



# ProLiant SL Turbocharged by VMA for Lowest Latency Trading Applications For Ethernet and InfiniBand



## 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 with HP's server solutions offer the lowest latency and highest volume end-to-end networking solutions for high frequency trading.

*The HP ProLiant SL390s Server with High End 10GbE and InfiniBand LOM is part of the HP ProLiant s6500 family of HP server solutions that is optimized for scale-out customers. It greatly reduces costs and maximizes power efficiency by sharing power supplies and fans and maintaining total flexibility. The HP ProLiant SL390s is optimized for applications needing large amounts of memory and I/O expansion.*

## End-to-end optimized solution backed by Voltaire and HP 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. VMA has a standard BSD sockets API and thus does not require any application changes for use. The application traffic is passed directly to the 10GbE Network Interface Card (NIC) or InfiniBand Host Channel Adapter (HCA) from the application user space, bypassing the kernel and IP stack and thus minimizing context switches, buffer copies and interruptions resulting in extremely low latency.

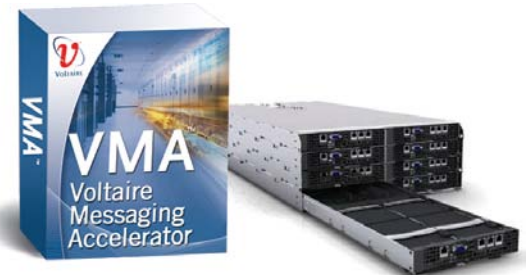
## Unleash the Lowest Latency with VMA Combined with HP ProLiant SL390s

HP ProLiant family servers with ConnectX-2 is available in BL blades, rack-mount DL servers, and the new scale-out SL390s nodes.

HP and Voltaire have 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

HP and 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 standard Ethernet interconnect networks – all without making any changes to the application.



## Features and Benefits

- Ultra-low application latency of as low as 3.5 µsec for 10GbE and 3 µsec for InfiniBand
- Extremely high packet per second rate of up to 2.5 million with 10GbE and 2.8 million with InfiniBand
- 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
- Best power/cooling ratios at lower cost than alternatives
- Option for 1-8 NVIDIA GPUs/node as needed
- Fast with top bin 130w Westmere
- Supports precision timing with 1GbE Intel 82576 controller w/ IEEE 1588
- Expandable with optional PCIe G2 LP x8 slot for specialty cards
- Twice as dense as 1U servers
- Fully managed ProLiant server with iLO3 & HP BIOS

