

RACKSPACE TECHNOLOGY STRENGTHENS CLOUD SERVICE PERFORMANCE WITH AMD

CASE STUDY

Global cloud leader Rackspace boosted core density and performance without needing to increase data center footprint by switching to AMD EPYC™ Server CPUs



Since its inception more than 25 years ago, Rackspace Technology has grown into a global leader in cloud computing and managed services. To maintain this leadership in an increasingly competitive environment, the company must consistently modernize its technology. By adopting AMD EPYC™ Server CPUs running on Dell PowerEdge R-series servers, Rackspace gained the performance, efficiency, and cost advantages needed to meet customer demands and fuel future growth. “We started off as a Linux hosting provider for small businesses in the Dotcom era, focusing on the popular LAMP stack,” says Bryan Litchford, Vice President, Product Management and Engineering, Rackspace Technology.

The company was the first Linux private cloud service provider, and one of the first to offer Microsoft Windows Server as an alternative in the early 2000s. Rackspace introduced VMware ESXi 3 in 2006 to offer virtualization and is now VMware’s biggest partner globally. “In 2010 we founded Open Stack, an open-source cloud across compute, network, and storage, developed with NASA. This is now run in hundreds of thousands of implementations across the world.”

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Bryan Litchford, Vice President, Product Management and Engineering, Rackspace Technology

However, in the mid-2010s, Rackspace pivoted into a multi-cloud environment. The company’s customer base expanded from small businesses to Fortune 100 companies. “They might require some compute to be on prem in a specific location, or a private cloud,” says Litchford. “Or they’re using AWS, Azure, and Google. Despite Rackspace’s heritage being a private cloud-focused organization, our real magic is helping customers along their cloud journey.”

Today, Rackspace provides solutions to 20,000 customers across the three major hyperscalers, and operates 30 private cloud data centers, with hundreds of thousands of servers across the US, Europe, and APAC, earning billions of dollars in revenue. Rackspace had been using Intel CPUs and the time for upgrade was approaching. “We were starting to serve more upper-mid market or enterprise customers,” says Litchford. “We were starting to verticalize as well, with greater focus on healthcare and financial services.”

INDUSTRY

Cloud services

CHALLENGES

Expand processing power and density to meet enterprise customer demand without having to invest in additional data center space

SOLUTION

Deploy Dell PowerEdge R-series servers powered by 4th Gen AMD EPYC Server CPUs, plus 5th Gen AMD EPYC Server CPUs for some intensive customer workloads

RESULTS

Greater CPU core density and performance while maintaining data center footprint, enabling customer growth without additional server space

AMD TECHNOLOGY AT A GLANCE

4th Gen AMD EPYC™ Server CPUs
5th Gen AMD EPYC™ Server CPUs

TECHNOLOGY PARTNER





With single-socket servers advanced by AMD EPYC CPUs, Rackspace Technology supports latency-sensitive financial and large-scale healthcare workloads while driving cost-efficient growth.

AMD EPYC SERVER CPUS DELIVER HIGHER SINGLE SOCKET DENSITY FOR HEALTHCARE AND FINANCIAL SERVICES

Banks have a high demand for the latest server technology, with every clock cycle counting for high-frequency traders. “They also need to be in specific locations, as close as possible to the exchanges,” explains Litchford. This reduces latency as much as possible, but data centers near exchanges tend to be in expensive real estate areas. “Space is a premium, so you need to pack a lot of punch into a small footprint.” Healthcare also demands a huge infrastructure to handle the needs of tens of thousands of medical staff across hundreds of hospitals.

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Bryan Litchford, Vice President, Product Management and Engineering, Rackspace Technology

Rackspace had a strong partnership with Dell that also helped make the upgrade decision. “Dell was happy to share the AMD roadmap with Rackspace and offer tech previews,” he says. Dell sent over PowerEdge R-series servers with AMD EPYC processors as test systems for Rackspace to try. “We deployed each of our products on current Intel systems and the 4th Gen AMD EPYC CPUs. We looked at the core density for the power drawn by each server. We did a VMware test, deploying ESXi with BusyBox containers to generate traffic. With AMD EPYC CPUs, we got 100 percent utilization without throttling. Any scenario that we threw at the 4th Gen EPYC CPU came up in AMD’s favor.”

