

P4 Compiler in SDN

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Slides available at: federicobruzzone.github.io/activities/presentations/p4-compiler-in-SDN.pdf

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Network Programmability

The ability of the software or the hardware to execute an externally defined processing algorithm²

²Hauser et al., “A Survey on Data Plane Programming with P4: Fundamentals, Advances, And Applied Research”.

Open Networking Foundation (ONF)

- Non-profit consortium founded in 2011
- Promotes networking through **Software Defined Networking (SDN)**
- Standardizes the **OpenFlow** protocol

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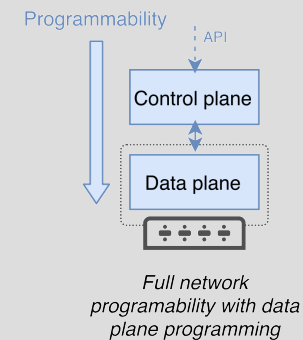
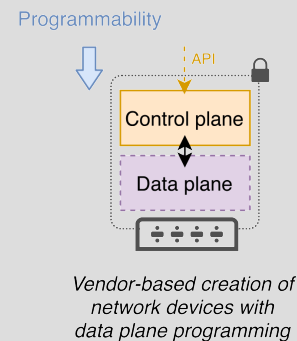
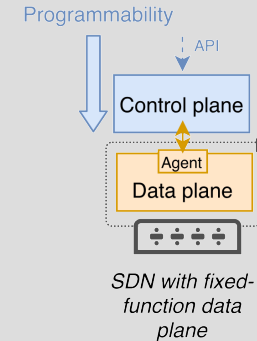
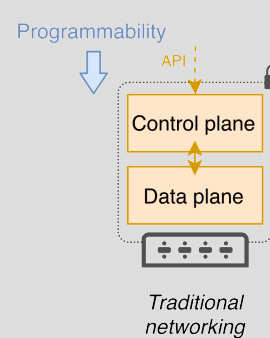
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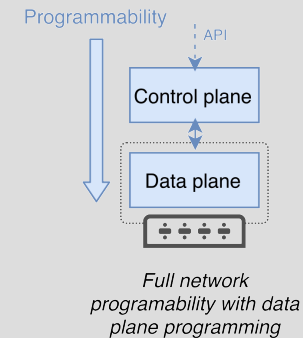
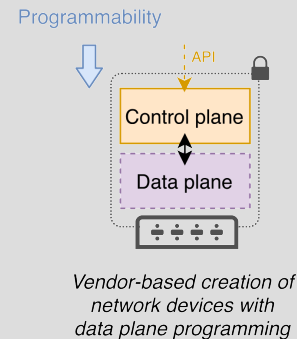
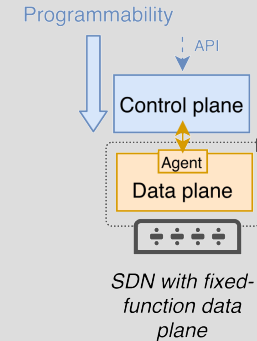
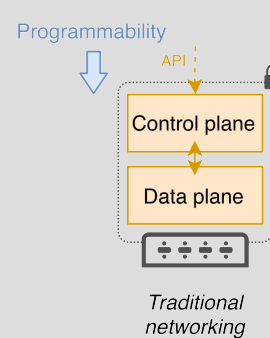
Software Defined Networking (SDN)

- Born to overcome the limitations of traditional network architectures
- Decouples the control plane from the data plane
- Centralizes the control of the network



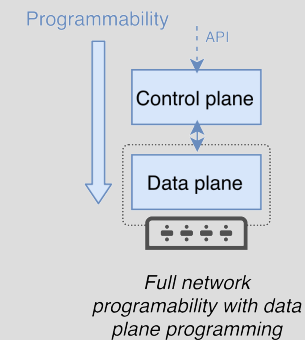
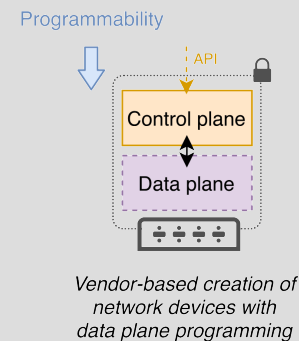
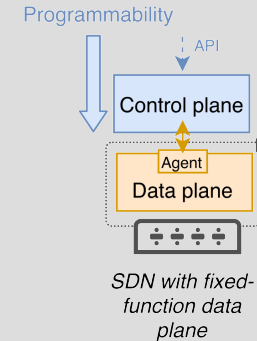
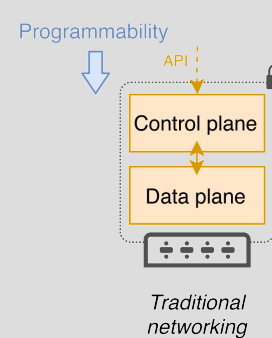
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OpenFlow Protocol

- Gives access to the **forwarding plane** (data plane) of a network device
- Mainly used by switches and controllers
- Layered on top of the **Transport Control Protocol (TCP)**
- De-facto standard for SDN

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OpenFlow Development

- First appeared in 2008 at³
- In 2012, Google deploys OpenFlow in its internal network with significant improvements (Urs Hölzle promotes it⁴)

³McKeown et al., “Openflow: Enabling Innovation in Campus Networks”.

⁴Inter-Datacenter WAN with centralized TE using SDN and OpenFlow

Focus!

This is very important.

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