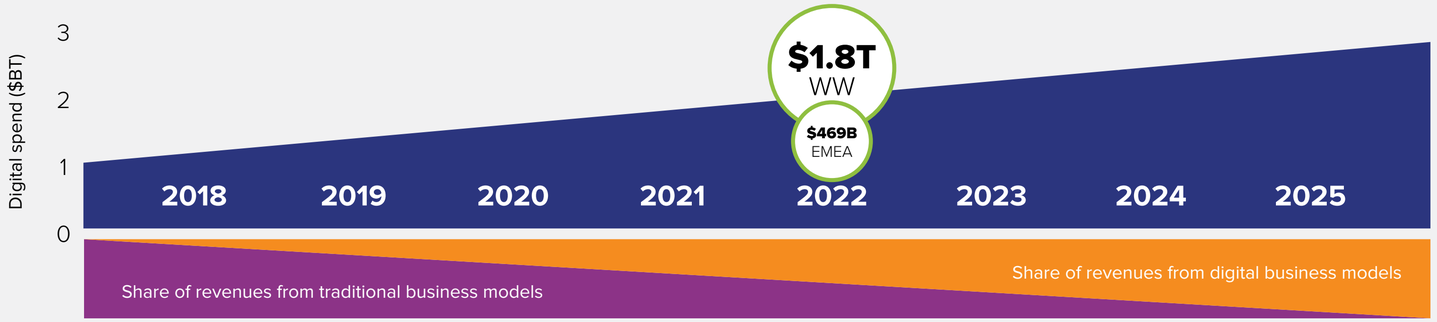
In 4Q22 IDC interviewed four leading hosting service providers about their adoption and use of desktop-class CPUs to provide a more flexible and cost-effective range of services to their customer base.

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

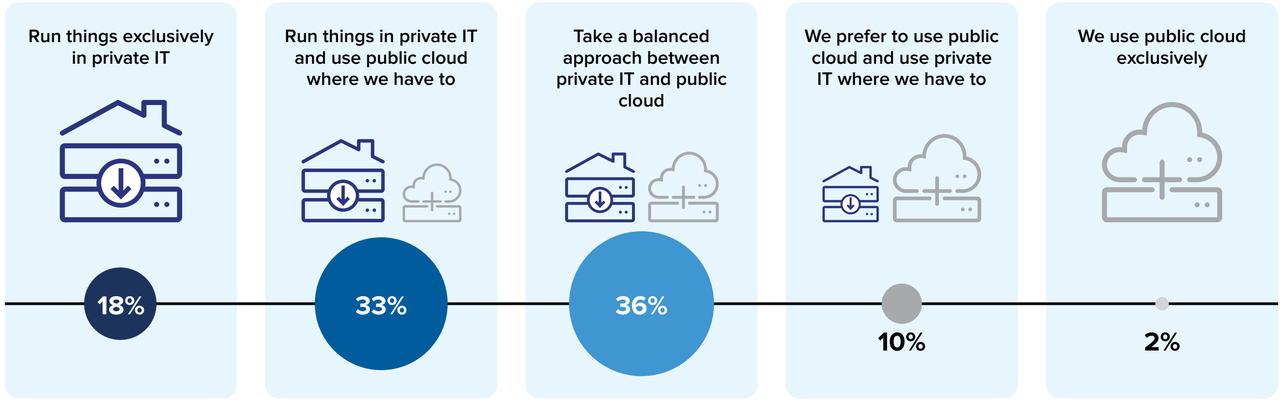
There is a transition happening as the global economy shifts toward digitally enabled business models, content, and services. Many businesses, skilled employees, and content creators are finding they have a need for high-performance and dependable infrastructure and services, but do not have the skills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



Source: 1

European businesses prefer private control of their IT infrastructure



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.

Source: 1 — IDC Worldwide Digital Transformation Spending Guide, 2021 V2; 2 — IDC European Infrastructure Survey 2022, n = 928

Entry-Level Hosting Platforms Target New Business Opportunities

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

While providing the ultimate in scalability and reliability, the high-end 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 server-grade entry-level CPU platforms.

