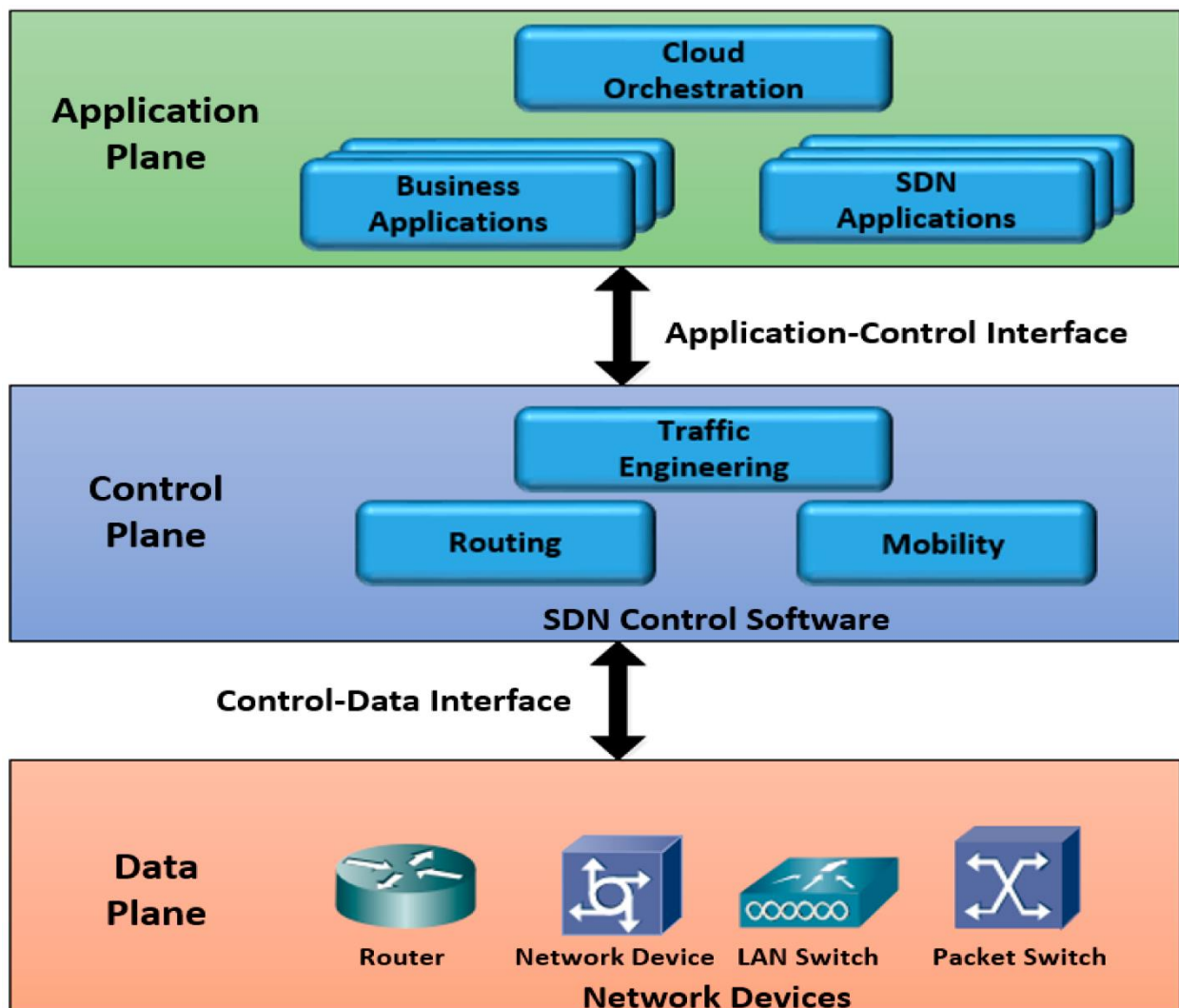


SDN:

- o The network architecture approach known as the Software-Defined Networking (SDN).
- o Uses software applications that enable network to be intelligently and centrally controlled.
- o Where you have a “software” that runs, programmed and controlled your entire network.
- o Through a software you be able to run, controlled and administrate an entire network.
- o The SDN gives network operators new ways to design, build, and operate their networks.
- o With Software-Defined Networking SDN, we use a central controller for the control plane.
- o The Software-Defined Networking controller could be physical hardware device or virtual.
- o Provision, manage, and program networks more rapidly with software-defined networking.
- o SDN provides choice in automation and programmability across data centers and WAN.
- o SDN is an architecture designed to make a network more flexible and easier to manage.
- o The SDN framework offers centralized control and view of the overall & whole network.
- o A good side effect of centralized provisioning is that SDN gives the user more scalability.
- o SDN controller provides centralized location for administrator to control entire security.
- o Deploying SDN allows an admin to optimize hardware usage and work more efficiently.



