

# Hands-on Workshop on Open vSwitch and Software-defined Networking

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# Overview of Virtual Private LAN Service (VPLS)

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# VPLS Architecture

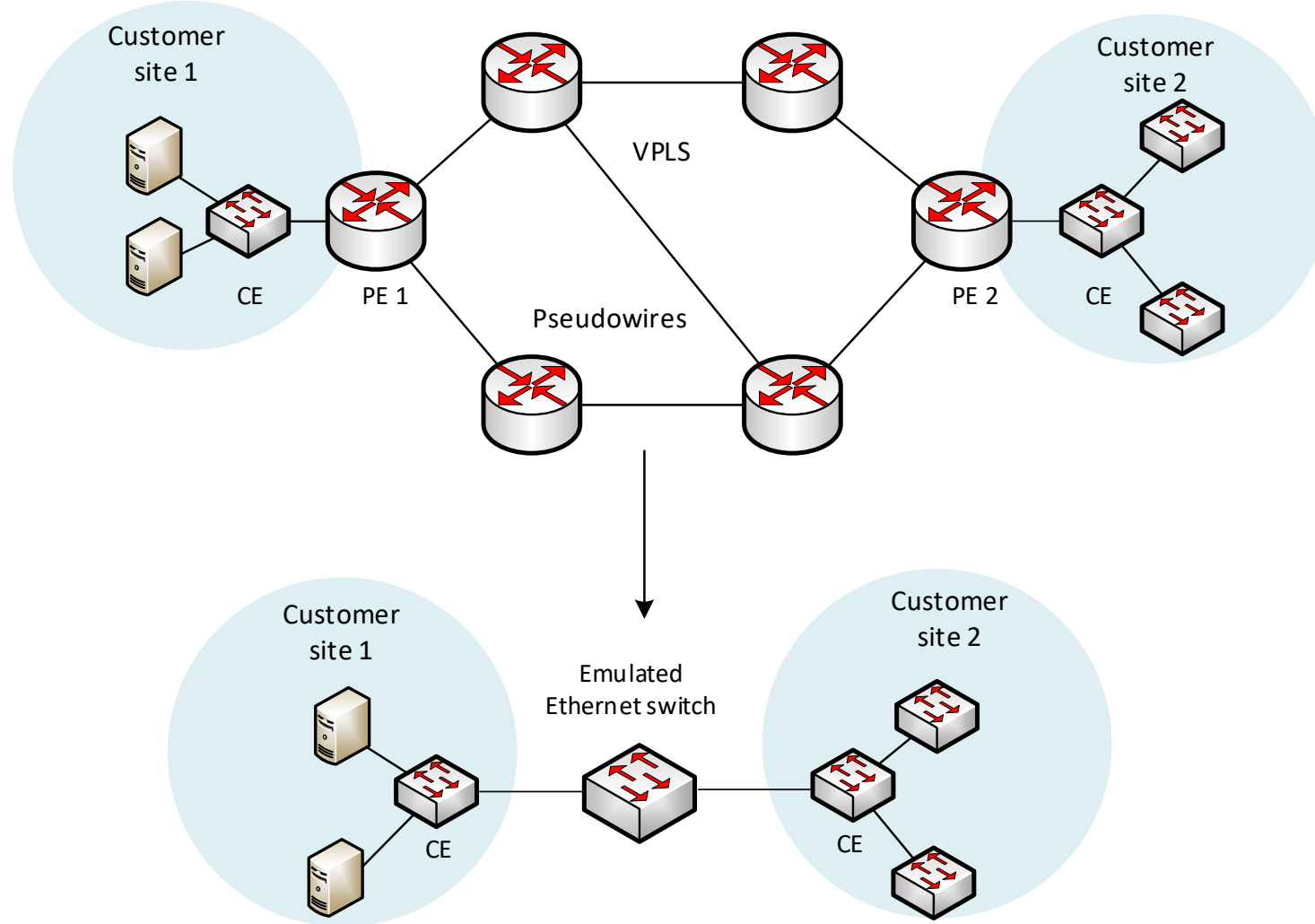
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- A VPLS emulates a Local Area Network (LAN) and provides Layer 2 functionalities by acting as an emulated Ethernet switch within a Wide Area Network (WAN)
- An Ethernet switch can:
  - Forward of Ethernet frames
  - Replicate and forward broadcast and multicast frames
  - Forward of unicast frames with an unknown destination MAC address
  - Prevent loops, etc.

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L. De Ghein, "MPLS Fundamentals", Cisco Press, CCIE No. 1897, 2016.