# ProLiant SL Turbocharged by VMA for Lowest Latency Trading Applications

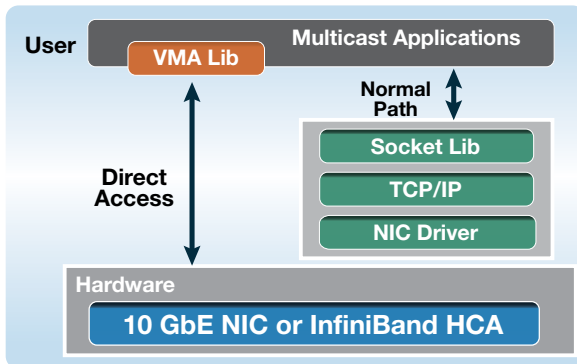


Figure 1: VMA Block Diagram



Figure 2: HP ProLiant SL390s

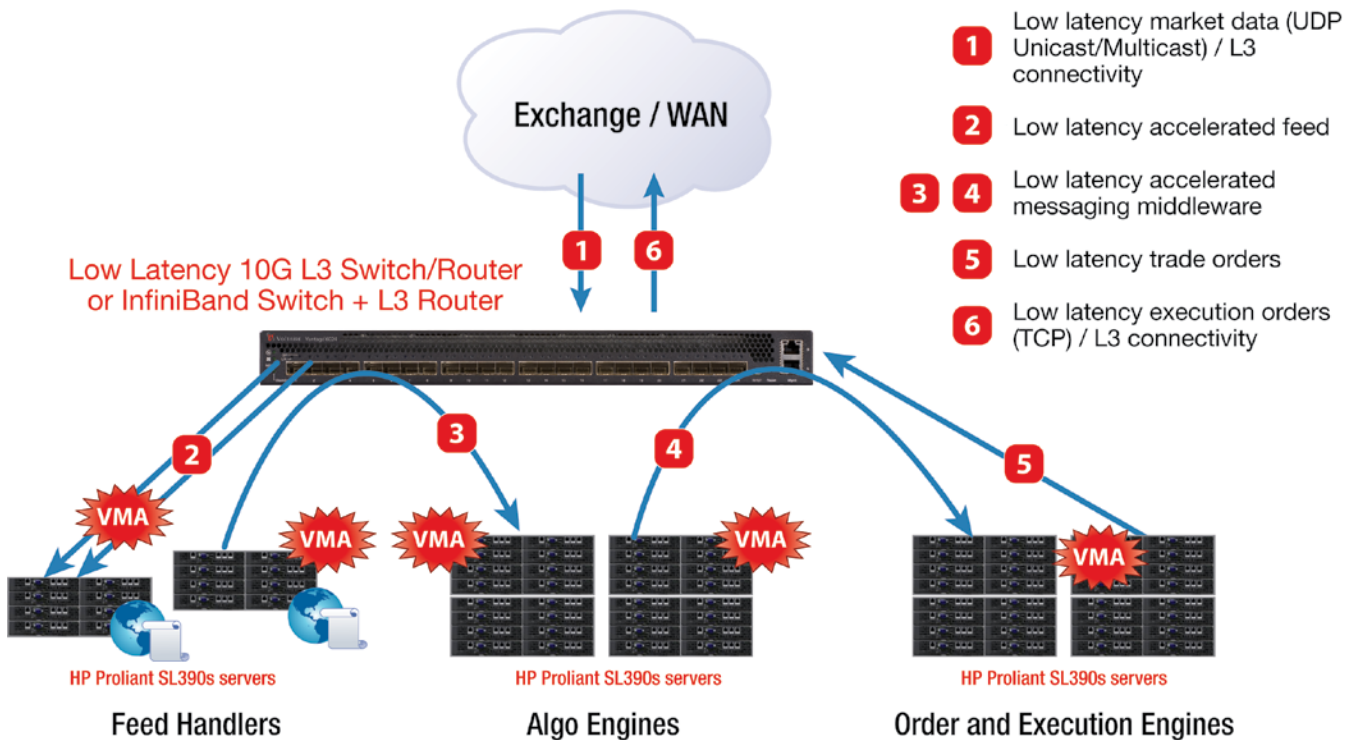


Figure 3: End-to-end optimized solution for high frequency trading

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

# ProLiant SL Turbocharged by VMA for Lowest Latency Trading Applications

## Proven lowest latency solution

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

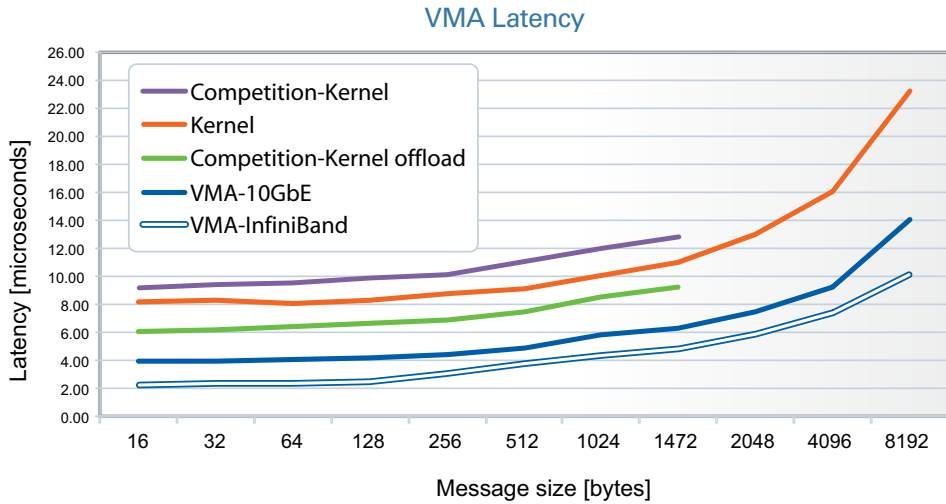


Figure 4: Application latency comparison - Voltaire's solution wins with 35% lower latency at any message size

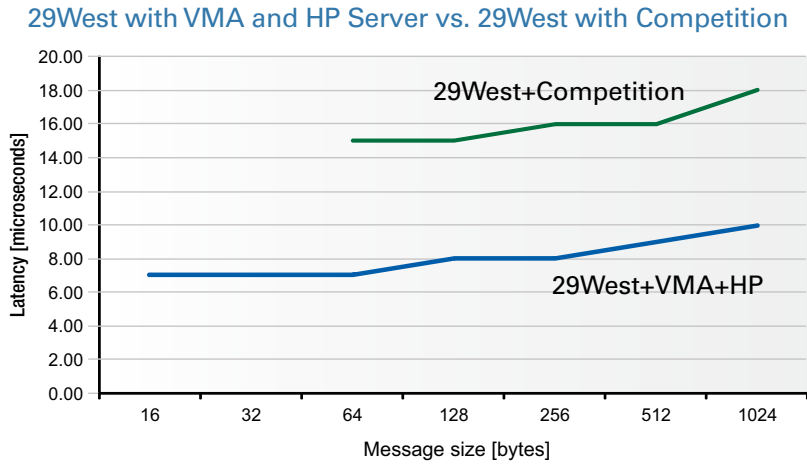
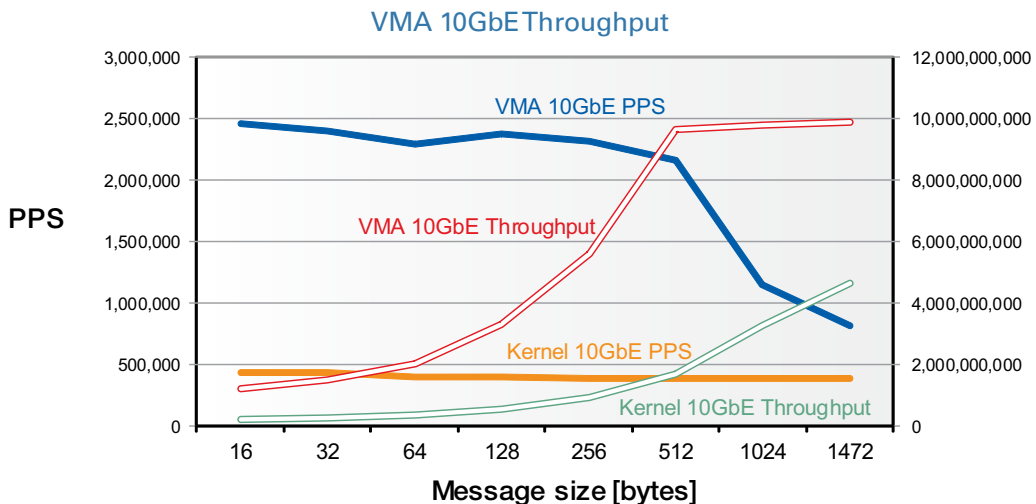