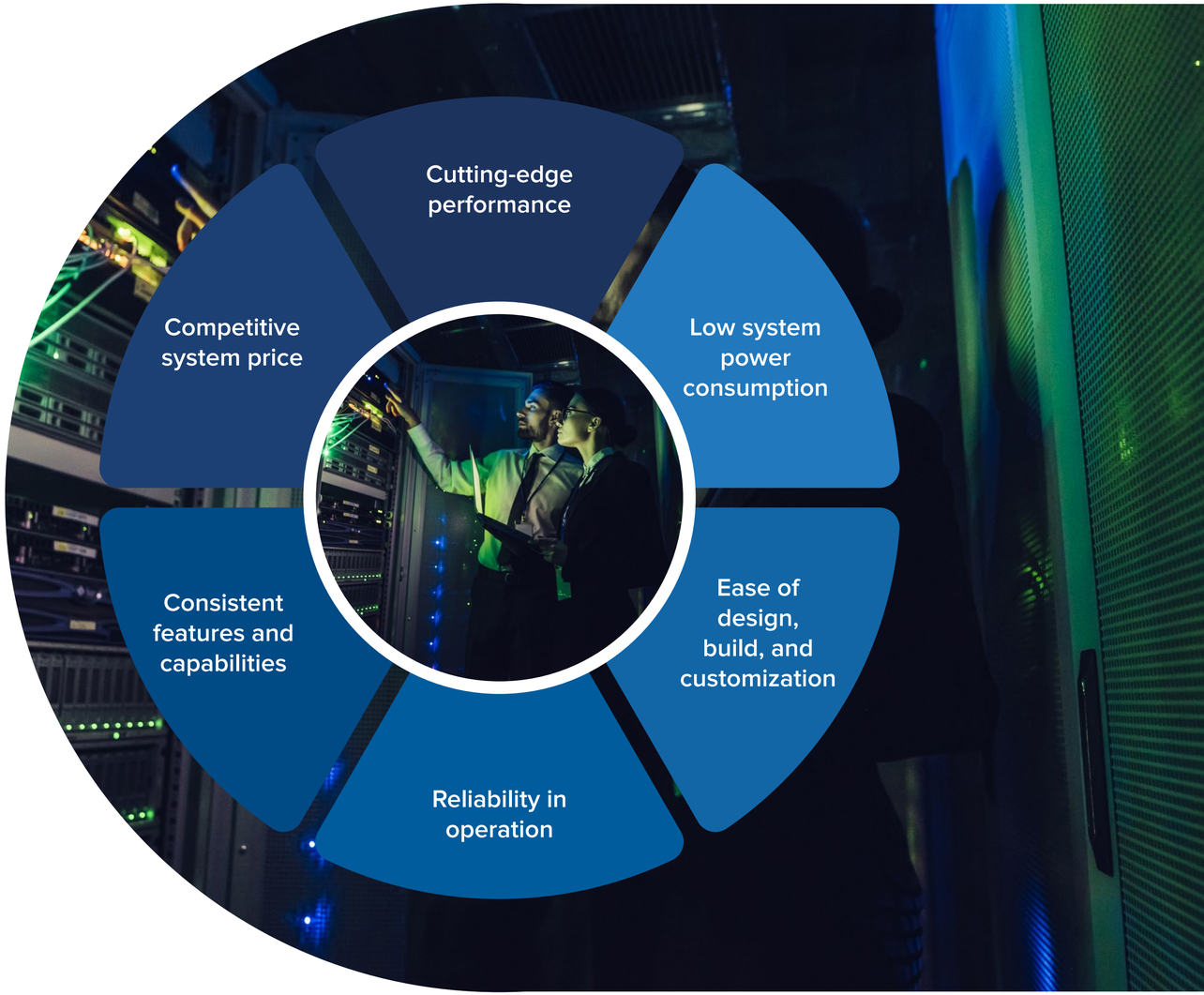
We started using AMD Ryzen in early 2021 for our bare metal services, and it is now the **fastest-growing** part of this business.

KnownHost

The Key Ingredients of Successful Entry-Level Hosting Server

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

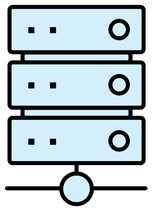
For an entry-level CPU to be a platform for hosting success, it needs to bring together six key ingredients to truly deliver on the promise.



> 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 Ryzen really helps here, with a broad range to deliver a variety of attractive servers.
>
> OVHcloud

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 BM 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 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 enterprise-grade multicore server CPUs
- Three-year minimum socket life to support at least two CPU generations
- Low price points starting from under $200

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 (8GB memory per core or more)
- Up to 4 SATA drive bays and/or 2+ NVMe slots
- 1-2PCIe slots, LoM options
- Out-of-band network-based manageability (IPMI, iKVM)

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

Hyperscalers are focused on building large, scalable enterprise-class offerings using server-class platforms. This enables hosting providers to **build differentiated infrastructure offerings** using a range of entry-level components such as AMD Ryzen™ processors. This helps you to deliver flexible dedicated or bare-metal infrastructure at lower price points than hyperscalers typically offer.

