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Software Defined Networks are architecturally designed to make the network easier to manage. The structure provides a network that is a centralized and programmable(Cisco, 2023). There are three components for SDNs which are a controller, Southbound, and Northbound APIs. The controller enables the centralization then the Southbound API helps transfer the information between the controller and network devices. The Northbound API transfers information between the controller and the application and policy engines(Cisco, 2023). This structure has some benefits such as faster troubleshooting, security improvement, and simplifying networks overall.

Open vSwitch(OvS) is a specific tool for SDNs. OvS consists of 6 steps, the first step is to build the switch which operates in every layer. The switch can decide how packets are sent based on their attributes(SDN part 2, 2019). Second, connect the switches using VXLAN which is needed when running two Virtual Machines(VM). VXLAN is a tech that is used to create an overlay between the endpoints in the network(SDN part 2, 2019). Next, we must add the hosts together using the switches and the VXLAN links. Then, create a controller for the SDN, OpenDaylight, ONOS, NOX, and Ryu are good options but the most popular is OpenDaylight. The fifth step is to set the controllers for the switches which is making sure the controller is aware of the switches and can be verified when using the OpenDaylight web interface(SDN part 2, 2019). Final step, is to test your code by setting up the overlay for IP addresses to the host. Overlay network is when we are using VXLAN links and OvS switches on top of our network we built(SDN part 2, 2019). OvS switches are important tools because it reduces the complexity and helps manage hardware while supporting other protocols and standards used in the network.

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