



HELPING CUSTOMERS MEET SOARING BANDWIDTH DEMANDS

Casa Systems outpaces its competition with an NFV-ready, virtualized ultra-broadband edge platform enabled by advanced carrier-grade, Intel®-powered Dell EMC servers



casa systems

Telecommunications

United States and globally

Business need

With exploding bandwidth demands from its mostly cable customers, OEM Casa Systems sought to dramatically boost performance of its core ultra-broadband service delivery solution.

Solutions at a glance

- [OEM Solutions for Telecommunications](#)
- [Dell EMC Support Services](#)
 - [Dell EMC OEM ProSupport](#)

Business results

- Simplifies network management
- Extends competitive leadership
- Lowers platform costs
- Enables a future-ready ultra-broadband platform

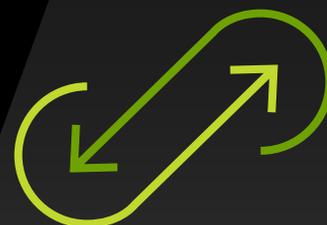
Up to

30x

performance
boost per RU



Accelerates
time to market



YouTube. Pandora. Netflix. Spotify. These are just a few of many hundreds of bandwidth-hungry services that today's subscribers expect to be able to access from wherever they are and whatever type of device they are using, whether a desktop or laptop, tablet or smartphone. That's why some experts expect mobile data traffic to soar eightfold between 2015 and 2020.

From a business standpoint, the bedrock challenge for service providers is daunting but straightforward: with such fast-growing demand for bandwidth to deliver these services, revenue growth is falling behind even faster-growing costs. And that's despite many of the biggest service providers investing tens of billions of dollars in their networks each year.

Casa Systems was founded in 2003 with a focus on the cable industry to help its service providers flatten the cost curve with advanced technology. As a leading provider of fixed, mobile, optical and Wi-Fi network solutions for ultra-broadband services, its infrastructure offerings — including its flagship Axyom™ edge platform — incorporate the latest radio frequency (RF) engineering, high-density access aggregation technologies, extreme subscriber density and session management capabilities.

Extending market leadership

According to Marketing Vice President Paul Hanna, Casa Systems was the first cable industry supplier to offer its customers a multiservice platform, the Converged Cable Access Platform, or CCAP, that is compliant with DOCSIS 3.1. The DOCSIS standard — Data Over Cable Service Interface Specification — defines how cable television networks can carry high-bandwidth data to enable delivery of voice, data and video services.

“With our solutions, service providers can offer rich customer experiences that are fueled by high-performance broadband, that span seamlessly across multiple access networks, and that are defined and optimized using software intelligence,” Hanna says. “So, beyond just delivering coverage and capacity, our technology delivers enhanced user experiences, greater network efficiencies and more opportunities for monetization.”

But Hanna insists that Casa Systems cannot stand still because bandwidth requirements will continue to grow. “Today our customers need more than 1 x Gbps throughput, and in the next decade, they'll be needing 10 x Gbps or more,” he says. “But Casa Systems will be there with the solutions they must have to deliver those levels of throughput more cost-effectively than ever. We know what it takes to serve tens of millions of subscribers without fail.”

Ensuring future readiness

Casa Systems recently took steps to ensure that its Axyom platform was ready for that 10 x Gbps future — and even beyond that. “To deliver the ultra-broadband multiservices capabilities that our customers are depending on us for in the years to come, we need networks that are ultra-fast, ultra-dense and ultra-secure.”

The Axyom platform is a versatile, virtualized solution that can be deployed on a service provider's premise, at another centralized location or at the network edge, with the latter being the company's primary focus. With it, customers gain a highly efficient, cost-effective way to deliver 3G and 4G voice, data and video services, plus Wi-Fi access.

“We are very focused on optimizing the access edge of our customers' networks,” Hanna says. “We're unique in that

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Paul Hanna
Vice President, Marketing, Casa Systems

regard and always looking to make the edge much more intelligent and efficient for our customers' operations."

Axyom is based on an important architectural evolution in the telecommunications industry called Network Functions Virtualization (NFV). NFV takes advantage of IT virtualization cloud orchestration technologies, often open-sourced to cut licensing costs, that have become common in recent years.

Software-defined networking (SDN) also plays a key role. Once network functions are virtualized, they can be placed under SDN control and orchestrated to dynamically deliver the uniquely tailored services 4G and emerging 5G applications require via network slices.

