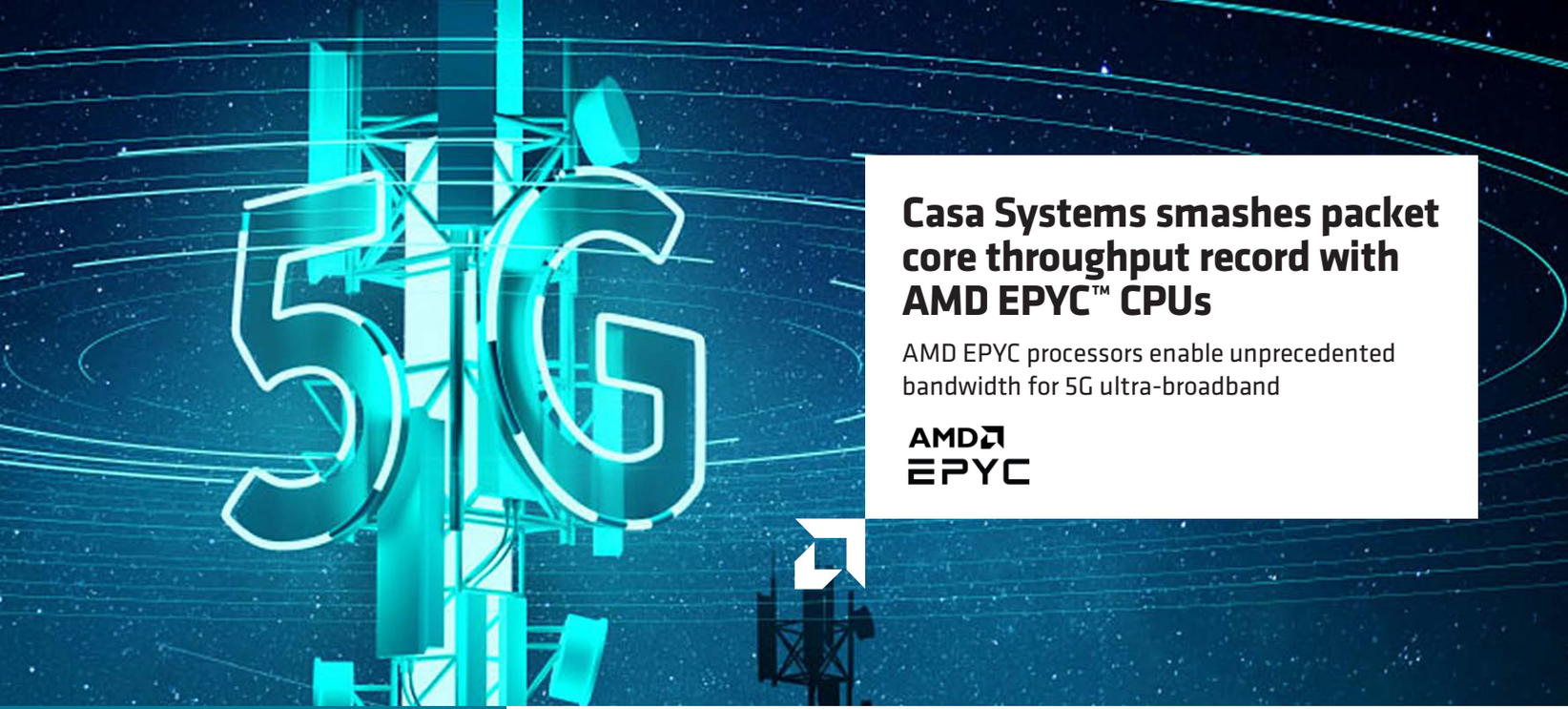

Casa Systems smashes packet core throughput record with AMD EPYC™ CPUs

AMD EPYC processors enable unprecedented bandwidth for 5G ultra-broadband

AMD EPYC

CUSTOMER

casa systems

INDUSTRY

Infrastructure technology solutions for wireless, cable and fixed networks

CHALLENGES

Provide leading performance for next generation 5G networks

SOLUTION

Deploy AMD EPYC CPUs with hardware partner HPE

RESULTS

Record-breaking packet core throughput in excess of 750 Gbps

AMD TECHNOLOGY AT A GLANCE

AMD EPYC CPUs

TECHNOLOGY PARTNER

Hewlett Packard Enterprise

The rollout of 5G promises a revolution in connectivity that goes far beyond much faster wireless data throughput. Bandwidth consumption is growing by 30 percent a year, but there is an increasing need for lower latency and more flexible services, that allow transparent transitions between wired and wireless connections.

Telecommunications companies can get the best performance out of the 5G upgrade when radio, software, and core are all part of one seamless solution. Casa Systems is a leading provider of ultra-broadband solutions for 4G/5G mobile and fixed wireless, cellular IOT, optical, and WiFi attached networks. Their innovative ultra-broadband solutions deliver disruptive performance benefits, service agility, and monetization potential for service providers. AMD second and third generation EPYC processors offered Casa Systems the hardware performance the company needed to deliver best-in-class per-RU (Rack-Unit) forwarding performance to fully harness emerging 5G fixed wireless access, eMBB, and edge computing services.

"AMD EPYC provides an innovative system-on-a-chip design with disruptive performance that maximizes value of on-prem and off-prem solutions."

Andrew Gibbs, VP, Wireless Solution Architecture, Casa Systems

Performance and seamless integration

"When you think of the 5G space, there are plenty of solutions out there where you can buy just the radio or just the software on the radio or just the core," says Andrew Gibbs, VP of Wireless Solution Architecture at Casa Systems. "Casa's goal is to be able to provide that end-to-end in 4G and especially 5G solutions. We cover that, from what we call core to door, from core network all the way out to the user in some cases."

