



Global Investment Bank Deploys Solarflare 10GbE PTP Server Adapters

SFN5322F Simplifies and Optimizes 10GbE Precision Time Synchronization

One of the world's largest investment banks needed to distribute time synchronization to financial transaction servers co-located at worldwide exchanges. Its challenge was to utilize Precision Time Protocol (PTP, a.k.a. IEEE 1588) technology from available ecosystem components that would allow it to deploy remotely. The firm chose Solarflare's SFN5322F server adapter to simplify and optimize its time synchronization deployments.

- Ultra-low latency and precision time synchronization in a single adapter
- Ease of remote configuration and management in Linux environment
- Sub-microsecond clock synchronization

Major International Investment Firm Migrates to Precision Time

This international investment firm needed to synchronize its application servers co-located at financial exchanges in key major trading centers (New York, London, Hong Kong, etc) to ensure accurate time stamping of market data feeds and high-precision log files for regulatory oversight across geographically dispersed server clusters. In addition to sub-microsecond server clock accuracy, this customer's primary requirements included support for ultra-low latency UDP multicast (IGMP), and TCP over standard Ethernet, ensuring market data processing faster than its competitors. Furthermore, the firm's goals were to remotely manage its time synchronization networks deployed across the many geographies, in-band from a single location. This would lower operational expense by deploying a common Linux interface to simplify network management and better utilize existing network administrative skill sets, while also avoiding dedicated appliances that require onsite personnel to configure and manage.

Time Synchronization Deployment Objectives

This PTP end user needed to integrate distributed time synchronization equipment into its server clusters utilizing features of existing PTP products in the market. PTP time synchronization servers featured 1G Ethernet connections, while PTP adapters required high-precision oscillators. The firm also wanted to take advantage of the technology shift by deploying PTP adapters that support the newer PTP v2, already supported by PTP grandmasters. Furthermore, this investment bank required deploying PTP network equipment that was intuitive to implement, easy to configure, and featured common Linux management interfaces.

The investment firm rounded out its evaluation of available PTP network equipment by investigating alternative time synchronization technologies such as PPS (pulse per second) signaling, requiring specialized cabling; PPP (precise point positioning), requiring a GPS receiver with line of sight to satellites; and hardware NTP appliances in the cloud.

Precision Time Becomes Standard Linux Network Function

Initially, this PTP customer's first implementation compromised accuracy by deploying an NTP grandmaster with a GPS time source at each location. However, the firm soon discovered that deploying dedicated special-purpose hardware required specialized configuration and management skills, and required numerous on-site visits from its technical team.



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In order to reduce operating expenses and fulfill its requirements, the company needed a streamlined time synchronization solution that operated as a Linux network device which also featured PTP. This network device needed to present itself to a Linux administrator as other network devices do, so it could be remotely configured and time synchronization services managed in co-located servers that may be thousands of kilometers away.

Two-Phased Deployment with SFN5322F Simplifies and Optimizes Precision Time Synchronization

With Solarflare's introduction of the SFN5322F, this financial institution discovered it could leverage its investment in its already-deployed grandmaster appliance (which also supports PTP), as well as leverage its experience with Solarflare's ultra-low latency network adapters. SFN5322F simplified PTP deployment since it is a Linux device utilizing a standard Linux driver and is completely compatible with other Solarflare server adapters. Taking advantage of this fact, the investment bank decided to initially deploy the SFN5322F as its standard ultra-low latency data device in remote co-located data centers. When it later upgraded to PTP, this investment firm simply enabled the SFN5322F's PTP functionality remotely at all worldwide locations using standard Linux management tools. SFN5322F provided the flexibility and remote reach that is not possible with special-purpose time synchronization solutions.

With Solarflare's SFN5322F, the firm could now deploy time synchronization in the same PCIe slot and through the same network adapter port, which also reduced the number of switch ports by 50 percent. More importantly, the investment firm consolidated time synchronization with the data network, running ultra-low latency data traffic and the PTP protocol over a single network, and avoided the deployment and maintenance of a separate dedicated PTP network. Furthermore, since market data feeds and transaction orders arrive on a microsecond basis, the SFN5322F's high-precision Stratum 3 oscillator ensured that accurate measurements could be made on a sub-microsecond level.

SFN5322F Unifies PTP and Ultra-Low Latency with Ease of Deployment, Configuration and Management

This major global investment bank successfully synchronized its financial servers' clocks co-located at exchanges all around the world, while optimizing performance with the lowest latency and highest precision time synchronization. The firm simplified its deployment utilizing standard Ethernet and POSIX sockets APIs, and simplified its configuration and management utilizing standard Linux management tools. This PTP end user deployed Solarflare's SFN5322F to ensure its market leadership and reduce its operating expenses by optimizing and simplifying time synchronization requirements.

SFN5322F – Single Network for PTP and Data with Remote Management

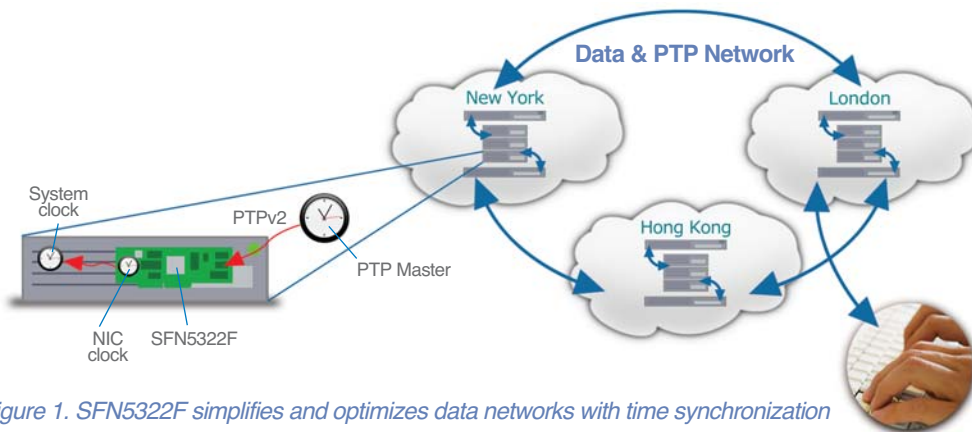


Figure 1. SFN5322F simplifies and optimizes data networks with time synchronization



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