Title: SDN/NFV based disaster recovery method in Elastic Lambda Aggregation Network (EλAN)

Authors: Asato Kotsugai† (Speaker), Takehiro Sato†, Hidetoshi Takeshita†, Satoru Okamoto†, and Naoaki Yamanaka†

Affiliation: † Graduate School of Science and Technology, Keio University

Contact Information: kotsugai@yamanaka.ics.keio.ac.jp

Extended Abstracts: The Elastic Lambda Aggregation Network (EλAN) which aims to integrate several individual service access networks and metro networks into one optical switching network has been proposed [1]. EλAN consists of programmable OLTs (P-OLTs) and ONUs (P-ONUs), Optical Distribution Network (ODN), and a wide area virtual layer-2 Switch (VL2SW). Many logical OLTs (L-OLTs) can be worked in one P-OLT box and a few number of logical ONUs (L-ONUs) can be worked in one P-ONU box. One L-OLT will accommodate maximum 256 L-ONUs. ODN supplies flexible optical paths among L-OLTs and L-ONUs. VL2SW supplies flexible Layer-2 paths among L-OLTs and a core network. Therefore, a network operator can select flexible combination of L-OLT and L-ONUs. In case of the disaster, the operator can find usable P-OLTs (L-OLTs) and L-ONUs, and connect them with reconfiguring ODN and VL2SW to keep service supplies. This is known as restoration. But L-OLT cannot accommodate exceed the number of 256 L-ONUs. In the small number of survived P-OLT case, restorable number of L-ONUs is limited. It is required to maintain service supplies as far as possible, to do so, we propose TDMA based L-OLT sharing method with applying SDN/NFV principle to accommodate exceed the number 256 L-ONUs into one L-OLT. Figure 1 shows a conceptual model of the proposed method. L-OLT will support 2 or 4 ONU groups using TDMA. And a proxy will be inserted between VL2SW and the core network to control burst traffic of TDMA.

At the presentation, the feasibility of the proposed method will be reported. Demonstration will be also held at the exhibition area.


Figure 1. A conceptual method of the proposed disaster recovery method