Virtualization on a vast scale

But NFV uses both technologies on a much bigger scale — to create virtualized network functions (VNFs). As modular building blocks, VNFs helps service providers develop, provision and deliver new services much more quickly, flexibly and cost-effectively. In turn, this cuts time to market and reduces deployment risks, while boosting the monetization opportunities that Hanna describes to help get ahead of the cost curve.

Hanna explains that Axyom is another example of the disruptive technology solutions that give Casa Systems' customers a winning edge over their competitors. "But to keep our leadership role, we need to continually innovate," Hanna says. "And our innovation is driven by close partnerships with our customers. We listen to their needs and challenges and then apply our deep technological expertise and engineering resources to address them."

Keeping customers competitive — and profitable

"Our agile development approach for both our hardware and software solutions allows us to respond quickly to our customers' needs — and, in turn, gives them access to the

capabilities, functionality and performance they need to deliver new services more quickly, to improve subscriber experience and to maintain the competitive edge that is so critical to their own profitability."

As successful as the Axyom platform has been, Casa Systems decided that it needed to reimagine how the platform is built, if it was to continue innovating at the pace and scale to meet its customers' needs.

Gibson Ang, who is the company's Mobility Product lead, provides the backstory: "We were using special-purpose hardware in our first generation Mobile Edge products, such as network processors, co-processors, application-specific integrated circuits, and field-programmable gate arrays," he says. "But these different components were all costly and complex to manage, while also contributing latency to Axyom's packet-processing performance. We knew there was a better way."

Consolidation for simplification

To achieve this, the Casa Systems development team wanted to consolidate the discrete architectures for each major workload — such as signal processing, network control, packet processing and application delivery — into just one architecture.

"This approach would enable us to align more functionality with the NFV model, help to simplify both application development and system management, and improve scalability," Ang says.

Casa Systems decided to move away from proprietary point solutions to use open-source software and host it on commercially available, off-the-shelf (COTS) hardware. After carefully evaluating hardware platforms from IBM, HPE and other vendors, it chose Dell EMC.

"The carrier-grade Dell EMC PowerEdge R630 rack server, powered by Intel processors, gives service-provider customers a dense, 1U form factor, plus three PCIe slots," says Ang. "This saves space and costs, while boosting performance. Higher density means that our customers' costs for rack space, power and cooling all go down."

Ang notes that the highly versatile Dell EMC servers, which are NEBS-compliant, also provide customers with a choice of different storage types — dense, high-performance flash, high-capacity spinning disk or a combination of both. Powered by Intel® Xeon® processors from the E5-2600 v4 product family and state-of-the-art DDR4 memory, the Dell EMC servers can more than handle Axyom's NFV workloads of today and tomorrow.

He adds that the Intel® QuickAssist Technology was a big help to the Casa Systems development team. With it, they were able to boost real-time, packet-processing efficiencies, especially in those functions that need encryption and compression acceleration.

“Maximizing CPU utilization while minimizing packet latencies are key performance benefits that our Axyom platform has gained from the combination of Dell's server design and the Xeon processors and QuickAssist Technology from Intel,” Ang says.

Strategic partners today and tomorrow

Both Ang and Hanna consider Dell EMC and Intel to be global, strategic partners. “As a global supplier of NFV-ready, ultra-broadband, edge solutions worldwide, we consider the global support of Dell EMC and Intel critical to our success in delivering a 30x performance boost per RU to our service-provider customers' operations,” Hanna says. “For them, that can be a big help, even a game-changer, in

Intel Inside®. Powerful Solution Outside.

keeping them ahead of their cost curves.”

For his part, Ang cites Dell EMC OEM ProSupport as an example of how Dell EMC has tailored its support offerings for businesses like Casa Systems. It enables his fellow developers to skip escalations, if they need advice on issues, putting them in touch with Dell EMC experts directly, saving time and helping keep milestone deliveries on schedule.

“With Intel, we get to see their product roadmaps in advance and even influence them, given that our CPU requirements really push the technology envelope,” he says. “In turn, that helps us figure out what features and capabilities we'll be able to build into our ultra-broadband platforms going forward.”

Ready for a 5G future

Among the features and capabilities for which Casa Systems is determined to remain a market-leader are ones that exploit the coming 5G evolution of mobile broadband standards. The proposed 5G solutions will support data-access speeds of up to 10 x Gbps, which echoes Hanna's forecasted throughput requirements for Casa Systems customers.

“We're confident we can keep innovating our Axyom platform and other Casa System products to meet these demands, given the passion that Dell EMC and Intel both have for relentlessly driving down the price-performance of their products and keeping us informed every step of the way as their strategic partner,” Hanna says. “Simply put, we're ready for the future.”



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