Service Provider Lowers Costs and Simplifies Expansion to New Markets

NTT Communications deployed Cisco ASR 9000 Series routers in major locations and extended services to new locations using Network Virtualization (nV) technology.

EXECUTIVE SUMMARY

Customer: NTT Communications
Industry: Service Provider
Headquarters: Tokyo, Japan
Employees: 6850

CHALLENGE

- Increase competitive advantage
- Lower capital and operational expense
- Cost-effectively expand to new markets, including enterprise customers

SOLUTION

- Cisco ASR 9000 Aggregation Series Routers in major locations
- Cisco ASR 9000v extension shelves in select locations

RESULTS

- Reduced number of core routers to purchase and manage
- Freed up slots for high-speed connectivity on Cisco ASR 9000 by using Cisco ASR 9000v to provide 1-Gbps connectivity
- Will lower router operational overhead by 20 - 30 percent (projected)

Challenge

NTT Communications operates Global IP Network (GIN), one of the world's leading global Tier 1 networks. GIN links Japan with major countries, providing 680 Gbps bandwidth to the United States, 125 Gbps to Europe, 592 Gbps between Asia and Oceania, and 160 Gbps between the U.S. and Europe. GIN has earned widespread industry recognition, including multiple World Communication Awards and the Best Wholesale Carrier award from Telecom Asia Awards 2011.

To sustain its leadership in an increasingly competitive industry, NTT continually looks for more efficient ways to keep costs down, serve more locations, and offer more services. "We are constantly faced with stiff competition from our rivals, and we look to advanced networking technology to provide the best service at competitive costs," says Kempei Fukuda, director of the Technology Department, Network Services, NTT Communications.

To increase operational efficiency, NTT Communications wanted a way to consolidate networking equipment, with the goal of lowering capital costs, management overhead, and data center space, power, and cooling costs. Company leaders also sought a cost-effective solution to offer 1-Gbps connectivity to service providers and enterprise customers, a new market.

Solution

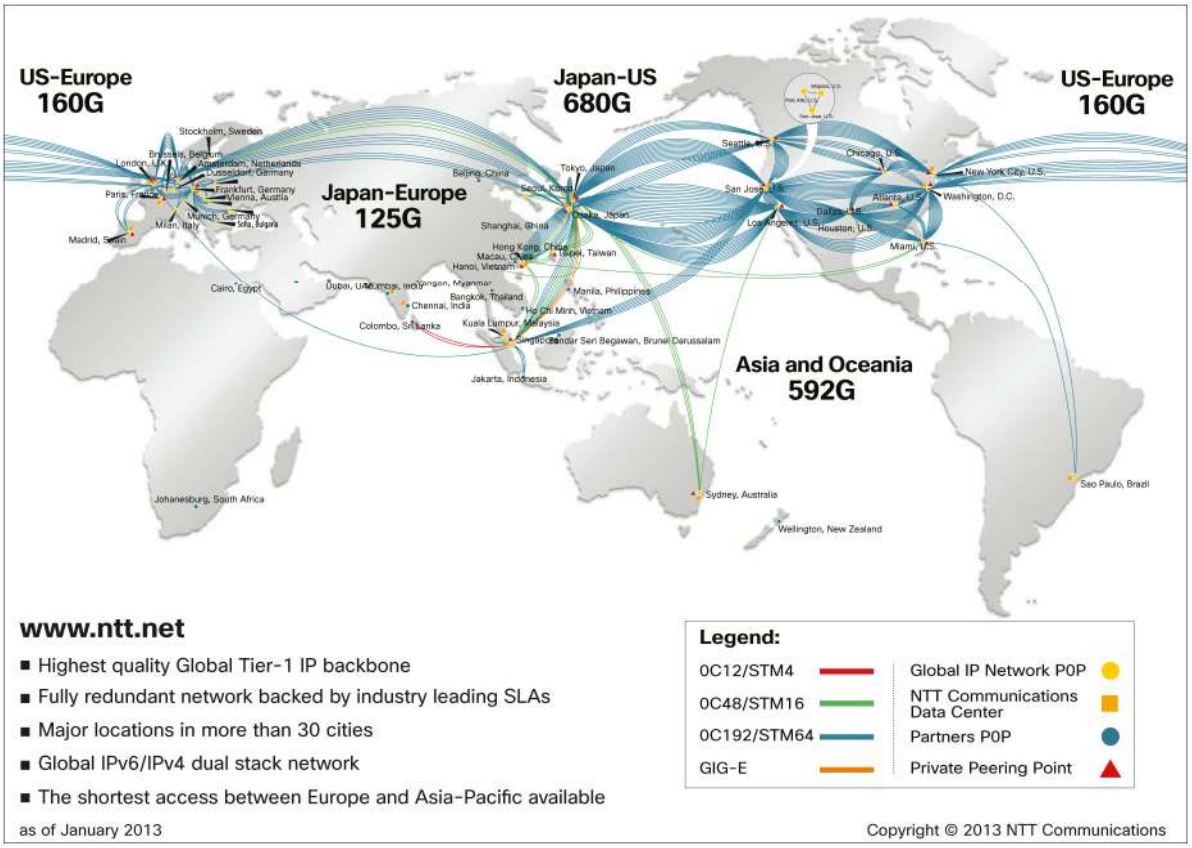
NTT Communications met its goals by deploying Cisco ASR 9000 Series Aggregation Services Routers, which combine edge and aggregation services in a single device. The advanced router is lowering equipment costs in three ways. “The greatest appeal [of the Cisco ASR 9000] is the high port density,” Fukuda says. “The use of a high-density line card makes it possible to increase the number of ports without adding more chassis. This means we can expand our services with minimal additional investment.” NTT Communications configured the routers with line cards providing 36 10-Gbps ports.