We started off by adopting AMD EPYC server platforms, but with the rapid increase in performance with AMD Ryzen this just naturally fell into place once suitable platforms were available.

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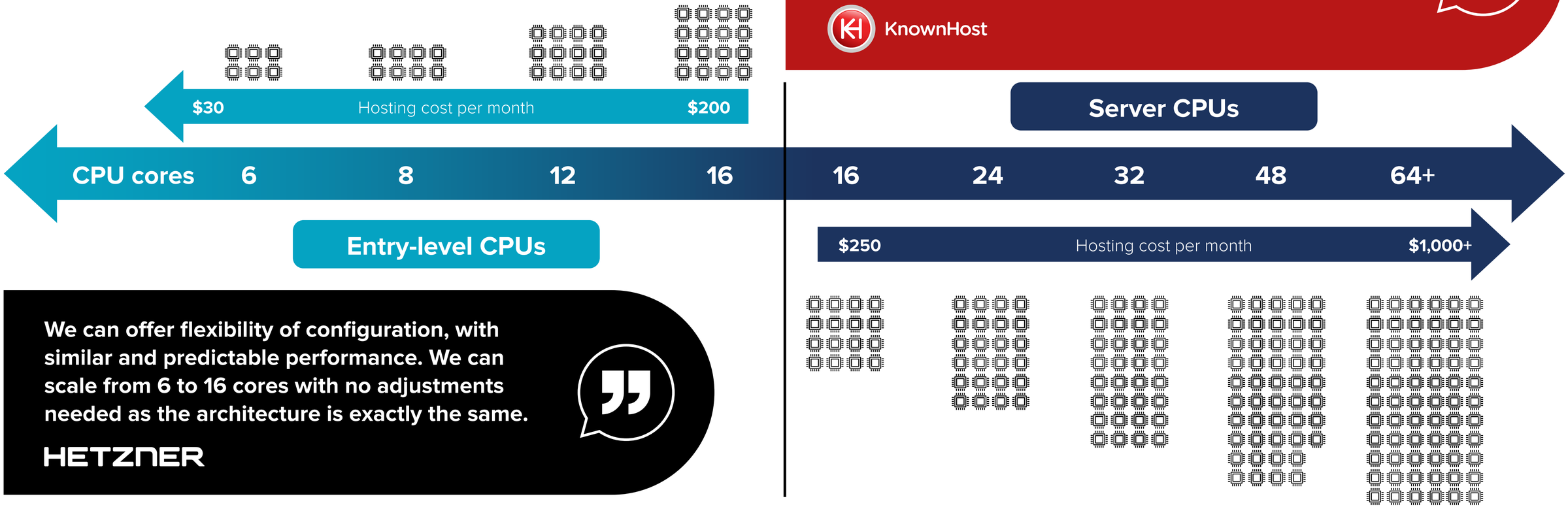

We can offer flexibility of configuration, with similar and predictable performance. We can scale from 6 to 16 cores with no adjustments needed as the architecture is exactly the same.

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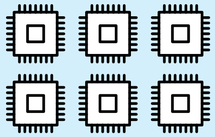
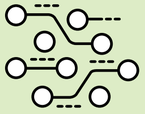
Entry-Level CPUs Can Provide Both High Performance and Adaptable Scalability

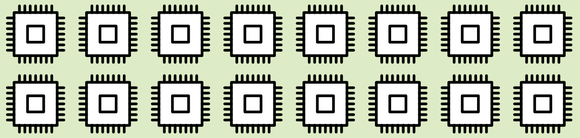
Single-thread performance



For single-application or low-thread-count workloads, entry-level CPUs can boost to **much higher frequencies** at much lower cost than server CPUs for the ultimate in compute responsiveness.



Multithread scalability



To run multiple applications or highly multithreaded workloads simultaneously, entry-level 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 Ryzen PRO, we could move to one socket and a shorter board resulting in a cheaper system and much lower cooling costs.

IONOS

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

OVHcloud

Key Workloads Driving Demand for High-Performance, Lower-Cost 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

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

For more information on third-gen Ryzen server application and OS performance results, please visit: **https://www.phoronix.com/review/amd-ryzen-server** and **https://www.phoronix.com/review/ryzen-server-os**

