Assignment NO: 02

Assignment Name: OpenFlow Switch protocols

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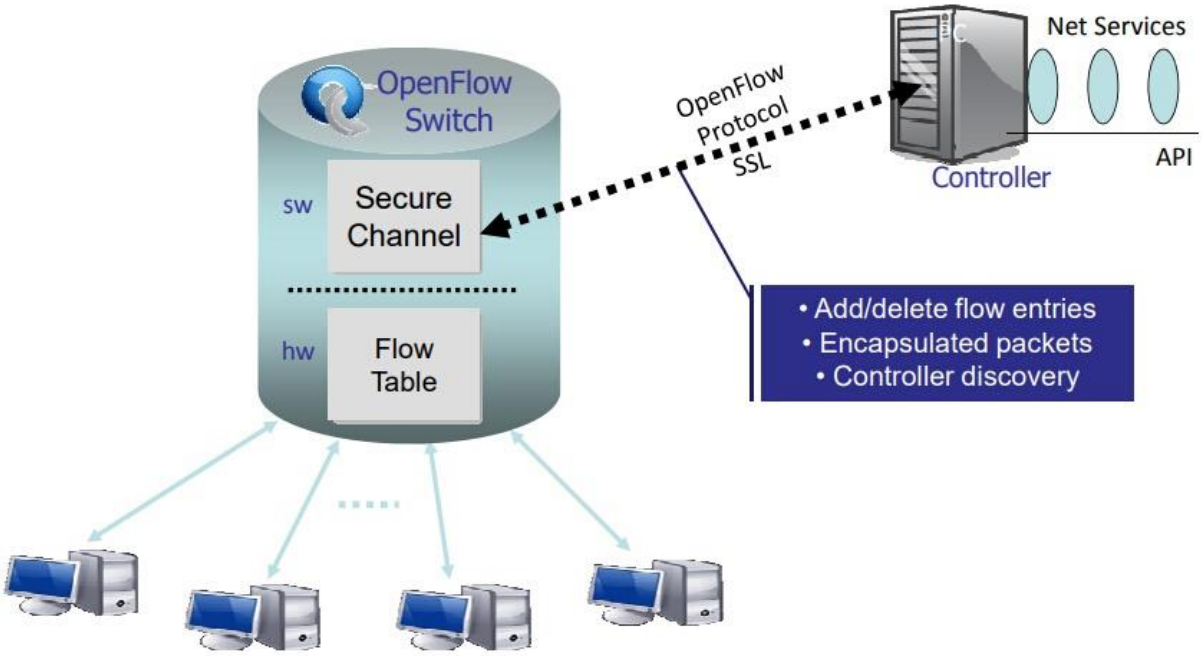
Theory:

