Managing network devices like servers

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How are servers managed?

- (Typically) many more servers than network devices
- SRE teams are generally large
- Automation methodologies for many years
- Variety of tools, including:
  - Salt
  - Ansible
  - Chef
  - Puppet
- Many features already implemented
- Plenty of success stories
Network platforms that can be managed like servers

- White box devices
  - Arista EOS
  - Cumulus
  - etc.

- Containerised solutions
  - Cisco IOS-XR (64 bit only)
  - Cisco NX-OS
  - etc.
Network platforms that *can’t* be managed like servers

- Junos
- Cisco IOS-XR, 32 bit
- Cisco IOS-XE, IOS
- Many many others...
Automation framework example: Salt

- Very scalable
  - e.g., LinkedIn 70,000 servers
- Concurrency
- Event-driven
- Easily configurable & customizable
- Native caching and drivers for useful tools
Salt Architectures (1): typical hub and spoke

Salt Architectures (2): multi master
Salt Architectures (3): masterless minions
Arista EOS Salt minion: Installation (1)

Copy the SWIX extension to the flash

edge01.bjm01#copy https://salt-eos.netops.life/salt-eos-latest.swix flash:
edge01.bjm01#copy https://salt-eos.netops.life/startup.sh flash:

Install the SWIX extension

edge01.bjm01#copy flash:salt-eos-latest.swix extension:
edge01.bjm01#extension salt-eos-latest.swix force
Arista EOS Salt minion: Installation (2)

Verify the installation

```
edge01.bjm01# show extensions | include salt-eos
  salt-eos-2017-7-1.swix  1.0.11/1.fc25  A, F  27
```

Enable the local unix socket

```
edge01.bjm01(config)# management api http-commands
  protocol unix-socket
  no shutdown
```
Arista EOS Salt minion: Installation (3)

Execute the Salt Minion startup script

```
edge01.bjm01#bash
  sudo /mnt/flash/startup.sh
```

Complete installation notes at:
https://docs.saltstack.com/en/latest/topics/installation/eos.html
Arista EOS Salt minion: Installation (3)

**Execute the Salt Minion startup script**

```
edge01.bjm01#bash
#sudo /mnt/flash/startup.sh
```

Complete installation notes at:

https://docs.saltstack.com/en/latest/topics/installation/eos.html
Cumulus Linux Salt minion: Installation

1. **Download the Salt bootstrap script**
   
   ```
   wget -O bootstrap-salt.sh https://bootstrap.saltstack.com
   ```

2. **Check the script!!!**

3. **Install the Salt minion**
   
   ```
   sudo sh bootstrap-salt.sh
   ```
Salt CLI execution: server

$ sudo salt 'some-server' disk.usage
some-server:
  ----------
  /:
    ----------
    1K-blocks:
    65869280
    available:
    60808360
    capacity:
    8%
    filesystem:
    rootfs
    used:
    5060920
  /dev:
    ----------
    1K-blocks:
    65902000
Salt CLI execution: Arista EOS minion*

$ sudo salt 'edge01.bjm01' disk.usage

edge01.bjm01:

---------
/

---------

1K-blocks: 4870812
available: 4812376
capacity: 2%
filesystem: none
used: 58436

/dev:

---------

1K-blocks: 8192

* This is real output collected from a device carrying Internet traffic
Need help/advice?

Join https://networktocode.herokuapp.com/
rooms: #saltstack #napalm

By email:

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Questions

By email:
- Mircea Ulinic: mircea@cloudflare.com
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How can you contribute?

- NAPALM Automation: https://github.com/napalm-automation
- SaltStack https://github.com/saltstack/salt
References

Arista Software download
Authentication system
Beacons
Engines
Event System
Grains
Jinja
load_template documentation
Master config file, default
Master config file, example
Master configuration options
Master systemd file
Mine
NAPALM
NAPALM BGP execution module functions
NAPALM Grains
NAPALM Installation
NAPALM network execution module functions
NAPALM NTP execution module functions
NAPALM Proxy
NAPALM route execution module functions
NAPALM SNMP execution module functions
NAPALM users execution module functions
Nested outputter
NETAPI Modules
Netconfig state
Node Groups
NTP state
Orchestration
Output modules
Pillar
Pillar modules
Proxy config file, default
Proxy config file, example
Proxy Minion
Proxy systemd file
Reactor
REST CherryPy