

# SURF NLT1 datacenter infrastructure

1. Networking tech we use
2. Topology
3. Configuration management and integration
4. 400G pilot

# Networking tech in use

1. NOS: Cumulus Linux running BGP-EVPN overlay
2. NVIDIA/Mellanox Spectrum 1 (100G platform) series SN2100/SN2700
3. Ansible for deployment

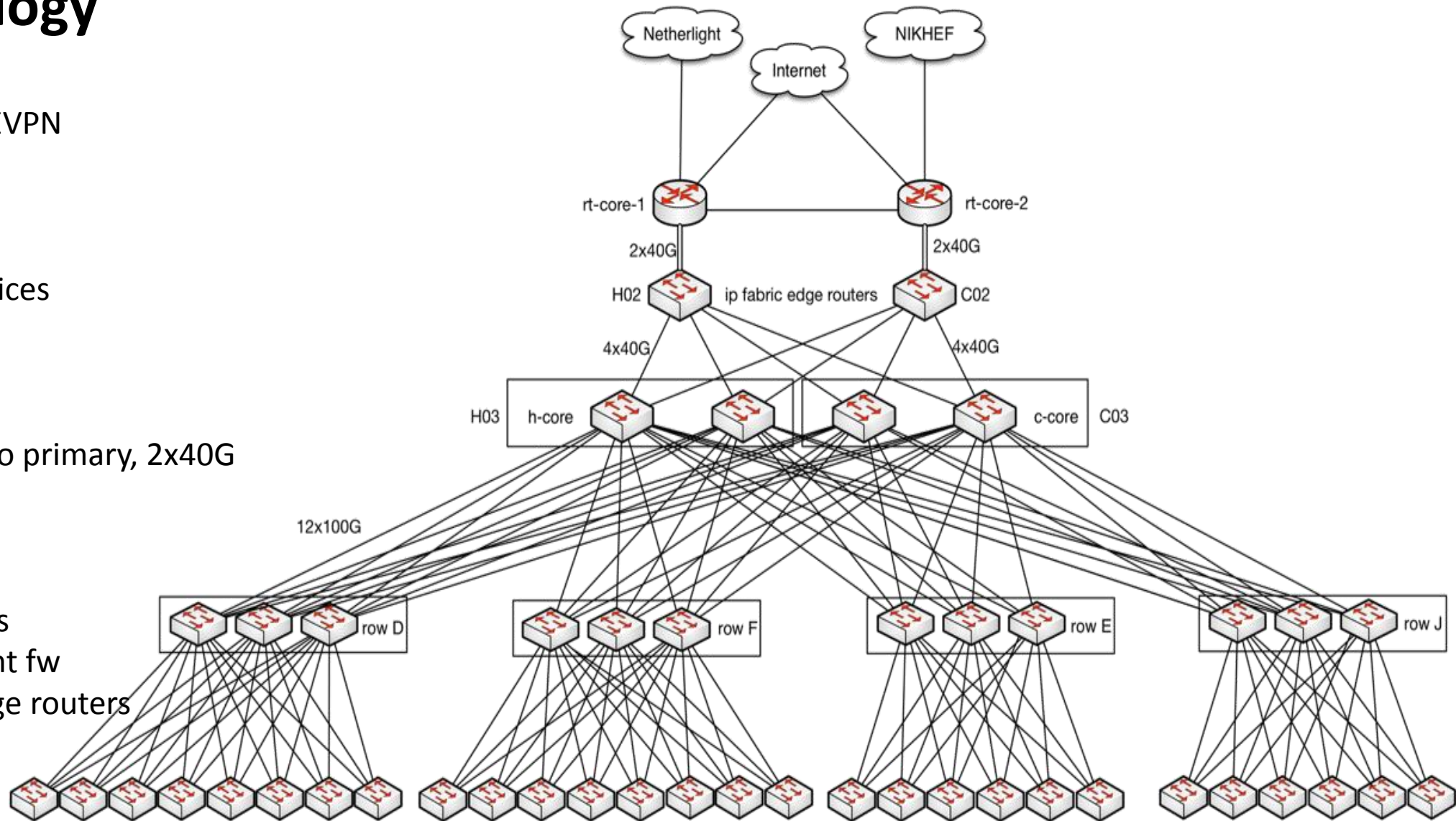
# EVPN topology

Controlplane: BGP-EVPN

Datalane: VXLAN

Facts:

- 101 network devices
- IPv4 + IPv6
- 6 rows
- 77 vlans
- 2 x 100G uplink to primary, 2x40G to secondary
- 67 gateways
- 900 ACL rules
- 7916 mAC entries
- Fortigate Segment fw connected to edge routers