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

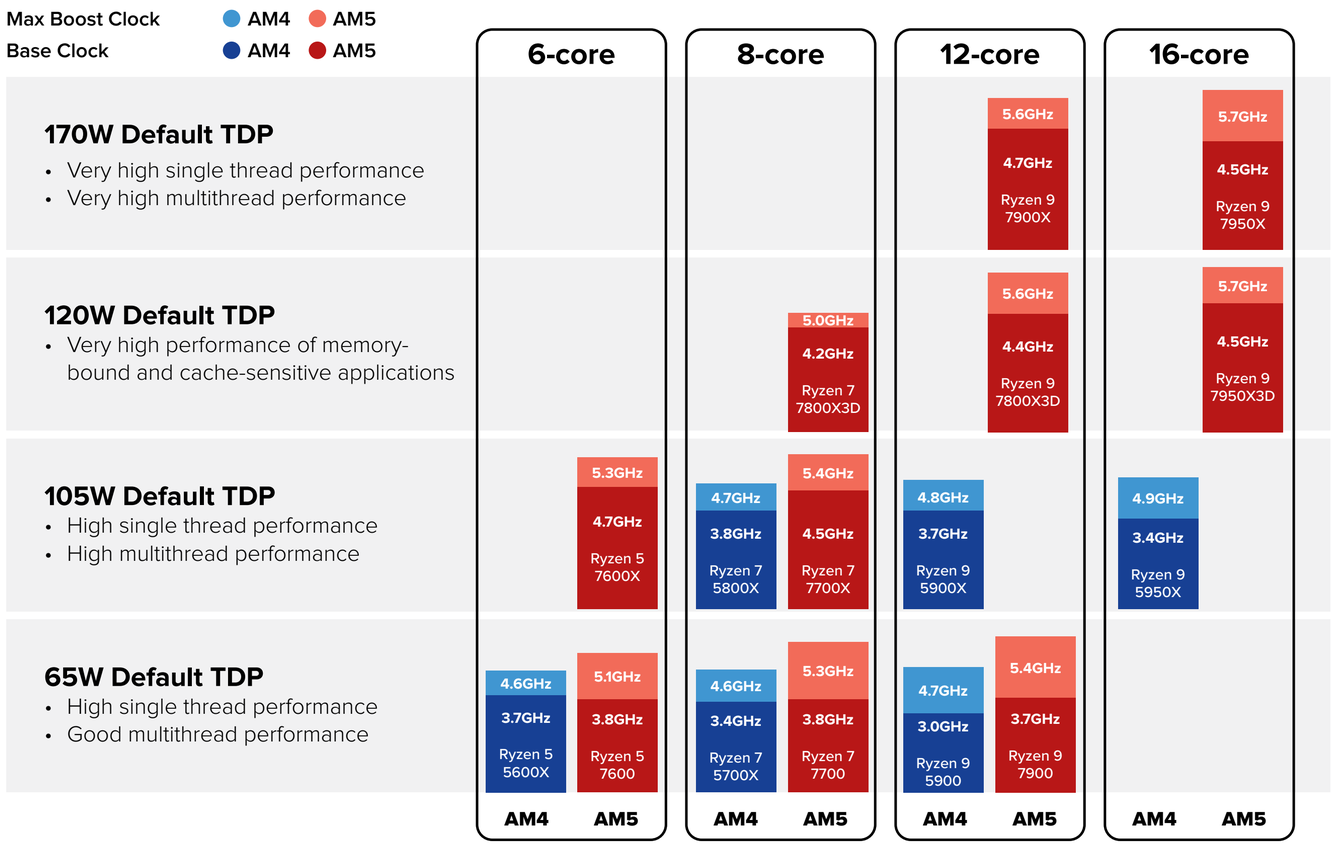
The cost of energy has greatly increased: CPU power consumption makes up a significant portion of the server power consumption which influences the infrastructure OPEX budget. Any savings that can be made here can directly contribute to keeping prices low for customers while maintaining profits.

> We need good power consumption to save costs. The lower the TDP, the lower the price for the customer. **AMD Ryzen is a very efficient platform, especially at the entry level.**
>
> IONOS

Efficiency is key: The latest generations of CPUs have significantly increased their efficiency, offering more than double the performance at the same socket power level than the leading CPUs of five years ago.*

> **Our energy costs have doubled in the last year. We chose AMD Ryzen based platforms for their competitive performance per watt, which helps keep our operating costs low.**
>
> HETZNER

Keep opex low: The latest generations of entry-level CPU offer significantly higher performance per watt than prior generations, helping to keep monthly operating costs competitively low for both hosting providers and end customers — even as energy costs rise.*



Source: AMD Specifications and Datasheets for AMD Ryzen 5000 series; AMD Ryzen 7000 series
* 2018: https://www.cpu-monkey.com/en/cpu-amd_ryzen_7_2700x - multicore score 589 (8 core 16 thread 105W – perf/watt 5.6)
2023: https://www.cpu-monkey.com/en/benchmark-amd_ryzen_7_7700-cinebench_2024_multi_core multicore score 1050 (8 core 16 thread 65W – 16.2) Ratio of performance per watt – 2.9

Max boost for AMD Ryzen 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 greatly increases the reliability of demanding applications.*

Integrated BMC and iKVM support enable easy remote monitoring and troubleshooting.

