

SEG4135 - Lecture 2

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Announcements

- Project proposals, Due 26th
- 4 quizzes, each is similar to an assignment that has been given before it.

Networking

Software Defined Networking

- Software defined networking is networking architecture that separates the control plane from the data plane and centralizes the network controller.
- Usually you purchase a switch and all of the software and policies are bundled into that piece of hardware.

Conventional Networking

- The control plane and data plane are coupled. Control plane is part of the network plant and carries the signaling and routing message traffic while the data plane is the part of the network that carries the payload data traffic.
- The router will not care about the network topology or QoS policies.

SDN Architecture

- The control and data planes are decoupled and the network controller is centralized.

SDN - Key Elements

Centralized network controllers

- With decoupled control and data planes and centralized network controller, the network administrators can rapidly configure the network

Programmable Open APIs

- SDN architecture supports programmable open APIs for interface between the SDN application and control layers (Northbound interface). These open APIs that allow implementing various network services such as routing, QoS, Access control.. E.t.c.

Standard communication interface (OpenFlow)

- SDN architecture uses a standard communication interface between the control and interface. Openflow is defined by the Open Networking Foundation and is broadly accepted.

OpenFlow

OpenFlow is a broadly accepted SDn protocol for the Southbound interface. With OpenFlow, the forwarding plane of network devices can be directly accessed and manipulated.

Packet-Switched Networks

A packet-switched network transports data units called packets through a maze of switches

A datagram is a transfer unit. Has a header containing control information necessary for its transport through the network

A switch is a device that connects network nodes.

Peering

- Two networks exchange traffic between each others customers

Transit

- A network pays to another one to access the Internet

Customer

- A network pays for allowed internet access

Tier 1

- Can reach every other network on the internet

Tier 2

- Will require to pay IP transit fees

Tier 3

- Customers pay for access to internet