SC22 Network Research Exhibition: Demonstration Preliminary Abstract

[High Bandwidth U.S.-Japan Traffic Test using Virtualized IXIA IxNetwork]

Yasuhiro Ohara, NTT Communications Corporation, yasuhiro.ohara@ntt.com
Takashi Kimata, National Institute of Information and Communication Technology, kimata@nict.go.jp

Abstract

The software-based network tester such as the virtualized version of KeySight's IXIA IxNetwork is portable and fits for transportation. We are going to carry in SC'22 the two 1U servers and the IxNetwork, and conduct high-bandwidth traffic loading test between the SC'22 site and the NICT's JGN (Japanese R&D Network). The software-based IxNetwork is said to have possible issues in measuring latency, and/or in analyzing accumulated statistics. Also there may be issues in synchronization when the components (vChassis and vModules) are separated by the long-latency(approx. 150ms) international link between U.S. and Japan. Using the multiple international paths coordinated between SC'22 and Japan, we check the min/max/avg bandwidth and latency for each path. Given the possible issues in software-based IxNetwork, the test may become challenging and is worth trying.

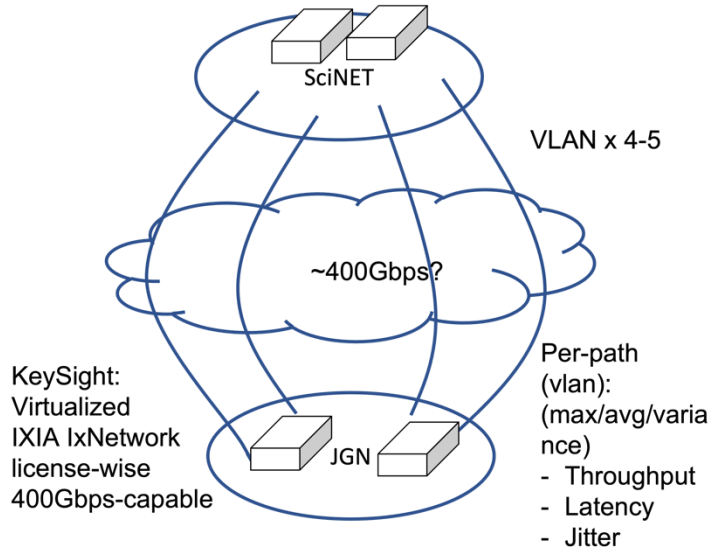
Goals

The goals of this project mainly focuses on measurements of individual network paths between SC'22 and JGN in Japan.

1. Send and receive the network tester traffic between the SC'22 site and JGN in Japan.
2. Measure the min/max/avg bandwidth (bps), for one or more paths. (Current plan is up to 80Gbps for each path, in 1522B-sized ethernet frame; approx. 6.5Mpps)
3. Measure the min/max/avg latencies for one or more paths. If something's weird, speculate for the cause.
4. Check for the different operation pattern(s) of software-base IxNetwork, such as two vChassis operation where vChassis are placed in each of the SC'22 site and JGN in Japan.

Resources

Known needs include Wide-Area network connections, location (housing, like rack-space) for two 1U servers including 100V power sources, management connections for out-of-band management.



The experiment is backed by the support and coordination of the JGN/APAN network operators. The necessary VLANs and facility (rack space, etc) should have already been voiced by the JGN operators or NICT staff.

We'd like to conduct the experiment in the Japanese daytime (i.e., U.S. night-time). We'd like remote access from Japan to control the experiment. Based on this condition, we are going to send traffic from Japan to U.S. SC'22 site only (one direction), for the safety, so that we can stop the traffic even when remote-control is lost.

Involved Parties

The experiment is supported by, and the contact information are, the following institutions, researchers, and entities.

- Yasuhiro Ohara, NTT Communications, yasuhiro.ohara@ntt.com
- Takashi Kimata, NICT, kimata@nict.go.jp
- Yuki Mori, NICT, mori@nict.go.jp
- Hirotaka Sato, KDDI, ir-satou@ote.kddi.com
- Kosuke Ueda, NTT Communications/JGN, ueda@jgn-x.jp
- Hiroki Ohashi, JGN, hiroki@jgn-x.jp