Blending the Old and the New

At **Future networks Pvt. Ltd.,** our goal is to provide global network and telecommunication resources to help make customer company successful. We serve Comcast to maintain their network infrastructure in downtown San Jose, CA. Our major backbone network consists of Cisco 2960-L 24 port switches connected to the routers.

Being part of the IP department, it has come to our notice that network in San Jose area is noticing high traffic due to the proliferation of new internet users. To balance traffic and optimize the usage of channel links, ideas for augmentation of new switches and expansion of the network are proposed. I would take this opportunity to propose installing hybrid SDN-legacy switches for network expansion instead of Cisco 2960-L 24 port switches. To prevent loss of investment made on the legacy equipment, OpenFlow switches must be used along with legacy switches.

A hybrid SDN-legacy switch will allow the architecture to use 12 ports as legacy switch ports and mechanism like Network Configuration protocol (NETCONF) and Simple network management protocol (SNMP) shall connect the switch with the existing network; on the other hand, remaining 12 ports shall act as SDN OpenFlow ports.

Software-defined networks (SDN) switch will enable centralized network service along with a dynamic, manageable, cost-effective, and adaptable architecture by providing a remote dynamic application support. Platforms like Floodlight and OpenDayLight (ODL) are used to enable SDN for network programmability. This will eliminate the complex and static nature of legacy distributed network architecture in San Jose area and allow programmable control network by means of defining new flow rules. SDN switches use OpenFlow protocol to update flow rules in the flow table.

Advantages of such an implementation are as follows:

1) Configuring multiple virtual switches using Open VSwitch (OVS)
   - We can have multiple virtual switches - in one physical port - connected to the independent virtual machine (VM) doing distinctive tasks
2) Low hardware dependencies due to application software
   - Applications such as firewalls can be written in the VM controller, which can block restricted site access. Requirement of separate firewall hardware is eliminated
3) Low cost due to openness
   - Openness is due to open source and upgradable Linux OS instead of company's proprietary OS

Being a graduate student of Electrical Engineering with a specialization in Computer Networking, I have worked in SDN technologies at a coursework project level. I can say that I am perfectly aware of the SDN concepts and this is the area we can really continue to explore and benefit in. Future network's infrastructure where we can install these switches won't hamper us economically as hybrid switches can be easily turned to legacy switches with simple OpenFlow configuration. Over the networking world, almost every company is switching to programmable network, and I believe now it's our time to spread our wings.