

Voltaire Lowest Latency Ethernet Solution for Financial Services

Featuring Voltaire® Messaging Accelerator™ and Voltaire® Vantage™ 6024



Unmatched trading application performance

Data volumes in the financial services industry are seeing dramatic growth, bringing existing systems to their limits. In a business where profits are directly measured by system speed, low latency, high volume infrastructures are needed with higher speeds and greater scalability.

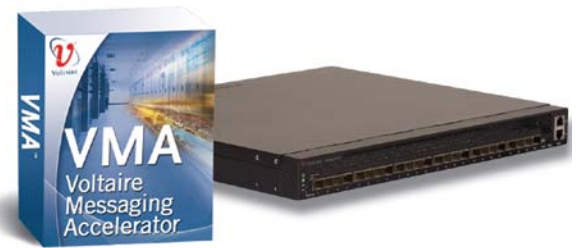
Voltaire's unique software and switching platforms offer the lowest latency and highest volume end-to-end networking solutions for high frequency trading.

The Voltaire Vantage™ 6024 10 Gigabit Ethernet L2/3 switching platform and Voltaire Messaging Accelerator™ (VMA™) multicast acceleration software package provides the performance required for transaction-based applications through seamless Ethernet IP multicast connectivity. The combined solution features application-to-application latency (RTT/2) as low as 3.5 microseconds, and less than 700 nanoseconds of port-to-port latency under a full load.

End-to-end optimized solution backed by Voltaire renowned support

VMA is a dynamically-linked user-space Linux library for accelerating multicast traffic. Applications that utilize UDP multicast sockets use the library to offload network processing from a server's CPU. The traffic is passed directly to the 10GbE Network Interface Card (NIC) from the application user space, bypassing the kernel and IP stack and thus minimizing context switches, buffer copies and interrupts resulting in extremely low latency. VMA supports standard NICs such as ConnectX2-EN and Intel-NE NICs.

The Voltaire Vantage 6024 switch is a low latency, high performance Layer 2/3 protocol stack top-of-rack switch optimized for financial services environments. It features 24 ports of 10GbE line-rate connectivity and power consumption as low as 115 Watts (4.8 Watts/port). It features the industry's most power-efficient and lowest latency capabilities on 10GbE, enabling new levels of efficiency, scalability and real-time application performance, while at the same time consolidating multiple/redundant network tiers and significantly reducing infrastructure expenses. The Voltaire Vantage 6024 L3 Routing feature may be used for both exchange connectivity as well as external clients. As a result, end-to-end application performance is improved without having to modify application code and latency-sensitive applications, and algorithms can perform at their best.



Features and Benefits

- Ultra-low application latency of as low as 3.5 microseconds
- Ultra-low switching latency of less than 700 nanoseconds (port-to-port)
- Extremely high packet per second rate of up to 2.5 million PPS sustaining growing market data rates
- Seamless Ethernet IP multicast connectivity using standard commodity servers
- No application code changes required and fully compatible with Linux socket API
- Direct L3 connectivity to the Exchange/WAN
- Low jitter minimizing maximum and average latencies

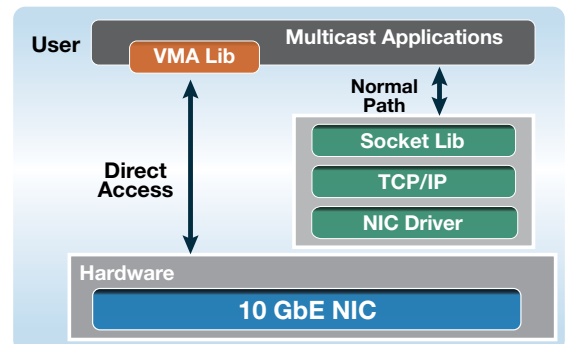


Figure 1: VMA Block Diagram

Voltaire Lowest Latency Ethernet Solution for Financial Services

Voltaire has a successful track record providing groundbreaking low latency solutions for the financial services industry backed by a world class support team with proven expertise in the financial industry.

Certified with leading market data messaging middleware and compatible with homegrown solutions

Voltaire's solution boosts the performance of financial market data and messaging applications, including NYSE Technologies' WDF, 29West Latency Busters® Messaging (LBM) and customers' homegrown trading systems. The solution is proven to cut latency by a factor of 2-3X and increases application throughput per server, as compared to applications running on other Ethernet interconnect networks – all without making any changes to the application.

