Array NETWORKS

YJFX! from YAHOO! JAPAN

YJFX, Inc.

Foreign exchange service with the world's third highest trading volume* adopted APV Series ADCs for improved reliability and sufficient performance to withstand peak usage after US employment data announcements.

Background

YJFX, Inc., a wholly-owned subsidiary of Yahoo! Japan Corporation, operates a foreign exchange (FX) trading service online. In 2013, it was the world's third highest site for trading volume and exceeded 220,000 accounts (as of July, 2013). Working with Hitachi Solutions Group (Hitachi Solutions, Hitachi Solutions West Japan), YJFX has adopted Array Networks APV Series application delivery controllers (ADCs) that function as a load balancer (load distribution equipment) with high processing power and also as an SSL accelerator for encryption and decryption of vast amounts of trading-related communication.

With an easy-to-use low spread (the difference between the bid and the ask – a type of trading commission), the service achieved a very

*Source: FOREX MAGNATES (Forex Volume Ranking for H1 2013)

Industry

Financial (Foreign Exchange)

Challenges

Support a rapidly increasing network load, new accounts and new trading tools

Preserve server performance by offloading SSL encryption/ decryption

Maintain service quality and stability

Solution

APV5600 application delivery controllers in high-availability clusters for load balancing and SSL acceleration/offloading

Benefits

Server performance improved through offloading of compute-intensive SSL encryption and decryption

Supports high volume of accounts and trading activity through load balancing of critical network traffic

Supports a 3X increase in trading volume with extremely stable performance, even during peak traffic loads

Reduces rack space requirements through smaller footprint

high level of customer satisfaction as the number of open accounts reached 220,000 (as of July, 2013) and trading volume became the third highest in the world (25-26 million currency units).

Challenges

YJFX's main challenge is to support a network load that is increasing due to growing numbers of account openings and provisioning of new trading tools. YJFX's main service, Gaika ex, provides a tool called Cymo that can be used for online FX trading with a variety of devices including desktop PCs, smartphones, and tablets, etc.

"Mobile devices such as smartphones were really starting to spread around the world when we began contemplating the adoption of the Array APV Series in June of 2011. At the time, there was intense competition among FX companies to tighten the spread and to attract new accounts through low trading costs. We forecast that it would be difficult to maintain the quality of our existing service as customers were accessing from an increasing variety of devices while accounts and trading volume were also increasing," said Shin Katsumata, assistant manager, Systems Department for YJFX.

Noted Keita Nakamura, Systems Department, YJFX, "The biggest concentration of access in monthly trading occurs when the US employment data is announced, since it reflects the US employment situation. Network equipment and databases, etc. are configured to respond to that peak. Since we provide a mission-critical financial service, reinforcing our network equipment was an urgent task so that trading speed would not be delayed when load balancer processing becomes a bottleneck during a sudden increase in trading volume."

Solution and Results

YJFX sought a load balancer to distribute access load and also offload SSL encryption and decryption of trading-related communication from servers to improve performance and throughput.

The existing load balancer solution was a redundant configuration of four sets of the Array TMX Series equipment, operating between the firewall and the Web server to process trading-related communication between various client devices and the Web server.

"Trading volume has now tripled compared to the time we adopted this technology, and the APV5600 has demonstrated extremely stable operation despite its application in processing, which typically takes up the greatest load... I think the biggest benefit of adoption is that we've been able to provide a stable service. Achieving a stable trading environment is a significant reason why we've achieved the world's third largest trading volume."

Keita Nakamura, Systems DepartmentChief
YJFX, Inc.

"After trading-related communication travels from the Internet through the firewall, it goes through the load balancer, undergoes system processing on the Web server that is prepared for each type of channel such as desktop PCs, iPhone, or Android, and is passed on to the main platform.

The Array APV Series, which is the current load balancer solution, handles the load of the relay involved with this series of communication. For that reason, there are two very important roles in the Array APV Series. One is the function of acting as an SSL accelerator that takes the place of the Web server in handling encryption processing used by trading-related communication, while the other is the load balancer function that distributes access from each channel to the relevant Web server," said Katsumata.

A system configuration that could maintain service quality was formed by prioritizing application of the Array APV5600 for channels in which trading volume was expected to increase in the future, and using it in conjunction with the conventional load balancer to distribute load.

Hitachi Solutions' Initiatives

YJFX received a system configuration proposal with a very high return on investment that determined which trading channel to apply the Array APV5600 to based on actual trading data.

In June of 2011 when YJFX selected the particular Array APV model, the company collaborated with the Hitachi Solutions Group to test the equipment's ability to process the trading data.

