JUNIPER NETWORKS T SERIES SUPPORTING NTT COMMUNICATIONS' GLOBAL TIER-1 IP BACKBONE

Summary

Industry: Telecommunications

Challenge: To improve operational efficiency of global tier-1 IP backbone

Network Solution: Juniper Networks T1600 Core Routers

Results: About 30 percent improvement of operational efficiency of global tier-1 IP backbone

Established in July of 1999, NTT Communications Corporation (NTT Com) is one of the business corporations created through the reorganization of Nippon Telegraph and Telephone Corporation (NTT). Handling long-distance/international communications as a part of the NTT group, NTT Communications offers a variety of services for individual and corporate customers. In addition to long- distance/international communications, NTT Communications offers telephone service—including supplementary services such as toll-free numbers and Navi Dial; ISP service through the "OCN" brand; and corporate, domestic, and international IP network/data communications and solutions utilizing a data center and hosting service. The global tier-1 IP backbone "Global IP Network" connects Japan with Asia, the United State, Europe, and Australia with the highest throughput in the Asia-Pacific region.

Challenges

NTT Com offers a wide range of international communications-based services as a part of the NTT group. The fast and large-capacity "Global IP Network" operated by NTT Com connects Japan, the United States, Europe, Australia, and Asia like a mesh. NTT Com, which has operated its "Global IP Network" since 2002, has used the Juniper Networks® T640 Core Router that underlies this fast, large-capacity, and high-quality network. However, the T640 faces challenges due to the increasing capacity of the network. The most important challenge is to improve operational efficiency.

"The most important challenge in this area was the throughput that one chassis could accommodate. For example, our bandwidth between Japan and the United States is now 185 Gbps and the challenge is the number of routers that are needed to process this capacity," said Kempei Fukuda, senior manager of the Global Network Department at NTT Communications. "As the 'Global IP Network' also serves as an Asian hub, the challenge is to continue to increase throughput in the future and operate the network efficiently."

Selection Criteria

It was the 10-Gbps Ethernet interface that NTT Com focused on to efficiently accommodate and operate the network. "The T1600 has a packet transfer capability of up to 100 Gbps per FPC. This capability can improve accommodation efficiency, save power consumption and installation space, and lead to the ecology we address on a company-wide scale. The T1600 has the additional advantage that it can use the T640 chassis by replacing just a few parts such as the interface board and power supply unit. As the throughput has increased to more than double and the consumption power is reduced to two-thirds, I believe a drastic improvement of operational efficiency has been achieved," Mr. Fukuda added.

NTT Com has promoted "Green ICT" as an environmental measure. The Green ICT takes two approaches. One is the "Greening of ICT" that seeks to reduce the amount of power used for the increasing equipment. The other is the "Greening by ICT" that seeks to reduce the environmental load across society as a whole through the use of ICT. Reducing power consumption with the T1600 represents one of the efforts that lead to the "Greening of ICT."

When NTT Com considered its core router, it understandably weighed the merits of several vendor products. The performance was the decisive factor in choosing the Juniper product.

"Our company also adopts other vendor's routers but it is only Juniper products that we adopt as the core router of the backbone. The decisive factor in deciding on the Juniper products was that the performance described in the brochure was actually achieved. We gave very high marks not only to the performance but also to the product architecture and technology," said Mr. Fukuda.

In addition to the performance, the operability and the platform compatibility were also evaluated in determining the migration from the T640 to the T1600.

"After all, the most important evaluation points are performance and compatibility. We make a point of high quality of service, and we cannot meet customer satisfaction if we fail to achieve sufficient line rate performance. We also appreciate that the existing chassis can be used as is," Mr. Fukuda noted.

Solution

NTT Com is now migrating from the T640 to the T1600. It first introduced the evaluation machine into the base in the United States in 2007, and performed evaluations—including performance tests—over a period of about four months. After that, NTT Com introduced the T1600 in March 2008. Mr. Fukuda said that the preparation for the production operation is currently ongoing.

"In the United States, two T640s have already been upgraded to T1600s and operation has actually begun. In September of 2008, the T1600 in the United States was connected with the T1600 in Tokyo and the production operation began," Mr. Fukuda added.

Results

Mr. Fukuda said that the effect of introduction most expected is the improvement of operational efficiency after operation begins.

"The effect of introduction most expected is the improvement of operational efficiency. We estimate that the operational efficiency will improve about 30 percent, and we intend to clearly demonstrate the improvement after operation begins. Electric cost savings is expected through a reduction in consumption power, but the aggregate effect of being able to bring the two chassis previously used in communications into one chassis is even greater."

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> Kempei Fukuda
> Senior Manager, Global Network Department,
> Global Business Division, NTT Communications

Next Steps and Lessons Learned

Mr. Fukuda said that future extension plans have not yet been determined, but NTT Com has great expectations for the result of the introduction between Japan and the United States.

"So far, we do not intend to extend the T1600 to bases other than Japan and the United States," noted Mr. Fukuda. "However, as the recent traffic in the Asian region has increased, we intend to make Hong Kong a core base in the future. At that time, I think the T640 will be introduced first."

Mr. Fukuda has high expectations for Juniper Networks. "We hope to establish long-term business relations with Juniper Networks. We hope Juniper Networks actively offers low prices, better performance, and leading-edge products."

For More Information

To find out more about Juniper Networks products and solutions, visit **www.juniper.net**.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at **www.juniper.net.**

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