Casa provides a range of solutions within this space. "Our toolkit includes Axyom™," continues Gibbs. "This is a multi-access common cloud software framework that anchors the traffic from mobile, fixed wireless access, cellular, IOT, and also provides wireline WiFi and optical-offload based solutions." The company provides a wide variety of access solutions for indoor and outdoor deployment. But one thing that ties them all together is Casa Systems' unwavering goal to provide market-leading performance.

"Performance is something that we hang our hat on," remarks Gibbs. "Being a software-first company, the ability to deploy our software in any shape or form, in any part of the network, and at any scale is what we're driving towards." Breaking the barriers of throughput is an essential element of what Casa Systems offers the telecommunications industry. "Our solution is always about continuously raising the bar to offer industry-leading performance in terms of session capacity per rack-unit," says Gibbs. "We're noted for driving two to three times higher throughput per logical core than our competition. In 5G, we're also about building more sustainable and greener networks, so our solution is designed to be able to offer the lowest cost per-watt per rack-unit."

Casa Systems offers these capabilities across all flavors of wired and wireless connectivity via its Axyom™ Software Framework. "Convergence is a major part of our story right now," says Gibbs. "The solutions that we offer are designed to provide a more streamlined user experience with more seamless mobility." Extra performance in a converged solution also provides cost benefits. Network providers want to consolidate wireless and wireline user experiences in common locations, to reduce cost of network operations and to realize the potential from borderless networks."

Central to this is the performance of the 5G core. When traditional telephony became data packets alongside other types of data, all of these were transported through a common core. Having a quick packet core with low latency became the central factor in delivering the most efficient telecommunications. This is where AMD EPYC processors offered a huge benefit, with the fastest packet core throughput on the market.

Harnessing the unique features of AMD EPYC CPUs

AMD is the perfect partner for Casa Systems since both aim to disrupt their respective markets. Disruptive performance in software requires disruptive performance in hardware. "For a company that is focused on performance, efficiency, and flexibility, it's a no brainer that we take our 5G core and make sure it works seamlessly with AMD, as well as ensuring margins are such that we can really break new ground together," says Gibbs. "Casa Systems had already achieved leading performance, but AMD EPYC processors took us to the next level."

"Our software is designed to scale efficiently in performance, both up or down, so that you can deploy your workload where it's most suited," explains Gibbs. "We were able to harness the AMD EPYC architecture in a variety of different ways. Not only does it raise the bar in terms of doubling the compute processing via the number of cores per socket, but it also offers the first system with 128 lanes of PCI Express Gen4. It offers access to more memory per-socket than what was available before and is able to harness the latest in IO density per socket."

"EPYC processors allow us to test the boundaries of what's possible, with better performance at a reduced price per watt."

Andrew Gibbs, VP, Wireless Solution Architecture, Casa Systems

"AMD EPYC has just got so many different flexible points that it is a tremendous opportunity to maximize value."

Andrew Gibbs, VP, Wireless Solution Architecture, Casa Systems

Breaking the record for throughput

The most recent packet core throughput record was 524 Gbps, but Casa Systems knew that with its performance driven design, paired with the unique elements of AMD EPYC hardware, this could be improved upon. "Our target was to pass 650 Gbps," says Shuvojit Chowdhury, Director of Product Management, Wireless Core Portfolio at Casa Systems. But the results ended up well beyond this, hitting over 750 Gbps with a dual-socket system equipped with a 64-core AMD EPYC CPU in each socket. This was achieved without any CPU offload to smartNICs, which can significantly raise power consumption and introduces middleware.

"That translates into industry-leading 5G performance not just from a logical core perspective but also on a per rack unit basis," says Gibbs. "By providing these types of dense performing solutions it enables our end user service provider customers to more cost-effectively manage their networks and have a greater solution with better economics." This will allow Casa Systems to address the increases in data usage that have been particularly accentuated during the last year.

"If you look at some of the trends that we've seen during this pandemic, in terms of people working from home, we've seen explosive growth in demand for fixed wireless access solutions," says Gibbs. "More and more people are on video meetings or streaming Internet video and cutting the cord so they're moving from traditional linear video to IP video experiences." Industrial applications are also driving the need for upload bandwidth as well. "You could have one piece of the network that needs single-digit millisecond latency," continues Gibbs. "Then on the same network you may have a 4K video camera with large bandwidth needs, so you're really going to have quite a broad set of requirements."

"EPYC processors allow us to test the boundaries of what's possible, with better performance at a reduced price per-watt," says Gibbs. "One of the constants in our industry is an insatiable appetite for bandwidth. We need partners and platforms that enable us to meet and exceed that goal in order to provide our software at the near and far edge and in centralized cloud data centers. We need to find the most flexible, cost-effective, green solutions to reduce the carbon footprint from 5G networks. AMD EPYC provides an innovative system-on-a-chip design with disruptive performance that maximizes value of on-prem and off-prem solutions."

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About Casa Systems

An Industry Innovator for nearly 20 years, Casa Systems delivers the core-to-customer building blocks to speed 5G transformation with future-proof solutions and cutting-edge bandwidth for all access types. In today's increasingly personalized world, Casa creates disruptive architectures built specifically to meet the needs of service provider networks. Casa's suite of open, cloud-native network solutions unlocks new ways for service providers to build networks without boundaries and maximizes revenue-generating capabilities. Commercially deployed in more than 70 countries, Casa Systems serves over 475 Tier 1 and regional service providers worldwide. For more information visit casa-systems.com.

About AMD

For over 50 years AMD has driven innovation in high-performance computing, graphics, and visualization technologies—the building blocks for gaming, immersive platforms, and the data center. Hundreds of millions of consumers, leading Fortune 500 businesses, and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work, and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit amd.com/EPYC.

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