# Configuration management

## Tools we use

- CMT
  - switch loopback address
  - switch mgmt interface ip
  - switch mlag ip
  - host vlan profile
  - Source for DHCP/DNS config
- Patchmanager
  - How everything is connected
- Gitlab
  - Network config state
  - ASN's
  - Vlan profiles
- Ansible
  - Push config to devices
- Python
  - Pull data from various sources to generate config

# CMT overview

## Site administration

<b>Group: Administration &amp; Applications</b>	
<b>Applications</b>	
Cluster	
Addresses	+
Clusters	+
Companies	+
Contacts	+
Countries	+
Equipment	+
Interfaces	+
Models	+
Networks	+
Racks	+
Roles	+
Rooms	+
Telephonenumber	+
Types of interfaces	+
Warranty contracts	+
Warranty types	+
Tagging	
Tagged items	+
Tags	+
<b>Administration</b>	
<b>Authentication and Authorization</b>	
Groups	+
Users	+
Sites	
Sites	+

# CMT equipment

CMT 2.5.2 Sander [View site](#)

[Home](#) > [Cluster](#) > [Equipment](#) > rt-fabric-z3a-f02-1 ↕ ↗

## Change equipment History

### Host info

Cluster: NIS  Label: rt-fabric-z3a-f02-1

### Configuration

State: configured  Role: 

hypervisor  
icinga  
inactive  
InfiniBand switch  
infra-nw-cloud  
infra-nw-cloud-routers  
infra-nw-daphne  
**infra-nw-fabric**  
infra-nw-fabric-vtep  
infra-nw-gic  
infra-nw-ppp4

  
Hold down "Control", or "Command" on a Mac, to select more than one.

### Machine specifications

Specifications: SN2100 (Mellanox)  +  
Warranty: \*\*\*\*\*  +  
Warranty tag:   
Service tag  
Serial number: MT1846K05892

### Physical location

Rack: rack Z3A-F02  + First slot:

