

YAHOO JAPAN CORPORATION OPTIMIZES BACKBONE AND DATA CENTERS WITH JUNIPER NETWORKS VIRTUAL ROUTING AND SWITCHING SOLUTIONS

Summary

Industry: Internet services

Challenges: Scale data center and backbone network capacity to meet ballooning demand from broadband and mobile users while conserving power and space.

Selection Criteria: Highly available, scalable, and manageable 10-Gigabit Ethernet capability in power-efficient and space-saving form factors

Network Solutions: Juniper Networks M Series Multiservice Edge Routers, MX Series 3D Universal Edge Routers, and EX Series Ethernet Switches

Results: A highly stable and scalable backbone with strong virtual network capabilities, coupled with a simplified and virtualized data center network architecture that boosts performance and greatly improves manageability while requiring less power and space.

Yahoo Japan Corporation is the premier Internet company in Japan, offering a wide range of advertising-supported and paid subscription services for individuals and businesses that are highly localized for the Japanese market. Its strategy is to be a “life engine” that people simply cannot live without. Through its “Everywhere” initiative, Yahoo Japan Corporation aims to bring the full spectrum of Internet services to mobile phones, game consoles, televisions, and similar devices in addition to regular computers.

The company’s range of services includes search, e-mail, auctions, travel, social networking, online gaming, information listing, community sites, e-commerce, and broadband access. It is typically the Japanese market leader or a strong second in its chosen segments and has successfully fended off competition from international market leaders.

To deliver services to Japan’s 96 million Internet users, Yahoo Japan Corporation operates a string of data centers connected via a high-capacity backbone network running along the country’s East-West axis.

Challenges

The life engine strategy means that Yahoo Japan Corporation is continually enhancing existing services and adding new ones, either through internal development or acquisition, as in the case of its video-sharing website GyaO! in which Yahoo Japan Corporation acquired a majority stake in April 2009. As a result, workloads at the company’s data centers have been rising strongly with Yahoo Japan Corporation’s networks and the backbone network having to accommodate high traffic growth.

“In order to respond to increases in traffic and provide stable services we have been strengthening our data center facilities”, said Norifumi Matsuya, VP, Site Operations, Yahoo Japan Corporation.

Part of the company’s response has been to double the average size of its data centers, from 250 racks in 2007 to 500 four years later. Compute density has also risen in line with server processing power, which Yahoo Japan Corporation now harnesses in a grid computing environment to share workloads across multiple servers running in parallel, imposing additional requirements on the data center network.

Selection Criteria

Yahoo Japan Corporation has been employing Juniper Networks® M Series Multiservice Edge Routers and T Series Core Routers for their performance, reliability, and stability under high workloads. By the end of 2007, however, the company was looking for the next generation of routing platforms that would enable it to sustain its quality of service (QoS) in the face of rapid traffic growth.

As well as wanting 10 Gbps Ethernet capabilities, the company also needed to be aware that in densely populated Japan, space for data centers is at a premium and it can be difficult to secure large amounts of power. “When selecting a network device, crucial points for us were availability, scalability, and operability—in addition to power and space saving,” commented Matsuya.

Solution

“When we were looking into new devices, Juniper Networks MX960 3D Universal Edge Router was virtually the only option that would give us 10 Gbps capability in a compact Ethernet routing product,” said Matsuya. Therefore, in 2008 Yahoo Japan Corporation started replacing its units of the Juniper Networks M320 Multiservice Edge Router with the MX960 to form the core of its data center networks. It subsequently brought in the Juniper Networks MX480 3D Universal Edge Router, which has efficient power per unit of throughput.

Today, each Yahoo Japan Corporation data center operates an 18-unit routing platform composed of 10 MX960/MX480 units and 8 M320 routers, supporting backbone line speeds in the 10 to 20 Gbps range. With the MX960 routers in place to provide high-performance core switching, the company was also in a position to radically overhaul the rest of its data center network infrastructure.

After comparing the operational costs, functionality and connectivity with core switches from a number of vendors, Yahoo Japan Corporation chose to adopt Juniper Networks EX4200 Ethernet Switch with Virtual Chassis fabric technology, which allows up to 10 interconnected switches to operate as a single, logical device.

“In addition to the benefits in terms of server performance, the EX4200 switches have enabled us to create an IT environment that can easily be scaled out”

Norifumi Matsuya,
VP, Site Operations, Yahoo Japan Corporation

Results

“By replacing the previous generation of routers with the power and space-saving Juniper Networks MX Series 3D Universal Edge Routers, we can reduce the TCO—including the running costs—at the data centers,” said Nobuhiro Takazawa, Leader, Network 1, Site Operations, Yahoo Japan Corporation. “The MX960 series has been problem-free, giving us stable operation and scaling in line with our initial targets.”

What’s more, Yahoo Japan Corporation has leveraged the logical router functionality of the MX Series and M Series to create multiple virtual networks on the backbone that links data centers. Having established a VPLS path in its virtual networks, the company is now constructing and running L3 networks for Internet service use, as well as L2 networks for internal use.

Yahoo Japan Corporation is now piloting IPv6 operations without the need for dedicated routers and connections. “With the virtual networks and VPLS, we can now respond rapidly to diverse network needs,” said Matsuya.

Juniper’s vitalization technology has also been key to improvements in the data center network. The EX4200 switches have been deployed as top-of-rack switches, with up to 10 of the switches interconnected in a Virtual Chassis configuration over the high-performance virtual backplane. By allowing multiple switches to work as a single device, a Virtual Chassis configuration greatly simplifies network management while reducing the number of uplinks—in some cases down to zero—that traffic must traverse in the server-to-server traffic patterns that are particularly prevalent in grid computing environments.

“In addition to the benefits in terms of server performance, the EX4200 switches have enabled us to create an IT environment that can easily be scaled out,” said Matsuya.

Next Steps and Lessons Learned

With increasing server virtualization, security and QoS are coming to be seen as increasingly important. In addition to application-level security, “it is necessary to tackle various issues including security of virtual servers at the network level. For this, we hope to be able to count on Juniper Networks’ ability to propose solutions and provide support,” said Matsuya.

Yahoo Japan Corporation continues its evolution as a life engine geared to various lifestyles. Juniper Networks supports part of the data center network platform, the driving force behind this evolution.

For More Information

To find out more about Juniper Networks products and solutions mentioned in this case study, please visit

www.juniper.net/us/en/solutions/enterprise/data-center.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

Corporate and Sales Headquarters

Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089 USA
Phone: 888.JUNIPER (888.586.4737)
or 408.745.2000
Fax: 408.745.2100
www.juniper.net

APAC Headquarters

Juniper Networks (Hong Kong)
26/F, Cityplaza One
1111 King's Road
Taikoo Shing, Hong Kong
Phone: 852.2332.3636
Fax: 852.2574.7803

EMEA Headquarters

Juniper Networks Ireland
Airside Business Park
Swords, County Dublin, Ireland
Phone: 35.31.8903.600
EMEA Sales: 00800.4586.4737
Fax: 35.31.8903.601

To purchase Juniper Networks solutions, please contact your Juniper Networks representative at 1-866-298-6428 or authorized reseller.

Copyright 2010 Juniper Networks, Inc. All rights reserved. Juniper Networks, the Juniper Networks logo, Junos, NetScreen, and ScreenOS are registered trademarks of Juniper Networks, Inc. in the United States and other countries. All other trademarks, service marks, registered marks, or registered service marks are the property of their respective owners. Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.