Workshop setup

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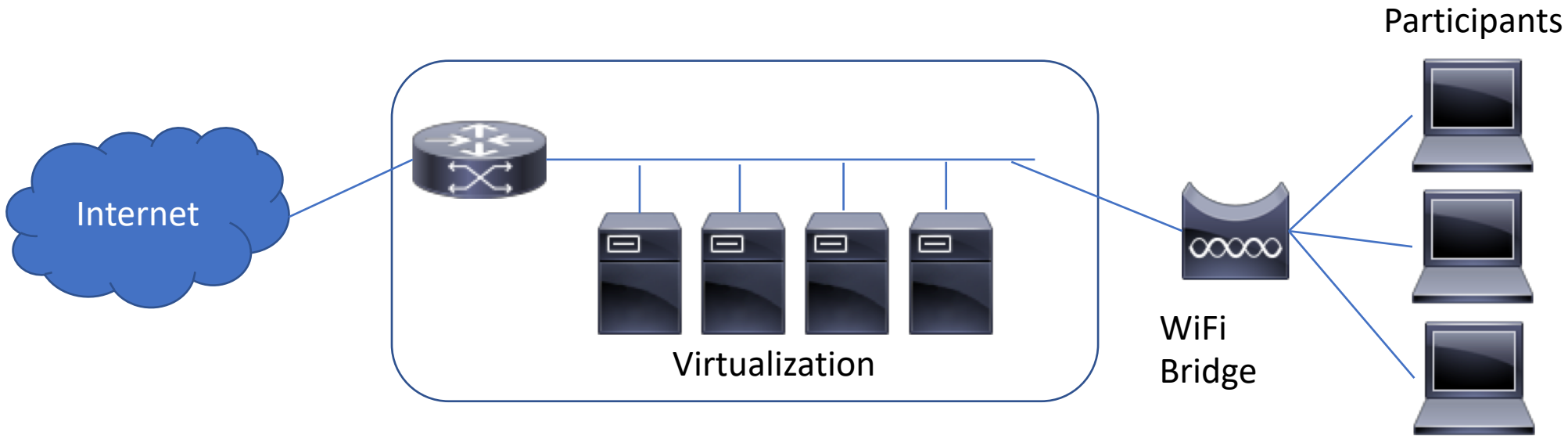
Testbed



- ‘Touch’ and ‘Feel’ help you to understand
  - also satisfies participants
  - Participants have different OS and sometimes restricted permissions
- Bringing in laboratory environment
  - To minimize the dependency on participants’ environment
  - To simplify laboratory materials

Testbed

- The testbed is a completely isolated network from the Internet
  - The testbed network provides one dual stack segment
    - 10.0.0.0/16 and fd00:2497:1::/64
  - The testbed has its own core servers
    - Root DNS server
    - TLD server
      - Serves the “workshop.” domain
    - DHCP/DHCPv6 server for network information distribution for participants
      - DHCP: Assigns IPv4 address to user terminals (Note PCs), and provide IPv4 DNS address
      - DHCPv6: Provides IPv6 DNS address
    - Router advertisement server
      - Provide IPv6 prefix information and IPv6 DNS address (RDNSS)
    - Squid HTTP proxy for getting software from inside testbed

Wireless Access Point (WiFi AP)

- Requires (or Preferred) Spec
  - 2.4GHz and 5GHz, WPA2-PSK (AES)
  - Support ~40 clients (associations)
  - Simple bridging facility, and small and light

- Yamaha WLX202
  - $340USD, 430g
- Ubiquiti UAP-AC-PRO
  - $140USD, 350g

Virtualization Host Server

- Modern NUC is a good choice
  - NUC7i7DNHE
    - 8th Generation Intel Core i7-8650U Processor

- Configuration for this workshop
  - 32GB memory
  - 1TB M.2 SSD
  - USB Ethernet dongle (to connect the WiFi bridge)
  - Around 2000USD

Operating System

- Host Operating System
  - Ubuntu 18.04 LTS
- Virtualization mechanism
  - Linux container (LXD)
    - https://linuxcontainers.org/
    - Lightweight, but can virtualize Linux only
    - Can run many containers (100~200 is possible, depending on host resource)
  - QEMU/KVM
    - Full x86 virtualization mechanism
    - Can run any operating system that runs on x86 boxes
    - Consumes larger resources than containers

Router Virtualizations

- Dynamips
  - Simulates smaller Cisco routers
- Cisco XRv
  - IOS-XR, requires more memory
- Juniper vMX
  - JUNOS, requires more memory