



Embedded OEM designs cut months from DIY model

BittWare, an FPGA tech leader, engaged Dell Technologies OEM Solutions to help engineer disruptive server products sold and supported worldwide.



Technology

United States

Business needs

BittWare sought a strategic OEM partner that understood field-programmable gate array (FPGA) technology as well as its disruptive potential and market trends to help develop a high-quality, highly reliable, enterprise-class FPGA server solution backed by global logistics, support and service.

Solutions at a glance

[Dell Technologies OEM Solutions](#)

[Dell EMC PowerEdge rack servers powered by Intel® Xeon® processors](#)

- [Dell EMC PowerEdge C4140 server](#)
- [Dell EMC PowerEdge XE2420 edge server](#)
- [Dell EMC PowerEdge R740 rack server](#)

[Dell EMC OpenManage Ecosystem](#)

[Dell EMC Configuration Services](#)

Business results

- Expands design and engineering capabilities dramatically.
- Accelerates time-to-market.
- Achieves greater differentiation.
- Gains worldwide support and service.

Saves

months in development time.



Reduces

costs and complexity.



Field-programmable gate array (FPGA) acceleration technology isn't new, but it's emerging from its traditional applications in aerospace, government, financial services and broadcast video into more mainstream ones. That's because FPGA chips can provide extremely dense and high-performance data processing with bidirectional throughput speeds of up to several terabits per second.

Leading the way is New Hampshire-based BittWare, an FPGA pioneer founded in 1989 and part of the Molex group of companies. It develops and sells a wide range of board-level and server-based solutions for enterprise-class compute, network, storage and sensor processing applications.

"FPGAs are amazingly good at I/O processing," explains Craig Petrie, BittWare's vice president of marketing. "If you want to ingest data and process it quickly and energy-efficiently with very high throughput, it's hard to find a better solution than FPGA. Just as GPUs grew beyond gaming and video applications to accelerate artificial intelligence and other applications, FPGA offers disruptive, next-level acceleration that we're making more accessible for data centers and edge applications via rack mount or rugged server form factors."

Accelerating FPGA adoption

According to Petrie, BittWare is breaking down the barriers of FPGA adoption and acceleration by making the technology more user-friendly and accessible to business users. "We're the only FPGA vendor-agnostic supplier able to deliver FPGA accelerators in high volumes," he says. "To achieve this, we had to develop enterprise-grade, off-the-shelf solutions that are certified to industry standards for compatibility. They also had to have good programming and management tools, plus offer warranties and support worldwide."

At first, BittWare provided customers with its own FPGA TeraBox Systems, using smaller suppliers whose servers were optimized for acceleration. "Dell's economies of scale, quality and global support are what we want our customers to have and, frankly, what they expect," Petrie says. "Also, Dell's financial resources for R&D and market staying power are well recognized."

"Our OEM Solutions account team made a huge effort to understand our market and the trends and what we need to be successful."

Craig Petrie
Vice President, Marketing, BittWare

Gaining quality and global scale

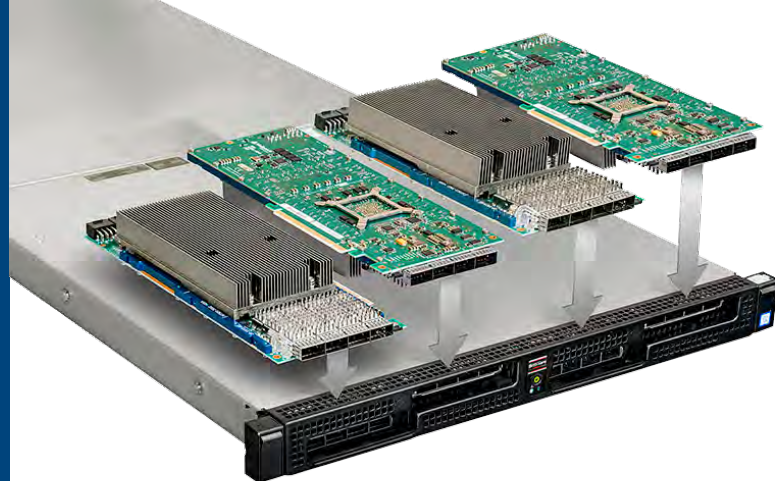
In 2018, the company changed this strategy and turned to Dell Technologies for assistance. "OEM supplier programs are quite similar in many ways, but Dell Technologies OEM Solutions stood out as beneficially different," Petrie says. "For example, the Dell Technologies team in OEM Solutions is very strategic, forward-thinking and global in their outlook."