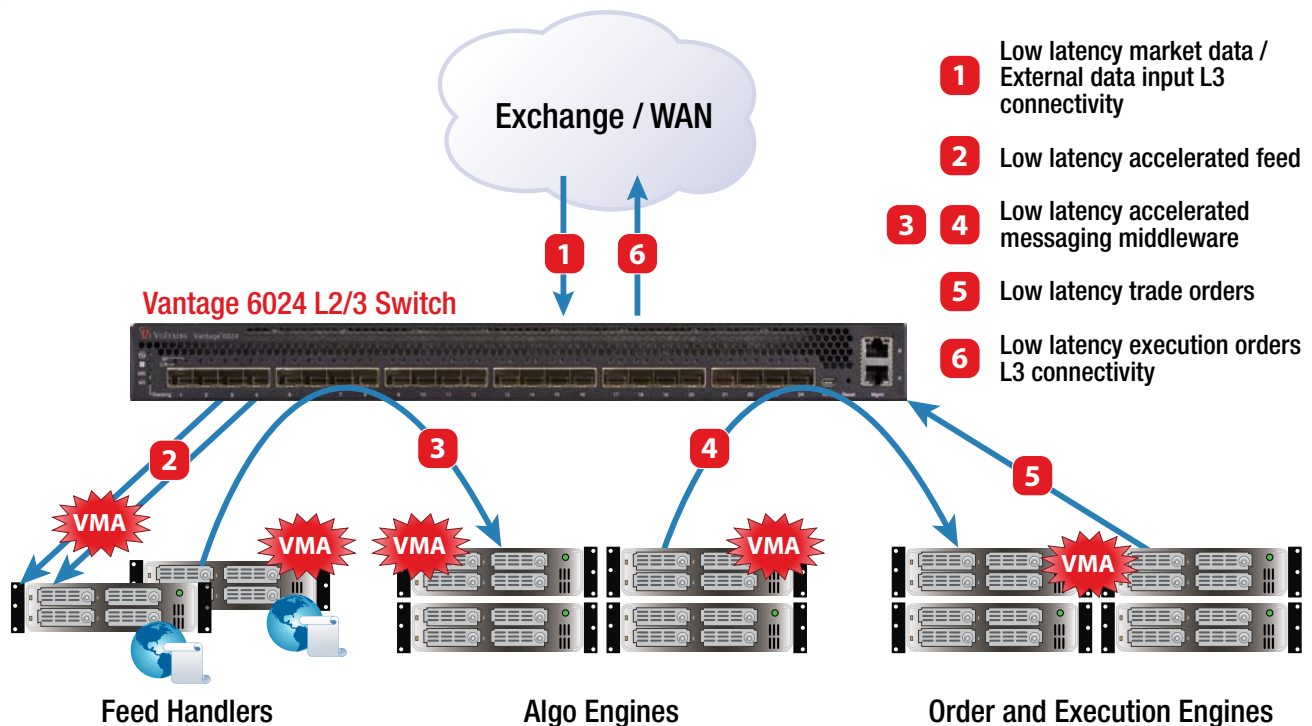


Figure 2: End-to-end optimized solution for high frequency trading

Due to the transparent and high-performance nature of VMA, many multicast applications with heavy traffic volumes and/or low messaging latency requirements gain a measurable increase in application performance. Ideal candidates for VMA include:

- Market data feed handler software that consumes multicast data feeds and uses multicast as a distribution mechanism
- Messaging applications that produce or consume large amounts of multicast data including applications that utilize messaging middleware
- Caching/data distribution applications that utilize multicast for cache creation or to maintain data state
- Any data acquisition application that makes heavy use of multicast and requires high packet per second (PPS) rates, low data distribution latency, low CPU utilization or increased application scalability

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Proven lowest latency solution

Notable results are achieved by presenting OS bypass technology while using a low latency switching/routing network, as detailed in the following graphs.

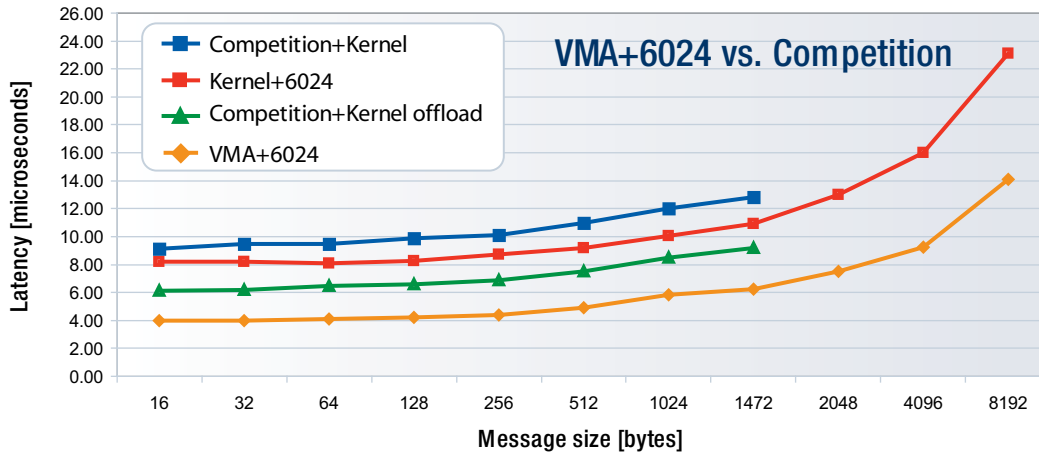


Figure 3: Application latency comparison - Voltaire's solution wins with 35% lower latency at any message size

