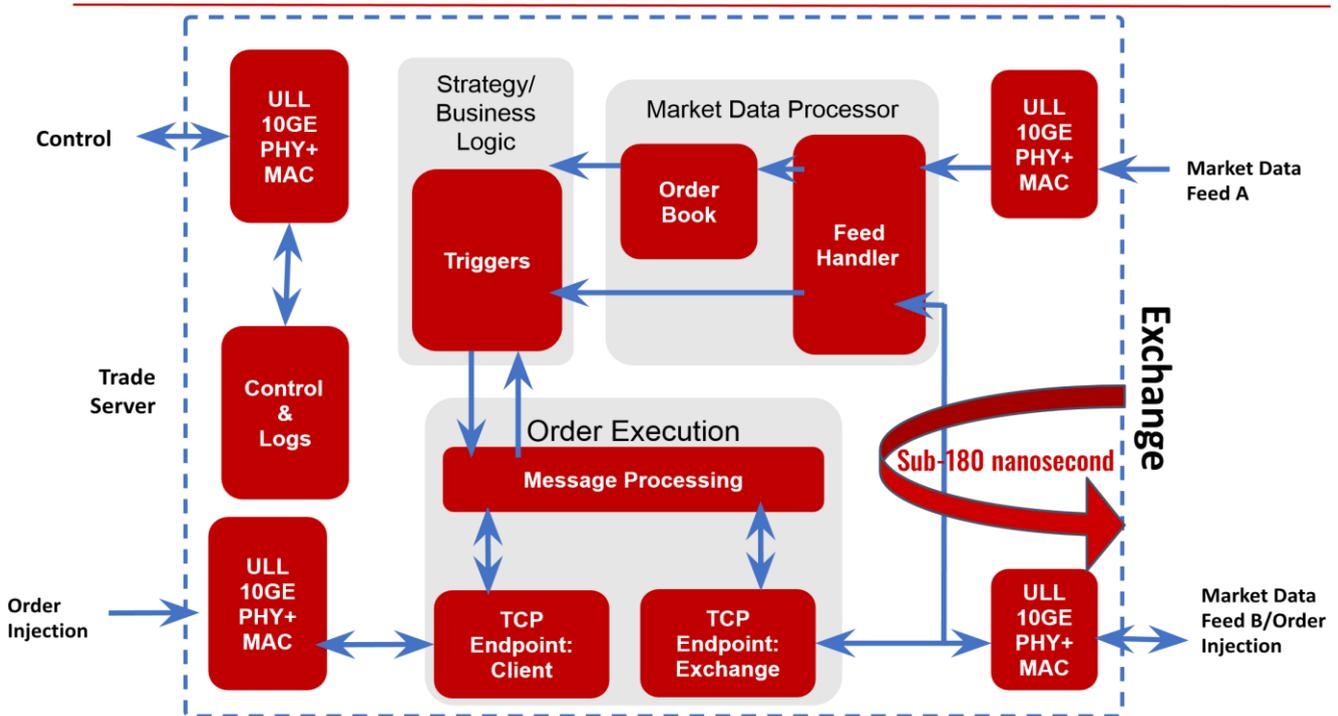


FPGA Tick-To-Trade System

FPGA Diagram of Tick-to-Trade System



Description

Algo-Logic Systems' FPGA accelerated Tick-To-Trade (T2T) System features sub-180 nanosecond trading solution

- Support for all CME Group exchanges including CBOT, COMEX, Nasdaq, and NYMEX.
- Also support for NASDAQ, EUREX and CBOE
- Pre-built IP cores that significantly reduce time-to-market and provide flexibility for customizations
- Parameterized triggers for mass quote cancel
- Mass action request and fast arbitrage as well as the ability to modify order fields in FPGA logic
- Integrates with existing Order Management Systems (OMS) through C++ Application Programming Interfaces (APIs)

ArQ C++ Library and API:

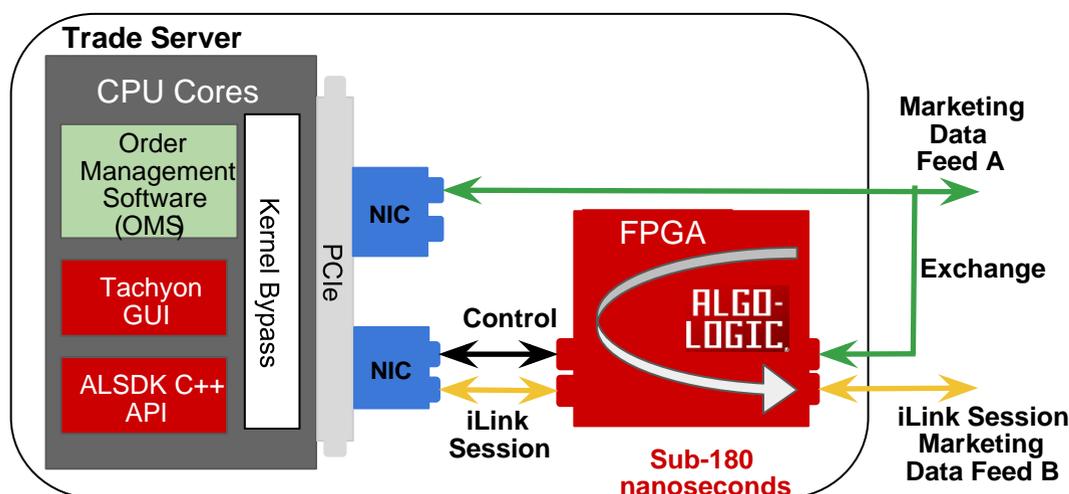
- Low latency C++ 98 compatible APIs are used to set up triggers and preload orders to be injected
- Well defined API to pass trigger parameters between hardware and software

Control Software includes:

- Device parameter configuration (e.g., IP and MAC addresses) and status monitoring
- Event notifications

FPGA-Accelerated Trading

Mass Quote Cancellation (MQC)	Ultra-Low Latency release of an order in reaction to a trade event outside of Best Bid and Offer as specified by the price threshold
Large Aggressor Quantity (LAQ)	Release an order in reaction to a trade event that has an aggressor trading a large quantity as specified by the quantity threshold
On Fill (Hedging)	Enables release of an order in reaction to a fill event as determined by iLink3 Fill or market data trade event whichever comes first as determined by the OrderID
Price	Enables release of an order in reaction to Best Bid or Best Offer price movement as specified by the price
Sweep Trigger	Detects the number of sweep levels and react with an order where the prices have been calculated on the FPGA and is based on the number of sweep levels and the user specified data
MBO Trigger	Detects the number of sweep levels and reacts with an order where the price is calculated in the FPGA based on price and quantity in the subsequent incremental order book update and user specified data
Custom Triggers in HLS	HLS allows customers to implement custom triggers to support their proprietary strategies. Allows trigger inputs from Market Data, Customer generated parameters, Top of Book, and incremental market updates or execution reports.



FPGA Tick-To-Trade System Features and Specifications

#Multicast Channels	16 each A and B feeds
#Order Books	4096 security IDs, snapshot consists of up to 5 levels
#Sessions and #Order Queues	32 and 64 respectively
Configurable Number of lean Legs	2 with full support for quoting one or two legs of a spread or strategy
Event Notifications	Order Messages, Market Data, Trigger events
FPGA Device and Platform	Xilinx UltraScale+ with 10 Gbps Ethernet on Exablaze ExaNIC V5P