"We added the Array APV5600 to our conventional system and checked to see that it processed access without any trouble or that delays didn't develop during trading activity. Over the course of a month, we collaborated with the Hitachi Solutions Group to carefully examine and conduct simulations based on test data to determine which channel we should apply the new APV5600 to, since we had to ensure that it could handle the timing for the announcement of US employment data when load reaches a peak as well as a potential increase in traffic due to the function

of various tools that were to be provided going forward," noted Katsumata.

As a result of the testing, YJFX applied the Array APV5600 to rich client-related and smartphone related-communication, access from which was anticipated to grow by leaps and bounds. At that time, there were system configuration proposals with a high return on investment from the Hitachi Solutions Group such as the number of machines and selection of applicable channels, etc.

"At the time of adoption, we made a redundant configuration with two APV5600 sets, but our company was concerned about risk since it was new hardware that had just been released. However, Hitachi Solutions had conducted tests at inspection facilities to verify sufficient product quality and performance prior to its release, and shared useful information with us in response to our concerns. As a result, we could build mutual trust and feel confident about adopting this technology," said Nakamura.

As a financial service, not only are system faults not tolerated, a delay at a level of several milliseconds can cause losses in heavy trading. Consequently, YJFX had to be very cautious in adopting the equipment. Under thorough preparation, such as planning for unexpected events after installation and readying replacement equipment that could allow the company to quickly return to the original environment, the new equipment was applied to the production environment in May of 2012.

Benefits

The number of accounts has now increased to 220,000 compared to around 180,000 at the time of adoption, while trading volume has expanded by a factor of three from 7-9 million to 25-26 million currency units.

"CPU usage rate is one indicator of machine performance. The lower this number is, the more stable the system is, but when we adopted the technology, the CPU usage rate under the older Array TMX load balancers would remain high at around 50-60%. Other equipment that is part of the redundant configuration is affected during a system shutdown, so there is also potential that even the entire system could go down in the worst case scenario. However, by adopting the APV5600, the Array TMX's CPU usage rate was reduced to 30-40%, while the APV5600's CPU usage rate is showing extremely stable performance at around 10-20%," said Katsumata.

"Trading volume has now tripled compared to the time we adopted this technology, and the APV5600 has demonstrated extremely stable operation despite its application in processing, which typically takes up the greatest load. We expect that it will be possible to continue using this configuration a few years from now as well. I think the biggest benefit of adoption is that we've been able to provide a stable service. Achieving a stable trading environment is a significant reason why we've achieved the world's third largest trading volume," said Nakamura.

Saving rack space is another benefit. According to Katsumata, "Just one set of the conventional TMX5000 equipment requires a space that is 3 units wide. Yet one set of the APV5600 is only 2 units wide, and since the performance per set is very high, it helps save space on the server rack."

"During system operation, we are always checking for alerts pointing to problems such as traffic amount, CPU usage rate, etc. Whenever there is something we're a little concerned about or don't understand, we'll ask Hitachi Solutions about it and they respond immediately. They are quick about providing answers, which I think goes to show that

they have a very meticulous support structure that really satisfies customers," Katsumata added

Summary

YJFX will continue aiming to be number one in the world for trading volume, and continuously strive to improve the trading environment.

"YJFX's mission is to provide a service that customers are excited to use. For that reason, we want to improve the trading environment even more, and aim to be number one in the world for trading volume while ensuring stable system operation. The reliability of the Array APV5600 is very high so we're not worried about it letting us down. Now we're considering replacing our currently operating TMX Series with the APV Series," noted Katsumata.

"I'm very satisfied with the support system that Hitachi Solutions and Hitachi Solutions West Japan have in place. Despite the fact that the product is from an overseas vendor, the support within Japan has been solid. We'll ask about the product status, seek advice about performance results which we're always trying to understand, or even raise possible concerns, and they are good about providing us with appropriate answers from past cases. That kind of response is very reassuring," said Nakamura.

"If I had to evaluate my experience with the Hitachi Solutions Group, my feelings can be completely summarized simply by saying that they are one of our best partners. From now on as well, in order to become number one in trading volume and provide new service and functions as quickly as possible, we would like their help with system design so that a portion of the communication environment never becomes a bottleneck," said Katsumata.

"The Hitachi Solutions Group is a partner with whom we had worked with from before, so they can understand any difficulties we are experiencing or things we want to do even if we don't explain in complete detail. Going forward, we hope that they can provide detailed proposals to resolve problems which we haven't noticed," added Nakamura.

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