The Application Layer:

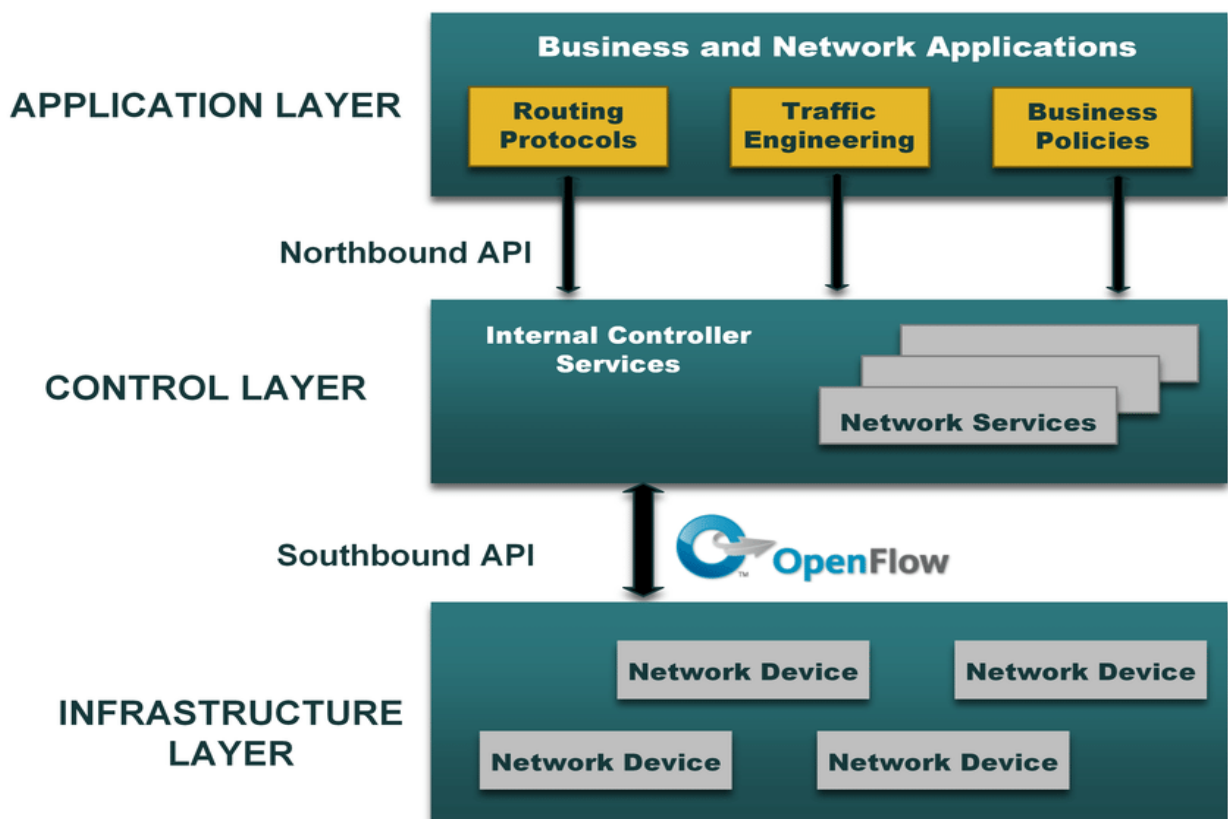
The application layer contains programs that explicitly and programmatically communicate their desired network behavior and network requirements to the SDN Controller.

The Control Layer:

The SDN Controller is the mid-layer that connects the application layer and infrastructure layer- Northbound interface is the connection between the controller and applications while the southbound interface is the connection between the controller and the infrastructure layer. This layer processes the instructions and requirements sent by the application layer (via southbound interface) and proceeds them to the networking components (via northbound interface). It also communicates back necessary information extracted from the networking devices to the application for it function optimally.

The Infrastructure Layer:

This consists of networking devices that control the forwarding and data processing capabilities for the network. The devices are responsible for handling packets based on the rules provided by a controller. It is the physical layer responsible for collecting the network statuses such as traffic statistics, network topology, network usage, etc. and send them to the control layer.



Southbound and Northbound API:

Therefore, for Application Programming Interface (API) communicating between the Controller and Physical Network is called Southbound API. Command Line Interface (CLI) and Simple Network Management Protocol (SNMP). On the other hand, API communicating the Service Layer and Controller is call the Northbound API. For the Northbound APIs, Cisco likes to use REST-based APIs.

