

# Open Overlay Lab

SOFTWARE DEFINED NETWORKING  
VIA PROGRAMMABLE OVERLAYS

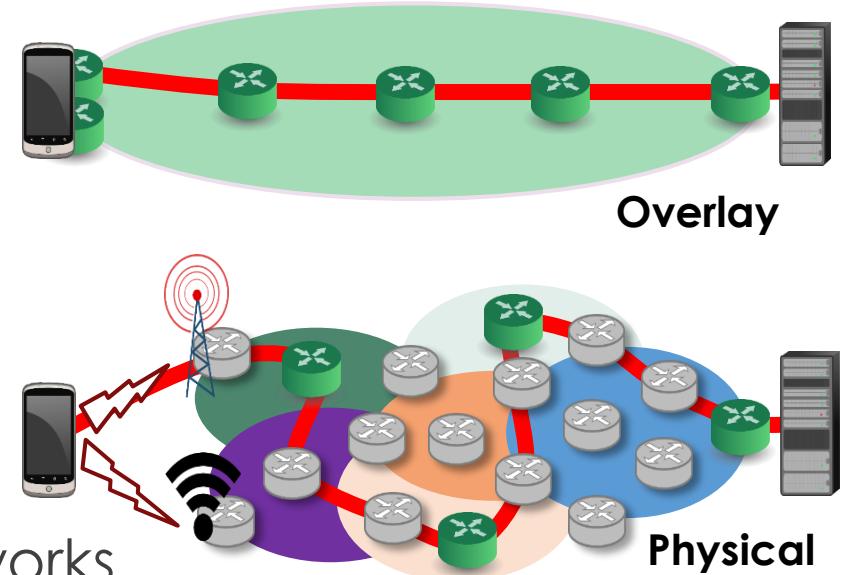
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<http://openoverlayrouter.org>

<http://lisp4.net>

# Why overlays?

- ▶ Enable SDN on legacy networks
- ▶ Incremental deployment
- ▶ Bypass underlay constraints
- ▶ Transparent DC-to-DC networks



# Experimental Overlay Network

- ▶ World-wide
    - ▶ ~20 countries
    - ▶ ~200 nodes
  - ▶ Maintained by UPC
  - ▶ Overlay identifiers allocated from public IP space
    - ▶ AS: AS3943
    - ▶ IPv4: 153.16.0.0/16
    - ▶ IPv6: 2610:00D0::/32
  - ▶ Overlay instantiated by 4 different implementations
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# OpenOverlayRouter

- ▶ Open-source overlay implementation
- ▶ Since 2011 – Active community
- ▶ Multiplatform (Linux, Android, OpenWrt)



- ▶ IETF standards (LISP, VxLAN)
- ▶ DPDK fast data-plane
- ▶ OpenDayLight interoperable
  - ▶ Part of ODL's LISPFlowMappings module



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# SDN via Overlays – Use Cases

- ▶ Remote interface management
  - ▶ Traffic offload (e.g. 3G to WiFi)
  - ▶ Bandwidth aggregation
- ▶ Dynamic traffic steering
  - ▶ Efficient CDNs
  - ▶ Flexible VPNs
- ▶ Path control over transit networks
  - ▶ Service Function Chaining
  - ▶ Network Function Virtualization