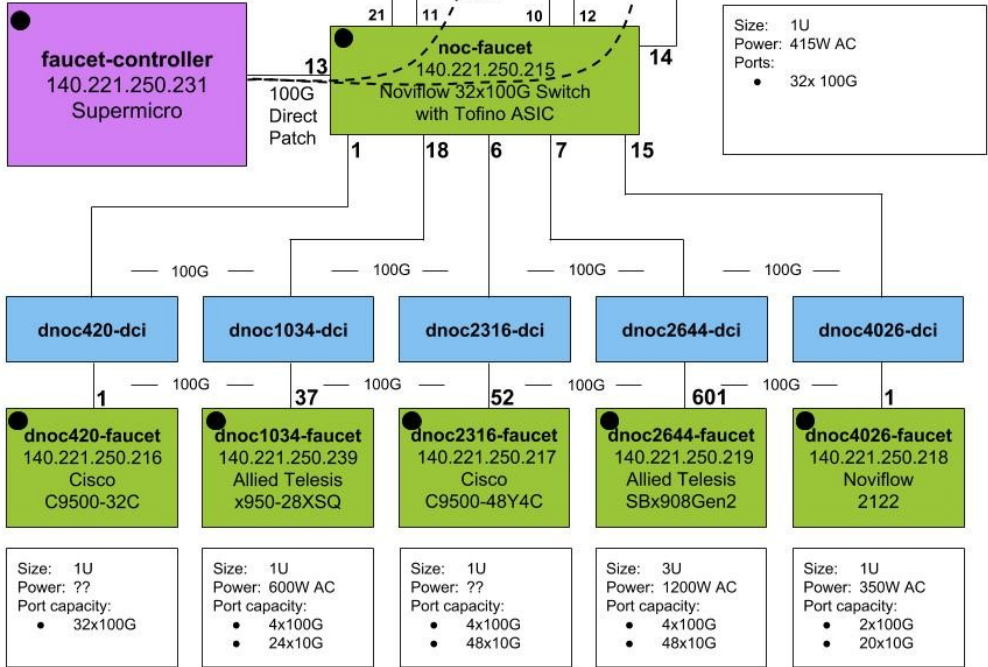


FAUCET @ SC18

Multivendor SDN switching and routing at 100G

<https://faucet.nz>

Each device with a black dot ● in the top left corner requires a 1G management network connection as it is part of the FAUCET fabric



What does SDN switching and routing mean?

- Controller (not switch) makes all L2/L3 forwarding decisions
 - L2 and L3 learning, reachability (ARP, ND), VLAN processing, IPv4/IPv6 routing
 - LACP
 - LLDP
 - BGP
 - ...all run on the controller. No hybrid mode!
- Controller speaks OF1.3 to everything
 - No TTPs
 - No vendor-specific OpenFlow code
 - Some optimizations for some implementations (e.g. barriers for switches with parallel flowmod processing)

What is FAUCET?

- FAUCET is an open source SDN/OF controller by the FAUCET Foundation
- Scales down to Raspberry Pi and up to 100G
- Core code (<http://github.com/faucetsdn/faucet>) is approx 13kLOC
- > 90% unit test coverage, hardware and software integration test suite
- 1-2 week release cycle
- Centralized config management: Ansible, Prometheus, Grafana

Multivendor SDN

- Controlling OF 1.3 switches from 3 vendors (Allied-Telesis, Cisco, NoviFlow; supports HPe and others also)
- ... 1 switch (NoviFlow) is Tofino/P4 based with an OF1.3 API (acts as router)

Better living through testing

- FAUCET has a hardware test suite
 - Many bugs are caught pre-release/pre-commit
 - Easy to integrate new platform (example: P4 switch)
- Control protocols are all in the controller
 - Once implemented instantly available on all platforms
 - Fix a bug in the controller and you fix it everywhere

Some FAUCET users

- WAND: University of Waikato (NZ)
- REANNZ (NZ)
- ESnet (USA)
- Cyber Reboot (USA)
- Google (USA/NZ :)
- TouSIX (France)

Thank you

- SCinet
- Academia: SDN
- OVS, Mininet and Ryu
- Our SC18 vendors: Allied Telesis, Cisco, NoviFlow
- ESnet: Kate Mace and Nick Buraglio
- Cyber Reboot
- Brad Cowie

Dashboard

<http://faucet-grafana.sc18.org>