### Involved parties

Seller: \*\*\*\*\*  +  
Owner: infra-tg  +

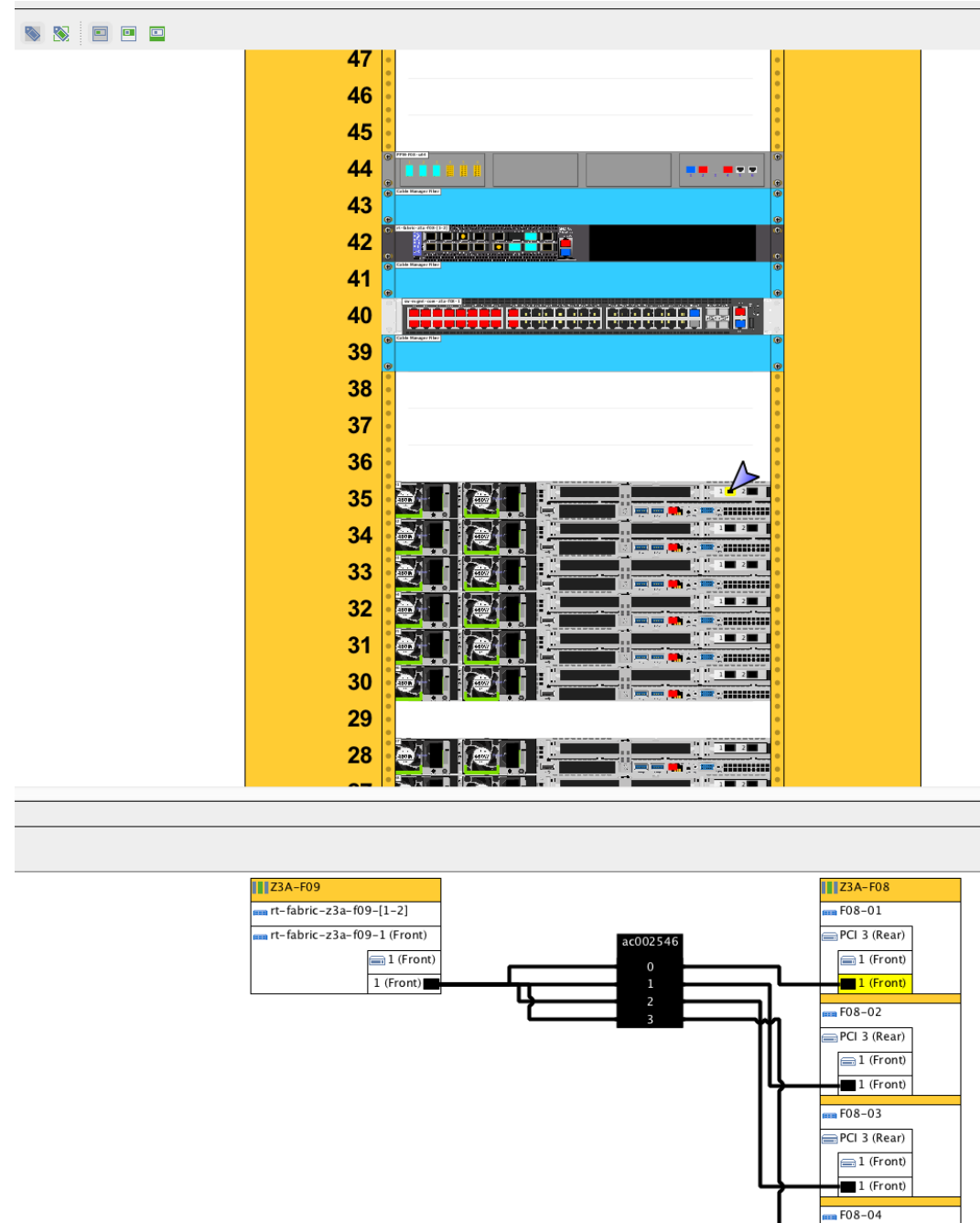
### Additional fields

Note:

### Interfaces

Tags	Network	Type	Label	Aliases	Hardware address	Ip	
<input type="text"/>	infra-nw-fabric-1o <input type="button" value="v"/> +	Gigabit <input type="button" value="v"/> +	rt-fabric-z3a-f02-1	<input type="text"/>	<input type="text"/>	172.16.208.2	✕
<input type="text"/>	infra-nw-fabric-m1ag <input type="button" value="v"/> +	Gigabit <input type="button" value="v"/> +	rt-fabric-z3a-f02-1	<input type="text"/>	<input type="text"/>	172.16.210.2	✕
<input type="text"/>	infra-nw-mgmt <input type="button" value="v"/> +	Gigabit <input type="button" value="v"/> +	rt-fabric-z3a-f02-1	<input type="text"/>	98:03:9b:68:03:ce	192.168.30.166	✕

# Patchmanager



# GIT

## INTERFACE PROFILES REFERENCED IN CMT

interface\_profiles.yml 1.96 KB

```
1 ---
2
3 # The interface profile names must be unique with characters matching
4 # the following regular expression: [a-z][a-z0-9_]+
5 # To make the interface profile names unique and to derive ownership,
6 # each interface profile name should contain a prefix indicating the
7 # name of the cluster or admin group (e.g. 'ods', 'daphne' ...)
8 # To ease the administration it is advised to group the interface profiles
9 # with the same prefix together with a comment on top.
10
11 interface_profiles:
12 #
13 # Apollo Production Cluster
14 #
15 apollo_cluster_nodes:
16   int_mode: trunk
17   vids: 500
18   pvid: 600
19 #
20 # DAPHNE Production-01
21 #
22 daphne_01_cell0_util_nodes:
23   int_mode: trunk
24   vids: "38 64-73 146-148 173 324 715"
25   pvid: 141
26 daphne_01_cell0_control_nodes:
27   int_mode: trunk
28   vids: "38 146 173"
29   pvid: 141
30 daphne_01_cell0_service_nodes:
31   int_mode: trunk
32   vids: "38 146"
33   pvid: 141
34 daphne_01_cell0_network_nodes:
35   int_mode: trunk
36   vids: "14 38 64-73 146-148 173 324 715"
37   pvid: 141
38 daphne_01_cell1_nodes:
39   int_mode: trunk
40   vids: "14 64-73 147-151 173 324 715"
41   pvid: 150
42 #
43 # DAPHNE Production-02
44 #
45 daphne_02_cell1_util_nodes:
46   int_mode: trunk
47   vids: "74 174 702 704-708"
48   pvid: 703
49 daphne_02_cell1_control_nodes:
50   int_mode: trunk
51   vids: "74 174 702 704"
52   pvid: 703
53 daphne_02_cell1_network_nodes:
54   int_mode: trunk
55   vids: "174 702 704-708"
56   pvid: 703
57 daphne_02_cell1_nodes:
58   int_mode: trunk
59   vids: "174 702 704-708"
60   pvid: 703
```

## HOST CONFIG

```
170
171 - name: DAPHNE_f15_bond
172   admin_state: enabled
173   alias: "DAPHNE production-01 nodes F15 ACCESS"
174   interface_profile: daphne_01_cell1_nodes
175   interfaces:
176     - name: bond600
177       alias: "Apollo node f15-01 ACCESS"
178       bond_slaves: swp6s0
179       interface_profile: apollo_cluster_nodes
180     - name: bond601
181       alias: "Apollo node f15-02 ACCESS"
182       bond_slaves: swp6s1
183       interface_profile: apollo_cluster_nodes
184     - name: bond602
185       bond_slaves: swp6s2
186     - name: bond603
187       bond_slaves: swp6s3
188     - name: bond700
189       bond_slaves: swp7s0
190     - name: bond701
191       bond_slaves: swp7s1
192     - name: bond702
193       bond_slaves: swp7s2
194     - name: bond703
195       bond_slaves: swp7s3
196     - name: bond800
```



