1. Future Internet
   1. Software Defined Network

The Internet has experienced a dramatic growth in nowadays. It tries to make almost everything connected and accessible from anywhere, which means the structure of the network will inevitably become more and more heavy and complicated.

* + 1. Architecture of SDN

1. Short history and current state.
2. General scheme, the decouple of Control and Data Plane, the concept of centralization.
3. Briefly introduce communication scheme between different planes and the protocols (OpenFlow, Northbound and Southbound, etc.)
   * 1. Future application of SDN
4. Advantages compared to the traditional network structure
5. Problem faced before widely deployed
   1. Efficient packet forwarding
      1. Packet Flow Path
6. Introduce Packet Flow forwarding scheme
7. The reason to set up Packet Flow Path (real-time, Optical communication without buffer)
   * 1. Network Function Virtualization

Introduce the NFV concept and MPLS, which is used to establish the virtual channel for flow.

* + 1. Latency in Packet Communication Protocol

1. Briefly talk about the waiting latency happened in “Send-and-Wait” Protocol with “Timeout Recovery”
2. The packet flow path can reduce the need of “send-and-wait” situation which is likely to happen between different plane communication. And the distribution function of total delay can be used to optimize the timeout value.
   1. Cloud support

Mainly about the DB support for controller. Abstract the database of storing network information from controller to cloud end, to implement data restoration for distributed system.

1. SDN: A comprehensive survey

The current Internet had led to the trend of making everything connected to each other with requirement of rapid new services deployment and less conmunication delay. However, the shortcoming of traditional network structure is obstructing the innovation of Internet. Despite the widespread adoption, traditonal IP network are complex and hard to manage(1)[1]. It mainly owes to the vertical integrated[1] scheme of the current network, which means network devices not only are responsible for packet forwarding but also need to take care of network control logic (eg. Path finding, firewall rules, statisitic collection, etc.). Since there are many function-separated devices in network, it inevitably leads to burdensome configurations of each individuals using low-level and often vendor-specific commands[1]. Besides, when coming to new service or protocol deployment, it could be even more complex to reconfigure throughly. Due to the inertia of current IP networks, a new routing protocol can take 5 to 10 years to be fully designed, evaluated and deployed[1]. For instance, the transition from IPv4 to IPv6, which could be regarded as merely a protocol update, started more than a decade ago and still largely incomplete[1].

Software-Defined Network is a hopeful paradigm for the future network to remedy the weaknesses of current Internet achitecture.