

ULTRA LOW LATENCY NETWORK SERVICE FOR TRADING FIRMS

New fiber path between New York and Chicago provides competitive advantage

“Many strategies rely on data from geographically diverse market centers. Market structure and economic forces are driving the growth in high-frequency trading. Due to the growth, the low latency story is not getting old, the race has only just begun. Smart infrastructures and faster fiber optics will bring latencies to new lows, and traders that can leverage these technologies will have the ultimate competitive advantage.”

Kevin McPartland
Senior Analyst
TABB Group

Ciena Solution Benefits

- Enables ultra-low-latency server connectivity for algorithmic and high-frequency trading over fiber connections
- Offers high-capacity, future-proof network platforms for 10G, 40G, and 100G solutions
- Provides the trading advantage package—an enhanced professional service offering matching the specific requirements of high-performance mission-critical networks

Financial services firms specializing in high-frequency trading are looking to reduce network latency within the algorithmic-based trading work flow. High-frequency trading systems are designed to execute trades and market orders automatically based on hundreds of different data points provided by the exchanges, as well as third parties such as Reuters and Bloomberg.

In the past, efforts to reduce latency have been implemented with superfast computers and faster software and storage connections. These technology strategies have created the need for an ultra-low-latency WAN between trading facilities. Fractions of milliseconds impact revenue—a one millisecond advantage can equate to over \$100M per year. Executing trades on an ultra-low-latency network can result in the ultimate competitive advantage.

The shortest, fastest path from New York to Chicago

Ciena and Spread Networks have teamed up to deliver an Ultra Low Latency Dark Fiber Network service. This service includes a dedicated fiber pair, optimized with Ciena hardware for trading from major New York exchange facilities to the Chicago Mercantile Exchange. Spread Networks painstakingly constructed this fiber optic network on the absolute shortest, straightest path possible between the two sites.

The 825 mile (1325 km) fiber path runs along highways and roads and over mountains, instead of railroad beds, significantly reduces network roundtrip latency to less than 13.3 ms.



The Ciena and Spread Networks solution offering provides constant monitoring for the fiber pair, and a response service that aims to provide the highest availability during trading hours. This type of private network allows financial firms to implement an optimized solution, eliminating carrier delays, providing traders and IT personnel complete control of their trading network.

In addition, the Ultra Low Latency Dark Fiber Network service includes a maintenance contract for the fiber pair and related facilities, a collocation agreement for the equipment needed to light the pair, and equipment and service packages including installation, service, support, monitoring, and maintenance.

This comprehensive offering ensures easy turn-up and—most importantly—stays online during critical trading hours.

Ciena's industry-leading ActivSpan 4200 delivers high capacity and ultra-low latency

Ciena has developed the technology to address emerging low-latency, high-capacity networking requirements over fiber. Spread Networks pre-tested and certified these features to offer:

- Latency-optimized server connectivity with ultra-low-latency GbE and 10GbE connections over fiber
- Lower transport latency through the reduction of fiber dispersion compensation delay
- High-capacity, future-proof network platforms for 10G, 40G, and 100G solutions

Ciena's enhanced low latency features

2RS Module

Ciena's 2RS module for the ActivSpan 4200 Advanced Services Platform offers the ultra fast, lowest-latency server GbE interconnection. The 2RS ultra-fast module simply reshapes and retransmits the data signal, adding virtually no latency. The latency tested for the 2RS module was 0.2 μ s round trip, or 0.05 μ s through each card. The 2RS supports Small Form-factor Pluggable (SFP) transceivers for easy plug-and-play interfaces to optical fiber over a variety of distances.

Dispersion Compensation Modules

Dispersion compensation modules reduce the signal distortion caused by chromatic dispersion as light travels down the fiber. However, some modules, like Dispersion Compensating Fiber (DCF) modules, can add up to 70 μ s of latency for 100 km fiber

transmission. Ciena is offering new ways to reduce the time it takes for light to travel through the fiber. Ciena's new FBG Dispersion Compensation Modules reduce latency to less than 0.15 μ s.

Ultra-low-latency managed service—the trading advantage package

Ciena has created a unique trading advantage package to ensure optimal performance and the highest network availability for leading high-frequency trading firms. This service allows Spread Networks customers to enjoy the benefits of a managed service with a strict SLA while retaining the control and performance of a private network solution.

The trading advantage package combines several service elements to provide network protection for extremely risk-averse clients, including:

- A dedicated network manager
- On-site engineering staff during trading hours
- On-site engineering staff within two hours during off-hours
- On-site spares at each site for immediate use
- Round-the-clock remote network management service from secure offsite location, via VPN
- Round-the-clock customer portal and technical assistance center

Ciena recognizes the importance of interoperability with the server and storage systems of financial firms. Ciena's networking solutions are qualified with industry leaders such as IBM®, EMC®, Hitachi Data Systems®, HP® and Brocade®.



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