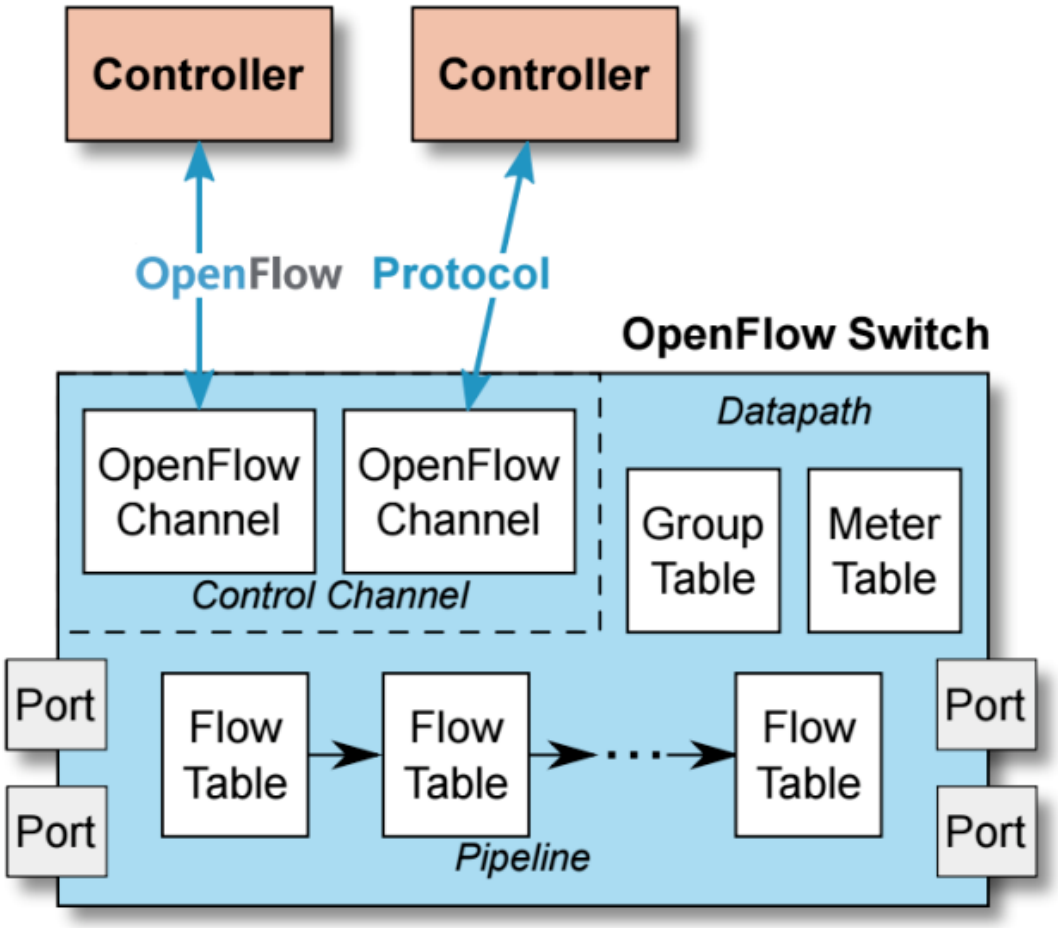
Open Flow is a programmable network protocol for SDN environment, which is used for communication between Open Flow switches and controllers. Open Flow separates the programming of network device from underlying hardware, and offers a standardized way of delivering a centralized, programmable network that can quickly adapt to changing network requirements. SDN (Software-Defined Networking) technology is generating huge interest in networking industry due to its ability to add higher agility and scalability for networks. At the core of the SDN technology is the Open Flow protocol, and SDN with Open Flow switch promises flexibility and fast configuration of communication networks.

Methodology:



An Open Flow switch can only function with the collaborate work of three essential elements: flow tables installed on switches, a controller and a proprietary Open Flow protocol for the controller to talk securely with switches. Flow tables are set up on switches. Controllers talk to the switches via the Open Flow protocol and impose policies on flows. The controller could set up paths through the network optimized for specific characteristics, such as speed, fewest number of hops or reduced latency. Open Flow switch is designed to provide consistency in traffic management and engineering, by making control function independent of the hardware it's intended to control. This combination of open source software and commodity hardware holds the potential for unprecedented efficiency and operational agility, which fitted well in the world where network becomes increasingly diverse and demanding. Enabling Open Flow on physical switches and move to Open Flow switch is something that most clients have been working toward. FS.COM switch product line consists of 10GbE switch, 40GbE switch and

100GbE switch that supports Open Flow 1.3, which can be used as Open Flow switches in open networking environment.



Protocols:

- With Open Flow enabled switch, the SDN controller could route non critical/bulk traffic on longer routes that are not fully utilized.
- The SDN controller can easily implement load-balancing at high data rates by just directing different flows to different hosts, only doing the set-up of the initial flow's.
- Traffic can be isolated without the need for vlan's, the SDN controller of Open Flow switch can just refuse certain connections.
- Setup a network TAP/Sniffer easily for any port or even specific traffic by programming the network to send a duplicate stream to a network monitoring device.
- It also allows for the development of new services and ideas all in software on the SDN controller, as well to accelerate new features and services.

Conclusion:

Open Flow switch addresses bottlenecks to high performance and scalability in SDN environment. Providing an efficient, vendor-independent approach to managing complex networks with dynamic demands, it is likely to become commonplace in large carrier networks, cloud infrastructures, and other networks.