Thanks to the high core density of AMD EPYC Server CPUs, Rackspace was able to switch to single CPU servers, when before 80 percent of its fleet had been dual-socket. “That’s one less chip to buy,” says Litchford. “Maybe the chip itself is more expensive, but not twice as much.” Migration also proved easy, with just a virtual machine reboot required.

MORE DENSITY, SAME DATA CENTER FOOTPRINT

The benefits of the upgrade were immediately clear. “The leap in processing capability from AMD EPYC CPUs let us offer servers to customers at 2018 prices, with 50 percent more performance,” says Litchford. “When we looked at the alternative, everything was just going to have to go up. Choosing AMD has been one of the best decisions we’ve made. We have platforms that are very usable across a wide range of workloads, whether it’s banking, healthcare, or even in the tech ad spaces. We’re able to give a great price point, great density, and rock-solid performance.”

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The huge improvement in clock speed and memory bandwidth from 4th Gen AMD EPYC CPU has led to more efficient sizing guidance from Rackspace’s solution engineers. “If a customer says they need 80 cores, we can now meet their needs with 60,” says Litchford. “One of the first customers we moved on to the AMD platform was a large bank in the UK. We made the move for them and saw a 47 percent drop in latency for end-to-end payment processing. They had grown from 12 to 16 cabinets, and we got them down to six. They’re going to repatriate some workloads from hyperscalers back into Rackspace.”

Additionally, the increased core density of AMD EPYC Server CPUs has enabled Rackspace to expand its offerings without needing more data center space. “We haven’t had to redesign for crazy changes in cooling to get the density that AMD brings,” says Litchford. “With AMD EPYC CPUs, we’re able to get more cores in a cabinet with the same power consumption.”

This means that the core count and performance in the data center can be expanded without needing more space. “Rackspace doesn’t buy a cabinet at a time,” explains Litchford. “We buy a five-to-10-megawatt room or half a data center. Expanding space is expensive. Reducing the footprint while maintaining compute capacity opens more space for the next customer. Those incremental savings are huge for us. We’ve been able to pass on those benefits to customers and let them reinvest in their IP estate.”

SUPREME CONFIDENCE THANKS TO RELIABLE PERFORMANCE

Rackspace now relies on AMD. “We have an inherent trust in the platform that AMD and Dell have built,” says Litchford. “We’ve built a rock-solid platform with AMD.”

Litchford argues that the AMD EPYC processor’s unique features provide this level of trust. “AMD EPYC CPUs deliver bulletproof performance, even at high density. With competitor CPUs, the frequencies can be halved with denser chips. I can get the same per-core performance out of a 64-core AMD chip as a 16-core chip. I can scale up quickly for a customer or scale down to meet a particular need. That consistency across the portfolio is extremely valuable. Whether the team goes for 32 or 16 cores, they can trust that the performance will be there.”

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The density of AMD EPYC CPUs also indirectly improves latency across Rackspace’s Dell PowerEdge R-series server environment. “A dozen cabinets means 20 plus switches,” argues Litchford. “With AMD EPYC CPUs I’m down to 6 to 10. The customer will get better performance because it’s more likely that a VM talking to another VM is sitting on the same physical switch.”

Thanks to the flexibility of AMD EPYC Server CPUs, Rackspace has now switched almost exclusively to the platform. “In the last three years, 95 percent plus of the compute that we’ve bought has been AMD powered,” says Litchford. “We now have tens of thousands of cores, up to 10,000 servers.”

Rackspace has already deployed some 5th Gen AMD EPYC CPUs for some healthcare workloads, too. “We’re definitely planning to continue down the path with AMD.”

“AMD has proven to have an unparalleled price to performance ratio that has been rock solid across the most critical services that Rackspace provides, including the largest hospital networks in the USA,” concludes Litchford. “We have the utmost confidence in the AMD stack for any workload that we throw at it.”



Business teams count on Rackspace Technology for rock-solid performance with AMD EPYC Server CPUs.



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ABOUT RACKSPACE TECHNOLOGY

Rackspace Technology is a leading end-to-end multicloud technology services company. We can design, build, and operate our customers’ cloud environments across all major technology platforms, irrespective of technology stack or deployment model. We partner with our customers at every stage of their cloud journey, enabling them to modernize applications, build new products and adopt innovative technologies. For more information visit rackspace.com.

ABOUT AMD

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