Network Programmability Fundamentals

S/w Development and Information technology operations (DevOps):

A collection of procedures where s/w developers work with IT operations professionals to automate n/w changes and s/w development.

SDN (s/w defined n/w):

A collection of tools that can be used for DevOps, allowing an entire n/w to be managed as one entity, rather than configuring individual devices.

Data plane: in charge of forwarding packets in the frames to appropriate interface(ingress, egress, MAC address)

Control plane: Tacking care of protocols. How CAM and routing protocols getting populated. Routing protocols, like RIP,OSPF,EIGRP

Management plane: In charge of how we administratively attach in to device. we can do telnet or ssh

Managing n/w as entity rather than maintaining individual devices.

Distributed Control Plane: A n/w architecture where control plane functions (e.g routing protocols) reside in the n/w devices.

SDN Controller: Take control plane from devices and consolidates them in to SDN controller. It can keep track of everything happening in the n/w. and push changes to individual devices.

This type of communication goes on b/w SDN controller and one of end devices is called API.

Application Programming Interface (API):

Allows an application on one device to communicate application with another device.

South Bound Interface (SBI):

An API used for Communication Between an SDN controller and a N/w device(e.g a router , a switch).

Centralized Control Plane:

An/w architecture where control plane functions reside in a centralized controller.

e.g : open day light is a protocol.(open flow)

North Bound Interface (NBI) :

An API used for communication b/w an SDN controller and an application.

Here we are using REST API also called Restful API.

REST API: (Representational state Transfer (REST) API

An API, commonly written as RESTful API, that uses HTTp msgs(e.g GET or POST) to send information from an application to SDN controller.

🡪Application could be Python program.

🡪Data formats that could be used by RESTful APIs.

JavaScript Object notation (JSON)

Extensible Markup Language (XML)

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