Petrie was also impressed by the group's commitment to learning about BittWare and its business. "Our OEM Solutions account team made a huge effort to understand our market and the trends and what we need to be successful, from engineer-to-engineer and CTO-to-CTO. That's an investment in time and resources that not all companies are able and prepared to make."

Carlos Tejeda, product manager for BittWare's TeraBox Systems, found that the Dell EMC PowerEdge server portfolio, powered by Intel® Xeon® processors gave his team a lot of choices on which to build their FPGA servers. "Dell also has made huge investments in the PowerEdge line, and OEM Solutions allows us to easily leverage all that good work," he says. "OEM Solutions immediately opens that up and says come build on top of our platforms and then go to market with the platforms badged for your company or your customers. That gives us huge value and isn't something we could realistically replicate ourselves."

“Compared to doing our own engineering, we saved months ... by working directly with the PowerEdge server engineers, facilitated by our OEM Solutions account team.”

Carlos Tejeda
Product Manager, TeraBox Systems, BittWare



Tejeda cites as one example the BittWare TeraBox 1400DN, which is built on the Dell EMC PowerEdge C4140 server. Working directly with Dell Technologies (product engineers, assisted by OEM Solutions), his team completely re-engineered the server's chassis design to keep its 1U form factor but provide four networking interfaces on its front.

“This saved us tremendous cost and complexity compared to doing the engineering solely on our own,” Tejeda says. He adds that BittWare server solutions based on the Dell EMC PowerEdge server come with the Dell EMC OpenManage Ecosystem systems management portfolio, which includes the integrated Dell Remote Access Controller (iDRAC) toolset for remote monitoring and administration. “We’re working on integrating directly with it,” he says.

Collaborative engineering makes a difference

This custom re-engineering—the result of extensive collaboration between Dell Technologies and BittWare—enables the BittWare FPGA server to support four large FPGA cards, plus up to eight 100-gigabit ports per PCI Express Card, making up to 32 100-gigabit connections available. In addition, a direct connection to the server's board management controller enables BittWare customers to monitor card and server temperatures at scale.

“Compared to doing our own engineering, we saved months on the development of the TeraBox 1400DN by working directly with the PowerEdge server engineers, facilitated by our OEM Solutions account team,” Tejeda says. “We dramatically shortened our time-to-market while offering our customers Dell EMC PowerEdge quality along with global support and service.”

“OEM Solutions is very strategic, forward-thinking and global in their outlook.”

Craig Petrie
Vice President, Marketing, BittWare

Extending the benefits with Configuration Services

In addition, OEM Solutions enabled the company's engineering team to collaborate with Dell Technologies engineers on adapting two other Dell EMC PowerEdge servers to its line of products:

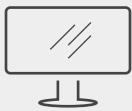
- TeraBox 2000D, a 2U FPGA server, is based on the PowerEdge R740 rack server.
- TeraBox 200DE, a 2U short-depth edge server that's NEBS-compliant, is based on the PowerEdge XE2420 edge server and built for harsh environments.

BittWare can also take advantage of Dell EMC Configuration Services. Each BittWare server comes preconfigured and tested. This includes setup and installation of its FPGA cards and associated hardware, the customer's choice of operating system and development tools. The iDRAC management software comes standard.

"Each TeraBox arrives at our customers fully tested with the software loaded and configured, so it's ready to use, with our brand and asset tracking affixed—all of which differentiates us in the market," says Petrie. "And that is all the result of our partnership with Dell Technologies OEM Solutions."

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Product Manager, TeraBox Systems, BittWare



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