Operating system support and stable drivers, particularly for Linux.

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've had AMD Ryzen PRO in the datacenter for two years now and it is a really solid platform. We would know when customers complain or something goes wrong, but it doesn't.

IONOS

With AMD Ryzen, ECC memory support means not only does this add to reliability for the customer, but it also means we can offer the same memory consistency across both AMD EPYC and AMD Ryzen platforms.

KnownHost

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

OVHcloud

*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/

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 microcloud 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 Ryzen has filled a void in the industry, allowing board manufacturers to create 'server-grade' motherboards for entry-level CPUs at much lower price points.

KnownHost

Hosters have a growing ecosystem of AMD Ryzen server platform partners to choose from

	Socket AM4 (AMD Ryzen 3000 and 5000 series) 2017-2023			Socket AM5 (AMD Ryzen 7000 series) 2022-2025+		
Brand	**System board**	**1U platform**	**Microcloud platform**	**System board**	**1U platform**	**Microcloud platform**
ASUS				✓		
ASRock	✓	✓	✓	✓	✓	✓
GIGABYTE	✓			✓	✓	
MSi				✓		
Supermicro				✓	✓	✓
Tyan				✓		✓

Choosing between the two Ryzen platform generations

Ryzen 3000 CPUs — same CPU core as EPYC 7002 series
Ryzen 5000 CPUs — same CPU core as EPYC 7003 series

PGA socket
65W to 105W TDP
AVX2 ext. instructions
DDR4 with ECC support
PCIe Gen 3/4 options
X570/X470 chipset variants

AM4 Platform advantages
Low cost memory and system boards
Low power 16-core CPU
Applications making use of AVX2 vector instructions

Ryzen 7000 CPUs — same CPU core as EPYC 9004 series

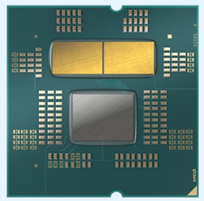
LGA socket
65W to 170W TDP
AVX-2, AVX-512 ext. instructions
DDR5 with ECC support
PCIe Gen 4/5 options
B650 chipset variants

AM5 Platform advantages
Fast performance and throughput
Long platform life
High-frequency CPU models with large 3D V-cache
GPU cores integrated on-CPU
Applications using (AVX-512, Bfloat 16 and VNNI vector instructions
Large choice of boards and platforms

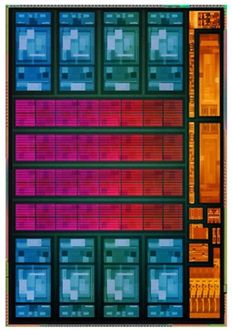
Consistent Feature Sets Help Avoid Silos of Infrastructure, Enabling Full Utilization of Available Capacity

AMD Ryzen and AMD EPYC CPUs use similar chiplets within a generation, helping ease workload migration and certification

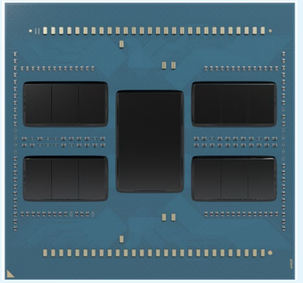
Entry-level CPU platform



AMD Ryzen 7950X — 2 CCD chiplets



Server-class CPU platform



AMD EPYC 9564P — 12 CCD chiplets

Entry-level CPU platform

4th Gen AMD CCD chiplet die (TSMC 5nm)

Up to 96 cores

Test once and run everywhere: validation effort is accelerated due to consistent, homogeneous high-performance core design 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 CPUs makes it much easier as **we don't need different CPUs and boards** for different workloads.

IONOS

With its **full set of capabilities** across all the product line, AMD Ryzen really is the CPU of the people.

KnownHost

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

HETZNER

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 CPU AMD RYZEN 1P only	Server-class CPU AMD EPYC 1P or 2P	Entry-level CPU AMD RYZEN 1P only	Server-class CPU AMD EPYC 1P or 2P	Server-class CPU AMD EPYC 1P or 2P	Server-class CPU AMD EPYC 1P or 2P
Typical core counts per server	6–8–12–16	16–24–32–48–64–128+	8–12–16	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 servers are not willing to match.

Competitive costs are critical:
Choose an efficient 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 a 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.

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

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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 Ryzen™ Processors: Solutions for Dedicated Hosting | AMD

AMD EPYC

AMD RYZEN

AMD

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