# VPLS Architecture



# VPLS in SDN

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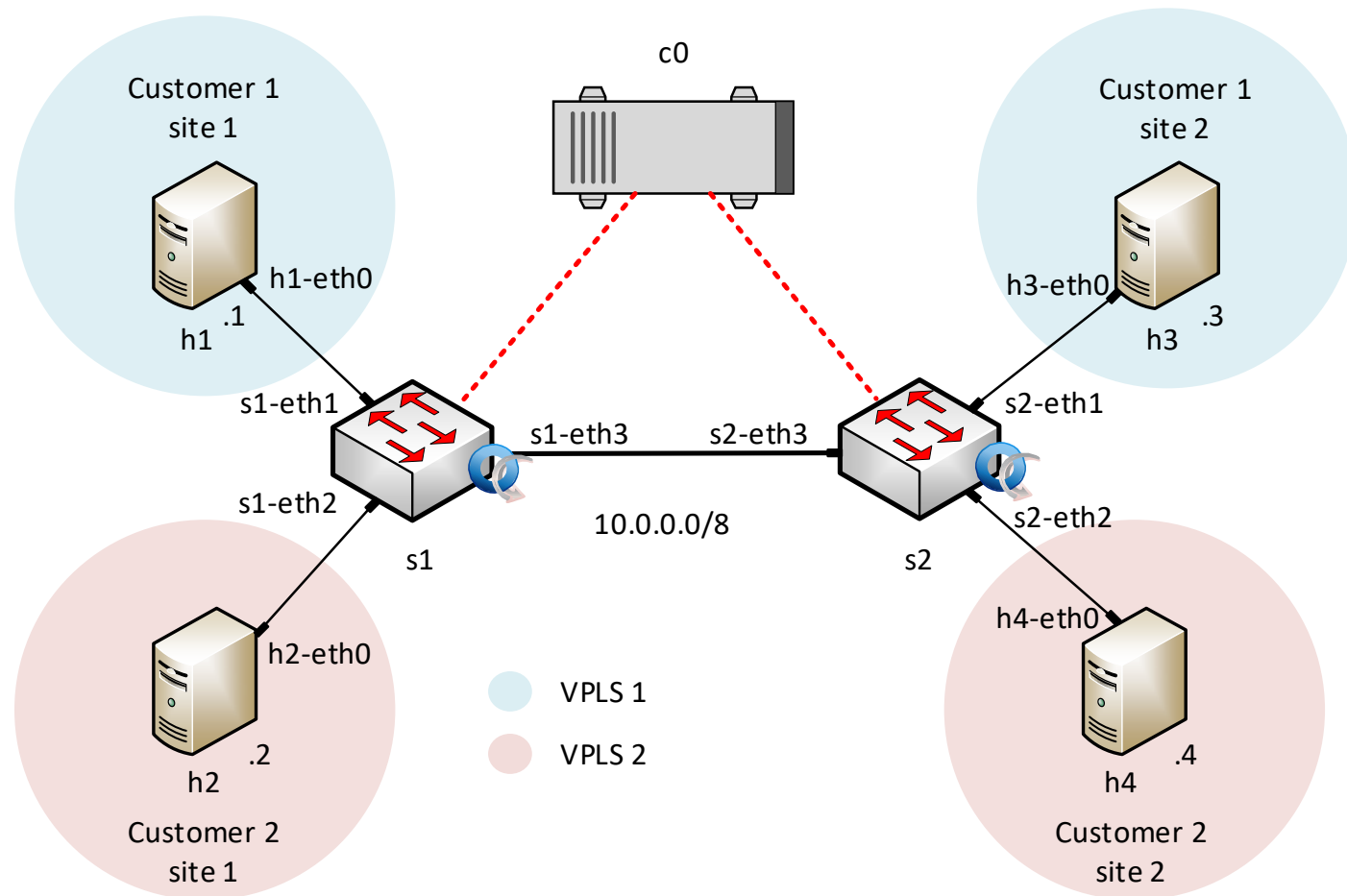
- VPLS is implemented as an ONOS application
- It provides multi-point broadcast Layer 2 circuits between multiple endpoints in an OpenFlow network
- To establish VPLS connectivity between two or more end-hosts, they must fulfill the following conditions:
  - At least one VPLS must be defined
  - At least the interfaces of two end-host must be configured
  - At least two interfaces must be associated with the same VPLS

# Lab 9: Configuring Virtual Private LAN Service (VPLS)

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# Lab 9: Configuring Virtual Private LAN Service (VPLS)

- Topology consists of four end-hosts, two OpenFlow switches, and a controller



# Lab 9: Configuring Virtual Private LAN Service (VPLS)

- Two remote customers have two remote sites