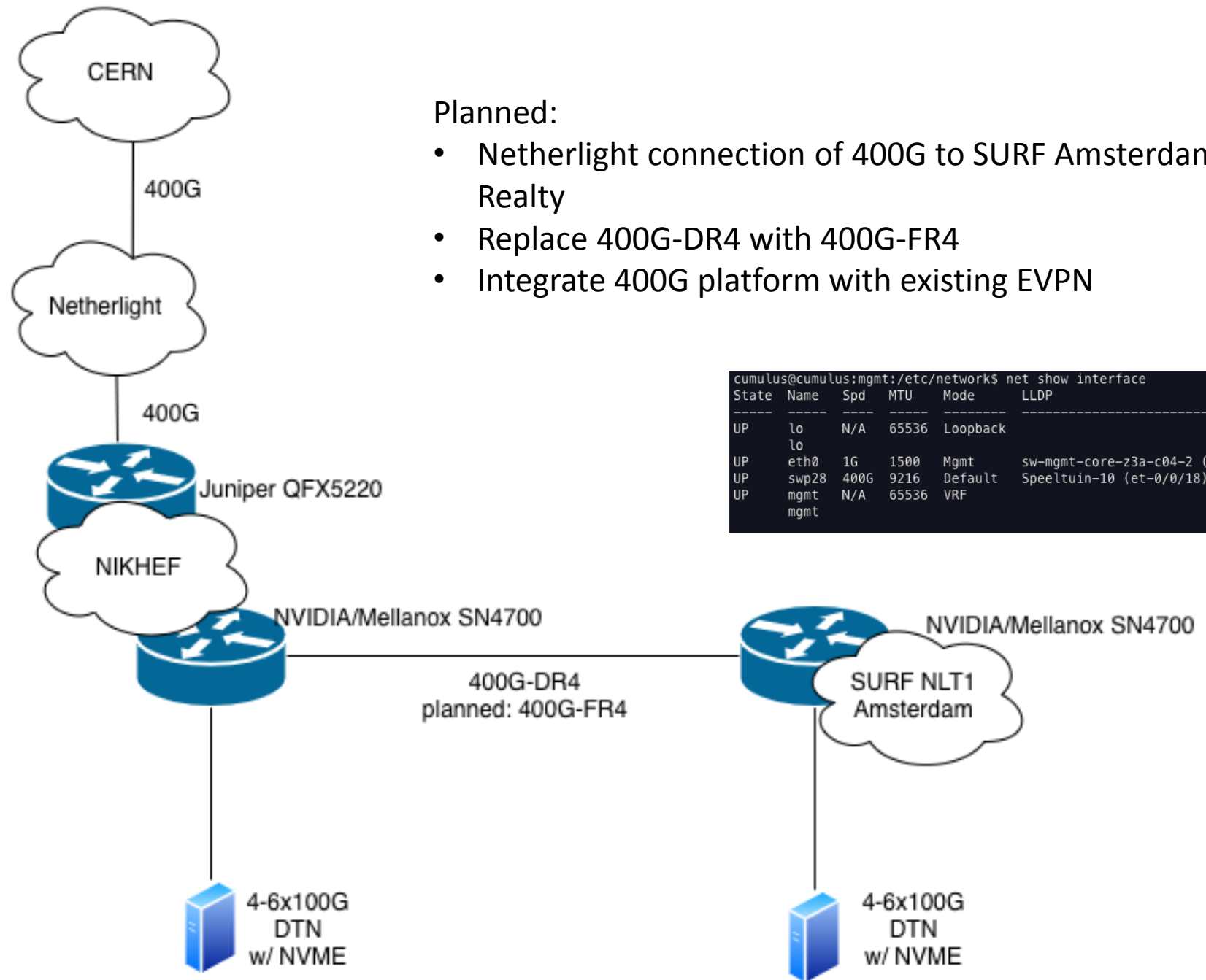
# Configuration/onboarding workflow

1. Onboard new nodes in patchmanager, tag with asset tag (DCO)
2. Onboard new nodes in CMT, tag with interface profile (sysadmin)
3. Generate TOR config with python (network admin)
4. Commit to Git repo (network admin)
5. Push config with ansible (network admin)

# 400G testing

Mellanox SN4700

- Spectrum 3 ASIC
- 32 x 400G
- Runs Cumulus Linux



# The End