

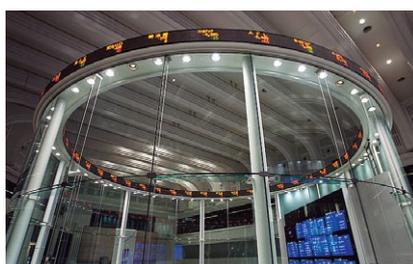
# Japan Exchange Group, Inc.

## Stronger network for transactions achieves ideal trading environment to attract money



Mr. Shinobu Sakamoto  
Director, IT Services  
Tokyo Stock Exchange, Inc.

“For financial transactions, we need a network that never stops, so it was inevitable that we would partner with NTT Com, which has always supported telecommunications in Japan.”



### Company Profile

**Name:** Japan Exchange Group, Inc.

**Address:** 2-1 Nihombashi Kabutocho, Chuo-ku Tokyo 103-8224 Japan

**Business:** An integration of Tokyo Stock Exchange, which has strong cash markets, and Osaka Securities Exchange, which has strong derivative markets. It aims to realize a prosperous society through sustainable development of financial trading markets.

**URL:** [www.jpx.co.jp](http://www.jpx.co.jp)

### Challenges

- Construct a highly reliable, low-latency network for accelerated trading
- Ensure competitiveness with an ideal trading system for global investors

### Solution

- Developed arrownet for a highly reliable, low-latency trading system
- Launched arrownet-Global for easy access by investors worldwide

### Benefits

- Assured reliability and availability to prevent downtime in natural disasters
- New trading system offers enhanced convenience and price competitiveness

### Challenges

Develop a network that supports accelerated trading and can be maintained for speed and stability

Japan Exchange Group, Inc. (JPX), one of the world's three largest stock exchange groups, was established through the management integration of Tokyo Stock Exchange (TSE) and Osaka Securities Exchange (OSE).

The integration was aimed at making Japanese markets more competitive globally.

“The globalization of financial instruments, including securities, has been accelerating, and there have been more mergers, acquisitions and restructuring in response. To attract foreign investors to the Japanese market, it is important not only to provide enhanced products and trading systems but to develop a trading environment that is easy for them to use,” points out Mr. Shinobu Sakamoto of JPX.

Recently, computer systems are more common in the industry, such as those that automatically place buy or sell orders based on stock price or trading volume. “For exchanges, IT is the engine that determines their competitiveness,” says Mr. Sakamoto. To achieve an accelerated trading system, JPX promoted an aggressive IT strategy. Prior to the integration, TSE had developed the arrowhead stock trading system for world-leading capacity and reliability.

However, due to the intensification of global competition, savvy investors have developed more sophisticated trading techniques. In order to realize both high speed and a stable trading infrastructure, network maintenance is also important. “The network is like a lifeline for investors, and any processing delay is a crucial risk that would lead to loss of opportunities for them,” says Mr. Sakamoto.

JPX needed a network environment that was different from the standard business



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system. Previously, they had an individual network for each security trading system and derivatives trading system, resulting in operating costs that represented a large ratio of trading expenses. "Infrastructure, which is expensive, was a big obstacle in attracting foreign money," says Mr. Sakamoto.

## Solution

Leverage NTT Com technologies in a network for carrier-level high reliability and low latency

JPX chose to partner with NTT Communication (NTT Com) to equip an easy-to-use network environment that would avoid any lost opportunities. It was critical that the network have carrier-level high reliability and low latency.

"NTT Com are real pros with a long history of supporting the stability and development of Japan's telecommunication network, an important social infrastructure," says Mr. Sakamoto.

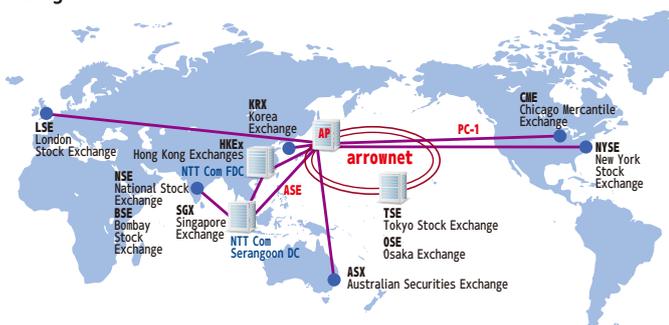
The infrastructure network called arrownet was developed to meet JPX's unique needs. arrownet, which started operation in 2009, connects a primary center, a secondary center and two access points with huge amount of fiberoptic cable, with the main part built in a cyclic ring network for full redundancy of the communication path.

99% of this ring network is buried underground, which protects it from the majority of natural disasters like earthquakes. "We could not have realized this system without NTT Com's network resources and technology," says Mr. Sakamoto.

In order to extend the same service to foreign investors, JPX partnered with NTT Com to launch arrownet-Global in 2013, connecting the Japanese market to major global cities.

arrownet-Global is a seamless network utilizing NTT Com's

Diagram: arrownet-Global Service



Offers one-stop connectivity between main domestic and foreign markets and investors. Realizes low latency and high quality international network service.

PC-1 submarine cable between the U.S. and Japan and the Asia Submarine-cable Express, which connects major metropolitan areas in Asia. Using these cables and data centers positioned near foreign exchanges, the network connects the Japanese markets with their foreign counterparts by the shortest routes, ensuring fast and reliable access.

## Benefits

Assured network continuity, even in disasters

Strengthened pricing adds value to Japanese markets

At present, around 150 companies use arrownet. Synergy with arrownet-global, which is designed for the needs of foreign investors, helps JPX to contribute to the financial products market in Japan.

Two key reasons are increased stability and reliability. "Connection delays have been eliminated, and the network is resilient against disasters. Even during the Great East Japan Earthquake of March 2011, arrownet did not stop functioning," says Mr. Sakamoto.

Foreign investors have also expressed their satisfaction with the network's speed, capacity and convenience. Arrownet and arrownet-Global are an integrated network and since circuit intensity was increased, JPX's various business systems and Co-location can be accessed globally as well. When foreign investors connect to arrownet-Global, they can seamlessly connect to JPX's Co-location and get access to multiple exchanges in Japan via Co-location.

"Since we no longer have to equip individual networks, cost effectiveness and therefore price competitiveness was improved. This is exactly the infrastructure needed to attract foreign money to Japanese markets," says Mr. Sakamoto.

NTT Com's status as a one-stop source for all their needs was also key in their selection. With many offices overseas, NTT Com is highly knowledgeable about local network situations. "Since NTT Com is able to arrange everything from local circuits to engineering support, we don't have to spend additional time and effort on the network environment," Mr. Sakamoto.

The globalization of financial product markets is likely to go on accelerating. JPX will continue to strive to be the most preferred market in Asia and to increase the global standing of markets in Japan.

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