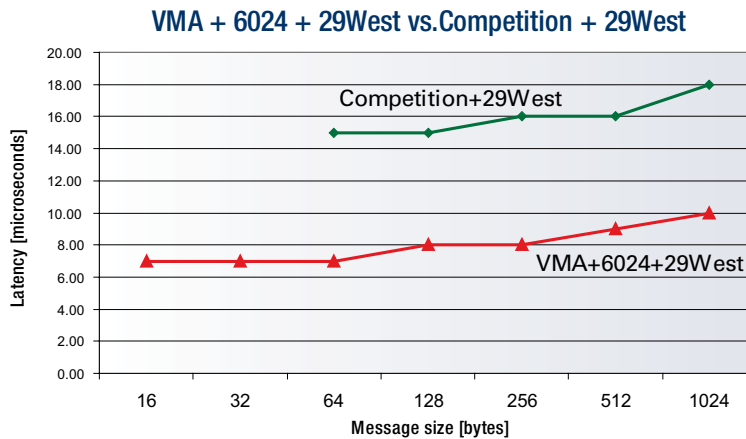


Figure 4: 29West middleware latency comparison - Voltaire's solution outperforms by more than 2X at any message size

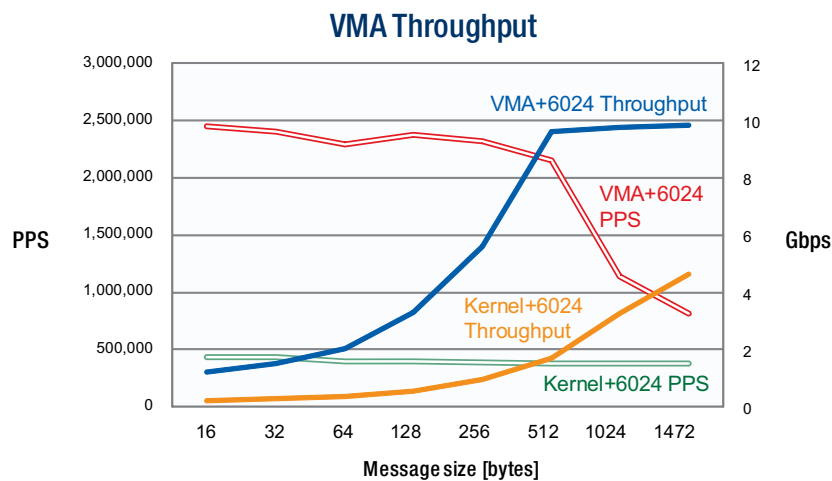


Figure 5: Application throughput - Voltaire's solution can handle the highest message rate arriving from the exchange

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Voltaire's solution is the ideal choice for enterprises that are seeking an end-to-end low-latency solution while avoiding code changes or using additional proprietary hardware units.

Ordering Options

Part Number	Product Description
Network Solution Bundle	
VMA-XXX	Voltaire® Messaging Accelerator™ Package License
VLT-30057	Voltaire® Vantage™ 6024 24-PORT 1/10GE Switch
Turnkey High Availability Solution Bundle	
VMA-XXX	Voltaire® Messaging Accelerator™ Package License
VLT-30057	Voltaire® Vantage™ 6024 24-PORT 1/10GE Switch
NIC-30007	High Performance 10GE Dual Port SFP+ PCIE2.0 NIC
GPS-00003	On-site Voltaire Professional Services
Bundle add-ons	
	SFP+ copper – DAC
CBL-00239	ETH CABLE SFP+ (10GE) 1M 30AWG
CBL-00240	ETH CABLE SFP+ (10GE) 3M 28AWG
CBL-00242	ETH CABLE SFP+ (10GE) 5M 26AWG
CBL-00244	ETH CABLE SFP+ (10GE) 7M 24AWG
CBL-00245	ETH CABLE SFP+ (10GE) 10M 24AWG
	SFP+ Optic Transceivers
OPT-90003	6024 ETH SFP+ SR Transceiver (UP TO 300M)
OPT-90004	6024 ETH SFP+ LR Transceiver (UP TO 10KM)



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