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Nippon Telegraph and Telephone Corporation
INTERNET MULTIFEED CO.

# Deployment of NTT's Open Source Software GoBGP in INTERNET MULTIFEED's JPNAP Service
## Automation of operation and vast improvement in efficiency: Lead time reduced to 1/10th of previous with new contract and configuration changes to 1/30th of previous time

Nippon Telegraph and Telephone Corporation ("NTT"; headquarters: Chiyoda Ward, Tokyo; President and Chief Executive Officer: Hiroo Unoura) and INTERNET MULTIFEED CO. ("MF"; headquarters: Chiyoda Ward, Tokyo; President and Chief Executive Officer: Koichi Suzuki) have partnered to apply GoBGP, an Open Source Internet routing control software provided by NTT, to JPNAP, an Internet exchange (IX)*1 point provided by MF. They have achieved commercial deployment. By utilizing the automation functions of GoBGP to automate the operation of JPNAP's RouteFEED service,*2 the lead time under the new RouteFEED service contract is reduced to 1/10th of its previous length. The time for customers' existing configuration change orders is reduced to 1/30th of its previous length. By automating operation, problems due to human errors in previous manual configuration changes can be prevented. Operational loads are also reduced to 1/10th of their previous amounts. JPNAP is the world's first IX point to introduce the commercial deployment of GoBGP for IX providers. NTT and MF will report this achievement at the Asia Pacific Internet Exchange Association (APIX)*3 conference, to be held in Sri Lanka in October 2016.

・Background

IX services are gaining in importance for the stable operation of the Internet. An IX is a point of Internet exchange connections between Internet service providers (ISPs) and content providers. More than 600 IX points are in operation around the world. MF's JPNAP is one of the largest IX points in Asia in terms of exchange traffic volume. As Internet traffic and the number of routes continue to increase annually, operational efficiency and costs are becoming issues.

NTT has engaged in Open Source Software (OSS) projects such as the development of the Ryu SDN Framework, which was released as Open Source in 2012, and OpenStack. Through this participation, NTT has gained technological expertise in network software and OSS development know-how. MF operates one of the largest IX points in Asia. Through this role, MF has gained advanced knowledge in Internet routing control technologies and operational experience. By working closely together to advance OSS development, NTT and MF have succeeded in achieving the deployment described above.

・Features of the Technology

By efficiently leveraging the features of modern-day hardware architecture such as multicore CPU, GoBGP achieves scalability that can process the current number of Internet routes and connection points required by IX services.

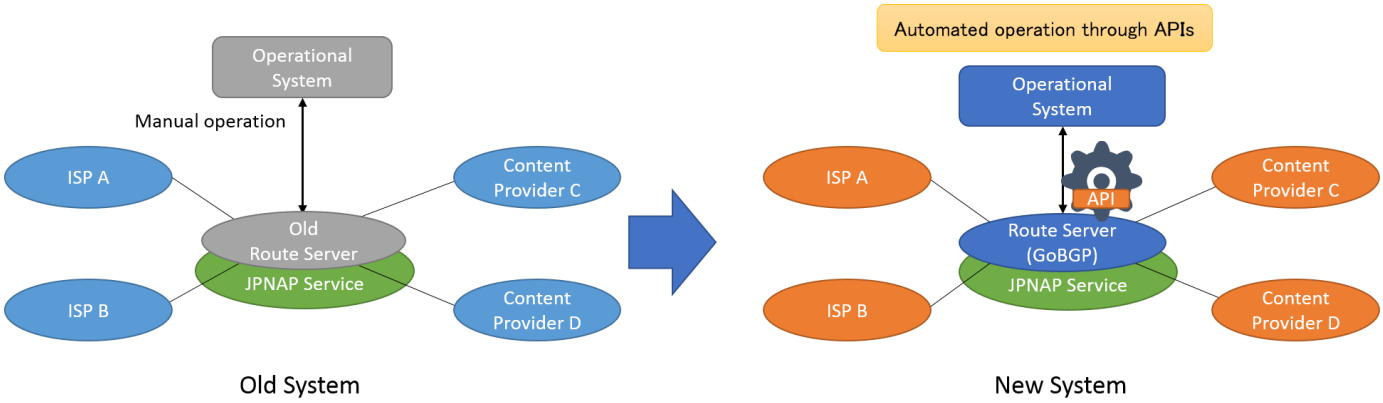
GoBGP uses a design premised on software control instead of conventional manual operation. By providing application programming interfaces (API)*4 and software for configuration changes and other purposes, GoBGP's design rapidly handles frequent API requests and makes it easy to automate operational processes.

Connections to processes such as data analysis and event notification to external systems can also be easily realized by utilizing these APIs.

Reference: GoBGP website: http://osrg.github.io/gobgp/

・Future Plans

Going forward, NTT is seeking to not just expand the GoBGP Open Source community and promote the spread of the technology, but also to apply GoBGP to use cases besides IX services, such as data center networks and commodity network hardware. It is also seeking to further accelerate the expansion of GoBGP's functions and performance. Furthermore, NTT is seeking to expand the business market with Open Source Software and energize the business and technological development of software networking infrastructure. MF is engaged in providing pioneering IX services that contribute to improving the reliability of IX points as social infrastructure. It seeks to increase its operational knowledge of GoBGP's RouteFEED service and provide feedback to other IX providers to continue to expand the Internet quickly and soundly.




・Glossary

*1 Internet exchange (IX) is a point of exchange connections between the networks of autonomous systems (AS), Internet service providers (ISP), content providers, businesses, and organizations. It establishes routes between AS (routing exchanges established by routing protocols) and transfers actual traffic.

*2 RouteFEED service

Service provided by MF for JPNAP users that automatically carries out routing exchanges with numerous connection points.

*3 Asia Pacific Internet Exchange Association (APIX)

Organization of IX providers in the Asia Pacific region for information exchange and joint studies

*4 API (Application Programming Interface)

Interface specifications for handling information and interactions between software components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