

High-Performance Trading: Algo Speed

Accelerating Front-Office Automated Trading Applications

Executive Summary

Financial Markets are going through sweeping changes, due to new regulations, changes in market structure and market economics. The shift from manual to automated trading requires speed and the handling of huge volumes of data, with maximum reliability and predictability, which together create a huge strain on the information infrastructure of financial firms. To stay ahead of the curve, firms need to match the challenge of exponential growth with a technological leap in their trading infrastructure. In response, Cisco[®], with the help of its ecosystem of partners, offers the next generation in trading infrastructure, Cisco[®] High-Performance Trading (HPT).

The Challenge

Automated trading has created a trading cycle, in which even milliseconds matter. The faster the trading infrastructure, the better the chance of hitting price points in a very dynamic market. Regulatory changes such as the Regulation National Market System (Reg NMS) in the United States and the Markets in Financial Instruments Directive (MiFID) in the European Union will generate more quote, order, and cancel/replace messages as equity firms adapt to more electronic business processes. Between 2007 and 2012, according to the TowerGroup report "Preparing for the Data Flood," global market data volume is expected to increase by 900 percent.

This shift from manual to automated trading requires speed and the handling of huge volumes of data, with maximum reliability and predictability. Those requirements create a huge strain on the information infrastructure of financial firms. Firms need constantly to innovate to maintain their competitive edge. New financial products, business models, and trading tools require a superfast response. Globalization magnifies the challenge by requiring that people, processes, and technology work around the clock and across the continents.

Business cannot tackle this exponential growth in market data with a linear approach to upgrading the supporting infrastructure.

The Solution: Cisco High-Performance Trading—Algo Speed

The Cisco HPT infrastructure is a highly available, modular, scalable, low-latency architecture that helps firms to handle the exponentially increasing volumes of market data and trades.

High-performance means low-latency (in the millisecond range), high predictability and availability, and the ability to efficiently handle volumes at close to the level of one million messages per second.

The technologies available include grid computing, multicast networks, messaging platforms, in-memory data caching, and complex event processing, to name a few. Cisco and its partners are offering an integrated set of technologies to help financial firms accelerate the introduction of the next-generation trading platform.

Algo Speed—one solution in the HPT portfolio—addresses the transformation of the front-office to meet the demands of today's high-velocity, high-frequency trading environment.

The main features of HPT: Algo Speed are:

- Acceleration of trading applications.
- More efficient use of server capacity: Servers have more CPU headroom to process applications instead of network traffic.
- Predictability: The variation in application messaging delay is reduced, helping to ensure consistent data input into algorithmic trading engines.
- Reliability: High-availability features in Cisco switches enable the design of robust networks, proven by large deployments in critical environments.
- Manageability: The solution facilitates end-to-end management across multiple switching fabrics.
- Visibility: The solution detects microbursts in market data traffic, monitors Financial Information Exchange protocol, and identifies the source of a delay.

Solution Benefits

- **Minimizes latency and increases capacity across the trading platform:** In a system that delivers time-sensitive data, it is imperative to minimize end-to-end latency. As the data traverses the different components of a trading platform—including market data delivery, order routing, and execution—the HPT infrastructure addresses the requirements by providing a lowest-latency interconnect at each component. At the same time, it allows server CPUs to dedicate more capacity to the application, by offloading network traffic processing to the switching fabric.
- **Helps prepare for new regulations:** Regulatory changes such as Reg NMS and MiFID will generate more quote, order, and cancel/replace messages as equity firms adapt to more electronic business processes. In the United States, the subpenny-pricing rule will also increase demands on the infrastructure. MiFID will also lead to higher data volume because investment banks that internalize trades will be required to publish their pretrade quotes electronically. Acceleration of trading applications helps ensure best execution requirements and increases trading competitive advantage.
- **Provides flexibility to support a service-oriented architecture:** The Cisco HPT: Algo Speed solution adheres to industry-standard protocols. An application environment that supports these industry protocols will truly benefit from the open architecture, as it becomes part of a service-oriented architecture strategy for the adaptive enterprise. This shortens the time to market for new financial products, providing a competitive edge.
- **Cisco's ecosystem of partners will help to ensure industry interoperability.** Cisco is building key relationships across the HPT value chain. Independent software vendors such as IBM, Wombat, 29West, TIBCO, Reuters, Redhat, Novell, Tangosol/Oracle, Exegy, Active Financials, Gemstone, Gigaspaces, and Platform Computing are the first in a growing list. Cisco is working to create the broadest industry interoperability matrix with processor, server, and storage manufacturers such as Intel, AMD, HP, Sun, Dell, and EMC.

Why Cisco?

Cisco is the industry leader in networking solutions. With its breadth of products and services covering traditional network infrastructure, security, and unified communications, Cisco is uniquely positioned to deliver a high-performance trading platform:

- Enterprise-class products, broadest portfolio of products from a market leader
- Robust solution, validated by third party testing facility
- Comprehensive ecosystem: key relationships across the low-latency value chain
- World-class support (24-hour global support; depots in 122 countries)
- Global training, scalable advanced services, robust escalations
- Success based on intense customer satisfaction focus

For More Information

For a more detailed discussion of the High-Performance Trading architecture, go to:

http://www.cisco.com/web/strategy/docs/finance/trading_architecture.pdf

<http://www.cisco.com/go/financialmarkets>



Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

©2007 Cisco Systems, Inc. All rights reserved. CCVP, the Cisco logo, and Welcome to the Human Network are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSR, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0710R)