Week15

**Measurement applications:** Applications which actively query the switches perform poorly under HyperFlow, because the number of queries grows linearly with the number of controllers. Such applications must be modified to partition queries among controllers in a distributed fashion and exchange the results (encapsulated in self-defined events) using HyperFlow. Consider the discovery application as an example. The discovery application must only sends link layer discovery protocol (LLDP) probes out of the switches under its direct control. For each link between a directly and a non-directly controlled switch pair, the discovery application receives an LLDP packet generated by another controller signaling the connectivity. Finally, the discovery application must propagate its link events using HyperFlow.

**Interconnecting HyperFlow-based OpenFlow networks:** To interconnect two independently managed HyperFlow-based OpenFlow networks (areas), controller applications need to be modified to be made area-aware. They must listen for area discovery events from HyperFlow, enforce the area policies declared using a policy language (e.g., Flow-based Management Language), and exchange updates with the neighboring area through a secure channel providing publish/subscribe service. Applications should encapsulate updates in self-defined events, and have HyperFlow propagate them to the neighboring areas. HyperFlow removes the need for individual control applications to discover their neighbors and communicate directly; instead, control applications just fire events locally and HyperFlow delivers them to neighbors.