

Enyx chooses Arista FPGA-enabled network switches to accelerate ultra-low latency solutions for major financial Service Providers

Highlights

Challenge

Focused on delivering higher performance with a lower data centre footprint, Enyx provides end-to-end applications that have been deployed by low-latency service providers, hedge funds, exchanges and top-tier investment banks.

As Enyx has grown, there has been a demand for smaller form factors that can be rack mounted within highly redundant switching products.

Solutions

- Enyx selected Arista's 7130 FPGA-enabled network switches (formerly Metamako) offering Layer 1+ and FPGA-enabled switching hardware that is already used by many stock exchanges and electronic trading firms.
- The combination of Layer 1 switching with onboard FPGA fabric offered Enyx a more elegant solution to streamline its development process to deploy its own FPGA apps, with less cabling, power consumption and better performance.

Results

- Enyx is now looking beyond its traditional financial services segment at providing its cutting-edge FPGA applications and services to major organizations.



To meet growing demand for its specialist FPGA technology in financial services, Enyx decided to switch from FPGA cards to Arista's network-centric, FPGA-enabled Layer 1 switches to ensure high performance, ultra-low latency and streamline the development of its core network applications.



Project Background

Enyx is a leading developer of ultra-low latency solutions. Focused on delivering higher performance with a lower data centre footprint, Enyx provides end-to-end applications that have been deployed by low-latency service providers, hedge funds, exchanges and top-tier investment banks. With over 40 engineers based in Paris, New York and Hong Kong, Enyx offers both off-the-shelf trading and network infrastructure solutions, and assists in integration and deployment into the customer's stack.

Enyx is a proven innovator and was one of the first to develop widely deployed, enterprise-class network applications running on FPGA switches. Its off-the-shelf applications include ultra-low latency market data normalization and distribution, order execution and in-hardware trading algorithm acceleration. Additionally, the Enyx product range features wireless network solutions and pre-built hardware IP blocks compatible with the Arista 7130 FPGA platforms, which may be integrated in a customer's application.

Challenge

For over a decade, Enyx has been at the forefront of FPGA technology and today has over 250+ FPGA systems deployed globally to deliver the fastest performance for activities such as electronic trading or low latency data communications. FPGA technology is prevalent in trading environments as firms are looking to accelerate their infrastructure e.g. reduce the processing time of trading applications, which can be done significantly faster with FPGAs than with software.

Historically Enyx used PCIE-based FPGA development cards which were installed into a server to develop its core network applications. However, as Enyx has grown, there has been a demand for smaller form factors that can be rack mounted within highly redundant switching products. To meet this demand from a 'big server' to a more 'network-oriented' platform, Enyx began evaluating a number of networking vendors with a switch-based FPGA architecture on which to develop and deploy its FPGA applications stack.

Solution

Following extensive testing, Enyx selected Arista's 7130 FPGA-enabled network switches (formerly Metamako) offering Layer 1+ and FPGA-enabled switching hardware that is already used by many stock exchanges and electronic trading firms.

The combination of Layer 1 switching with onboard FPGA fabric offered Enyx a more elegant solution to streamline its development process to deploy its own FPGA apps, all with less cabling, power consumption and better performance.

As Enyx CEO and founder Arnaud Derasse explains, the partnership with Arista as its underlying FPGA-enabled network switches would prove to be a pivotal moment in helping to expand the potential of the innovative approach. "The customers we spoke to were all extremely positive about the deal, especially several in the electronic trading sector that had already deployed Arista solutions within their core networks due to their low latency and non-blocking performance," says Derasse.



The position was further strengthened when Derasse met with the Arista senior management team and began to discuss the platform technology roadmap. "Arista is a large, highly technical and deeply trusted organisation and this is a critical requirement for some of our biggest customers," explains Derasse. "Our clients come to us for our expertise around deploying very specialist FPGA solutions and with Arista as our platform partner, we now have the backing of an enterprise-grade and truly global firm."

Enyx has to date deployed more than 100 Arista 7130 Series devices. The 7130 platform combines low latency Layer 1+ technology which forwards data between ports in 4 nanoseconds with full signal recovery and regeneration. The devices are non-blocking, deterministic and packet-aware, providing comprehensive packet statistics, signal quality monitoring and diagnostics.

The 7130 series offers up to three on-board FPGA(s) and is an open platform that support Arista's own network apps such as MetaMux or MetaWatch, but also enables third-parties to develop custom network applications.

"Openness and extensibility are key at Arista" adds David Snowdon, Director, Software Engineering for Arista Networks. "We provide the required APIs, and strongly encourage customers and partners such as Enyx to write their own network applications to build powerful apps, faster and more conveniently to facilitate the creation of a true FPGA app ecosystem."

In spring 2019, Arista launched the new 7130L Series which offers higher levels of performance, lower latency, picosecond timestamping and contains the latest FPGA fabric. This new model has allowed Enyx to more seamlessly integrate its custom network applications such as its nxLink suite of apps for use cases including bandwidth sharing for RF links, low latency trading connectivity and market data filtering.

