Agenda

CNaaS-NMS Software:
- Goals
- Design principles & decisions
- Components/Architecture
- Change workflow
- ZTP (zero-touch provisioning)
- Demo
- Development status
Goals of CNaaS NMS

Zero-touch provisioning

Automation of changes (VLAN/VXLAN, IP routing, port-config...)

Automated firmware upgrades
Design principles

Multi-vendor
No per-device licensing
Open-source
Open API:s and plugins
Design decisions

Nornir/NAPALM vs Ansible

Config replace vs config merge

Infrastructure-as-code vs WebUI
Components / Architecture

- Support systems
- Automation engine
- User interfaces
Change workflow

1. Update settings or templates
2. Commit and push to git
3. Ask API to pull changes from git *(API-call)*
4. Dry run on devices *(API-call)*
5. Verify diff
6. Live run *(API-call)*
Change workflow UI mockup

UI for commit workflow only

All configuration changes are made via git
Network architecture

- Access switches connected to two distribution switches (LACP)
- Distribution switches deployed in pairs using EVPN ESI
- Anycast gateway in dist switch
- Distribution and core switches form VXLAN/EVPN fabric (Clos)
ZTP workflow

User Input

Device State

CNaaS components/containers

DHCP Server

HTTP Server Static template

API init_device

INIT Moving to separate management VLAN, apply base config

MANAGED Device is now managed by CNaaS-NMS

CNaaS-NMS Step1

CNaaS-NMS Step2
Demo Video

https://play.sunet.se/media/t/0_dj4ic054
Status

ZTP: working for access
Change: working for access, limited on dist/core
Firmware: initial development started
NAC/WebUI/etc: planning/initial development started

No customers in production
500+ commits on github
Tested with 1000 mock devices (fake-switch)
Thanks for listening! Questions?

SUNET wiki:
https://wiki.sunet.se/display/CNaaS

Source code available at GitHub:
https://github.com/SUNET/cnaas-nms

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#automation @ NREN slack