

Success in large-scale test of technology to solve IPv4 address space exhaustion issue

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Fujitsu, the National Institute of Information and Communications Technology (NICT), and the Japan Advanced Institute of Science and Technology (JAIST) today announced that they recently conducted a successful large-scale test of a solution technology that will enable IPv4 addresses to be assigned (shared) to different devices at datacenters configured with IPv6 networks.

The test succeeded at running SA46T-AS – a technology developed by Fujitsu for sharing IPv4 addresses on IPv6 networks, announced June 12, 2012 – using StarBED, NICT's large-scale network testbed. For the first time the test confirmed automatic large-scale operations, with no need for manual operation or individual settings, even with virtual servers running SA46T-AS on StarBED.

The success of the test on a large-scale network demonstrated the practicality of SA46T-AS. This, in turn, will make it possible for multiple devices that employ IPv4 addresses – which are still in widespread use despite the fact that IPv4 address space is becoming scarce – to share a single IPv4 address, rather than each needing to be assigned their own separate address. As a result, it will be possible to continue and even augment the use of IPv4.

Details of this technology will be presented at the 6th Internet and Operations Technology Symposium (IOTS2013), to be held from December 12-13 at Hiroshima University.

In recent years, international organizations that manage IP addresses, and relevant organizations in the Asia Pacific and European regions, have noted the exhaustion of the IPv4 address space and, as a result, have promoted the transition to IPv6. At the same time, the ability to continue using existing systems based on IPv4 is a crucial issue, especially for Internet server environments which require the use of IPv4 global addresses. Once IPv4 address space is exhausted, there will be no more IPv4 addresses available for allocation, which is expected to make it impossible to add new servers. Although datacenters and other systems will be designed to run on IPv6 networks in the future, it is still important to ensure an environment on those networks in which IPv4 addresses can continue to be used.

To address these issues, Fujitsu developed SA46T-AS, a technology that makes it possible to share IPv4 addresses and communicate on an IPv6 network. In June 2012 at Interop Tokyo 2012, Fujitsu presented a basic proof of concept for the technology that was carried out as part of a small-scale test among servers. Key to demonstrating the practicality of SA46T-AS technology is the implementation of technology that automatically enables large-scale deployment of virtual servers that use SA46T-AS, with no need for manual operation or individual settings. Moreover, it is also essential to be able to show that performance of the technology in a large-scale environment is sufficient enough to be practical.

A large-scale test was performed using NICT's StarBED environment. With twelve physical servers each running 128 virtual servers, the large-scale test was carried out with a total of 1,536 virtual servers. Results confirmed stable basic operations and scalability, thereby demonstrating sufficient practicality.

Provided by Fujitsu

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