Secondly, support for Ethernet over MPLS (EoMPLS) in the Cisco ASR 9000 eliminates the need for a core router in certain locations, because these locations can connect over Layer 2. “By reducing the number of devices we need, EoMPLS further reduces capital expense,” says Taku Morinobu, senior manager of the Technology Department for Network Services, NTT Communications.

Finally, each Cisco ASR 9000 Series router can process up to 96 terabits per second (Tbps), reducing the number of routers required to meet bandwidth requirements.

NTT Communications began implementing Cisco ASR 9000 Series routers in 2010, and now uses them in most major locations in the United States, Japan, Europe, and Asia (Figure 1).

Figure 1. NTT Communications Global IP Network



In December 2012, the company increased the value of its routers by implementing the Cisco ASR 9000v, an extension shelf that can be deployed adjacent to the router or in a remote location. The ASR 9000v conserves data center space, power, and cooling because of its high port density. A single one-unit (1U) form factor provides forty-four 10-, 100-, or 1000-Mbps ports and four 10-Gbps ports. NTT uses the ASR 9000v extension shelf for 1000-Mbps (1-Gbps) ports, freeing up slots on the Cisco ASR 9000 Router for 10-Gbps ports. “Our objective for implementing the Cisco ASR 9000v is to further increase the efficiency of equipment,” says Morinobu. “It is a waste to use the limited slots for low-speed ports. Moving low-speed ports outside the chassis to the Cisco ASR 9000v lowers our cost per port.” So far, NTT has deployed Cisco ASR 9000v shelves in Los Angeles, New York, Washington D.C., Singapore, and Hong Kong.

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> **— Kempei Fukuda, Director of Technology Department, Network Services, NTT Communications**

Results

Lowered Capital and Operational Costs in Satellite Offices

NTT Communications has reduced the time and cost to provide 1-Gbps services by deploying the Cisco ASR 9000v extension shelves in local data centers. The shelves connect to a Cisco ASR 9000 in a main data center.

NTT’s network administrators can manage the Cisco ASR 9000v extension shelves as part of the Cisco ASR 9000 router to which they connect. The company expects a 20 - 30 percent reduction in management overhead, with the greatest improvement seen in remote offices. “Management in remote locations is easier [with the Cisco ASR 9000v] because we can manage the shelves and router as one unit,” Fukuda says. “It is also easier to avoid human error because we only need to check one location when delivering services.”

Reduced Customer Costs

Implementing the Cisco ASR 9000v in smaller offices also reduces customer costs because customers do not need to pay for an access line to the main GIN location. Multiple customers can use the same Cisco ASR 9000v.

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Lowered Costs to Provide 1-Gbps Service to Enterprise Customers

Currently, NTT Communications works primarily with Internet service providers and content providers. To expand its market to include enterprise customers, the company wanted to offer 1-Gbps connectivity using its VLink service, which provides Layer 2 VPN (L2VPN) connections on GIN. The barrier was the high cost of installing a Layer 2 switch at the customer site. Now, NTT Communications can provide 1-Gbps connectivity at a lower cost, using a Cisco ASR 9000v.

“Deploying services to small-scale locations will be a vital approach for expanding our business in the future,” says Fukuda. “We believe this is a powerful method for extending services to smaller locations.”

> “It is a waste to use the limited slots for low-speed ports. It is possible to lower the cost per port if low-speed ports are moved outside the chassis, to the Cisco ASR 9000v.”
>
> **— Taku Morinobu, Senior Manager of Technology Department, Network Services, NTT Communications**

Next Steps

NTT Communications plans to deploy the Cisco ASR 9000v in more locations. Other plans under consideration include:

- Adding a 100-Gbps line card to the Cisco ASR 9000: “At present, it is only possible to use a 2-port line card, but in the near future, we would like a high-density card able to mount 8-10 ports per slot,” says Morinobu.
- Taking advantage software-defined networking (SDN) to automate more router configuration tasks: Currently, 60 - 70 percent of administrative actions are automated, and SDN will help to increase this percentage. The company also plans to provide a customer self-service portal for router configuration, further differentiating its service.

Fukuda concludes, “What we expect of network vendors is timely support for the network we are aiming to provide. Cisco’s introduction of the Cisco ASR 9000 series was very timely. It also features carrier-grade reliability and excellent support.”

PRODUCT LIST

- Cisco ASR 9000 Series Aggregation Service Router
- Cisco ASR 9000v Extension Shelf with Cisco Network Virtualization (nV) Technology

For More Information

To learn more about the Cisco ASR 9000 Series Aggregation Services Router, visit: http://www.cisco.com/go/asr9000.

To learn more about the Cisco ASR 9000v Extension Shelf, visit: http://www.cisco.com/en/US/prod/collateral/routers/ps9853/data_sheet_c78-673744.html.

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