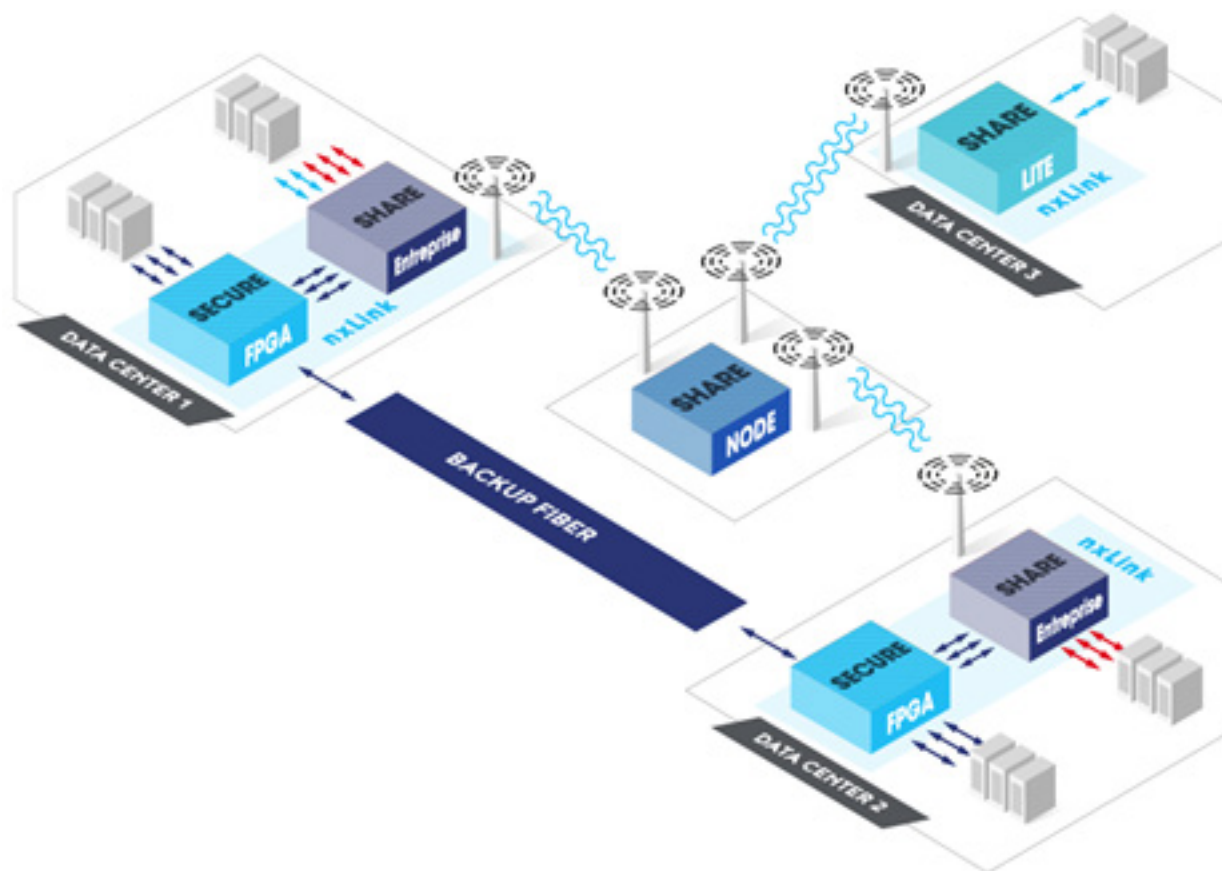
Conclusion

Changing from FPGA-cards to a switch-based FPGA architecture has yielded significant benefits for Enyx not just in terms of performance. "The switches are easier to manage for networking teams and are less prone to failures than traditional server-based solutions," says Derasse. "In addition, the layer 1+ functionality within the same device as the FPGA itself provides a multitude of additional features such as signal regeneration, media conversion, telemetry, dynamic patching/link management and Layer 1+ statistics on every link."

Enyx is now looking beyond its traditional financial services segment at providing its cutting-edge FPGA applications and services to major organizations including telecom operators, research labs, universities, and technology manufacturers for the defence, aeronautics, aerospace and high-performance computing industries.

"Our current generation and future customers are deployed on the Arista 7130 platform and our partnership with Arista is proving highly successful," says Derasse. "Innovation and execution are key drivers for both Arista and Enyx. Our roadmap for development gives us confidence that we can create innovative new applications that can serve the needs of a much wider range of use cases."

Application	Overview	Use it for...
nxLink - Share Lite & Enterprise	Bandwidth management for RF links	<ul style="list-style-type: none">- Multi-user wireless network service operator environments- Low latency trading infrastructure
nxLink - Share Node	Low latency network router	<ul style="list-style-type: none">- Low latency trading infrastructure- Routing user traffic between multiple radio links
nxLink - Secure	Packet arbitration for link redundancy	<ul style="list-style-type: none">- Fiber back-up for wireless connectivity disruption due to inclement weather conditions- Smart arbitration between wireless and fiber back-up to ensure best performance, no data loss or service outages- Low latency trading Infrastructure



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