Figure 5: 29West middleware latency comparison - Voltaire's solution outperforms by more than 2X at any message size





## ProLiant SL Turbocharged by VMA for Lowest Latency Trading Applications

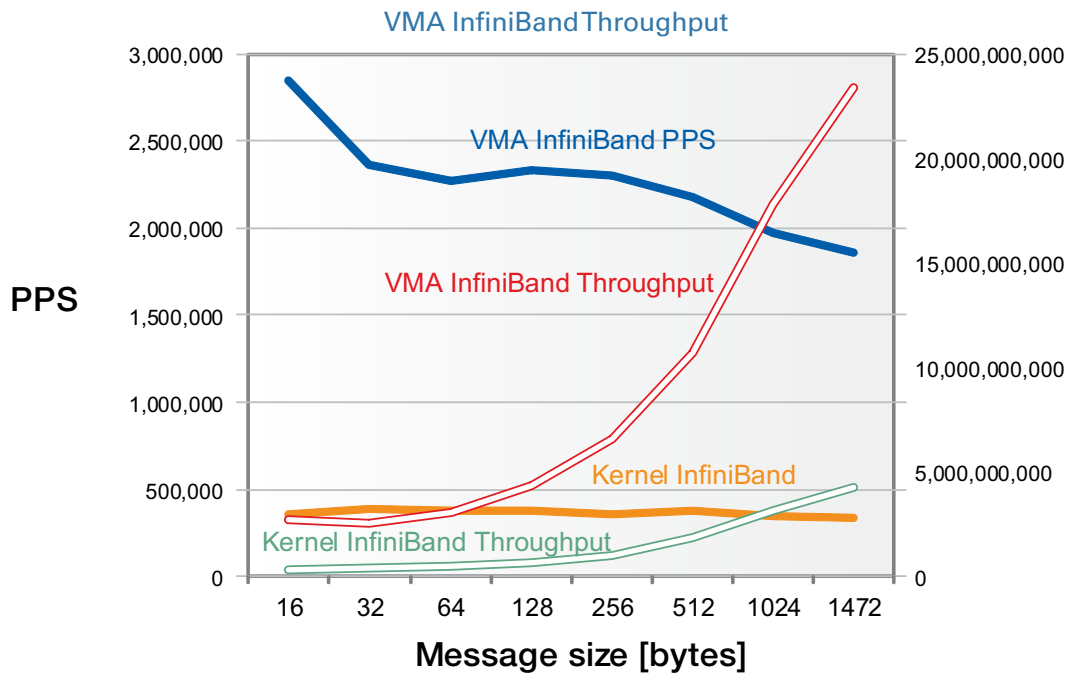


Figure 6: Application throughput - Voltaire's solution can handle the highest message rate arriving from the exchange

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

Solution Products
HP ProLiant SL390s Server Blade
Voltaire® Messaging Accelerator™ Package License
Voltaire® Vantage™ 6024 24-PORT L2/3 1/10GbE Switch
Voltaire® Vantage™ 8500 with up to 288-Ports L2 10GbE Switch
Voltaire® Grid Director™ 4036E 34-PORT QDR IB & 2-PORT 1/10GbE InfiniBand Switch AND Ethernet Gateway
Voltaire® Grid Director™ 4200 with up to 162 IB Ports QDR InfiniBand Switch
Voltaire® Grid Director™ 4700 with up to 324 IB Ports QDR InfiniBand Switch



Contact Voltaire or HP to Learn More

1.800.865.8247  
info@voltaire.com  
www.voltaire.com  
www.hp.com

©2010 Voltaire Inc. All rights reserved. Voltaire and the Voltaire logo are registered trademarks of Voltaire Inc. Grid Director is a trademark of Voltaire Inc. Other company, product, or service names are the property of their respective owners.