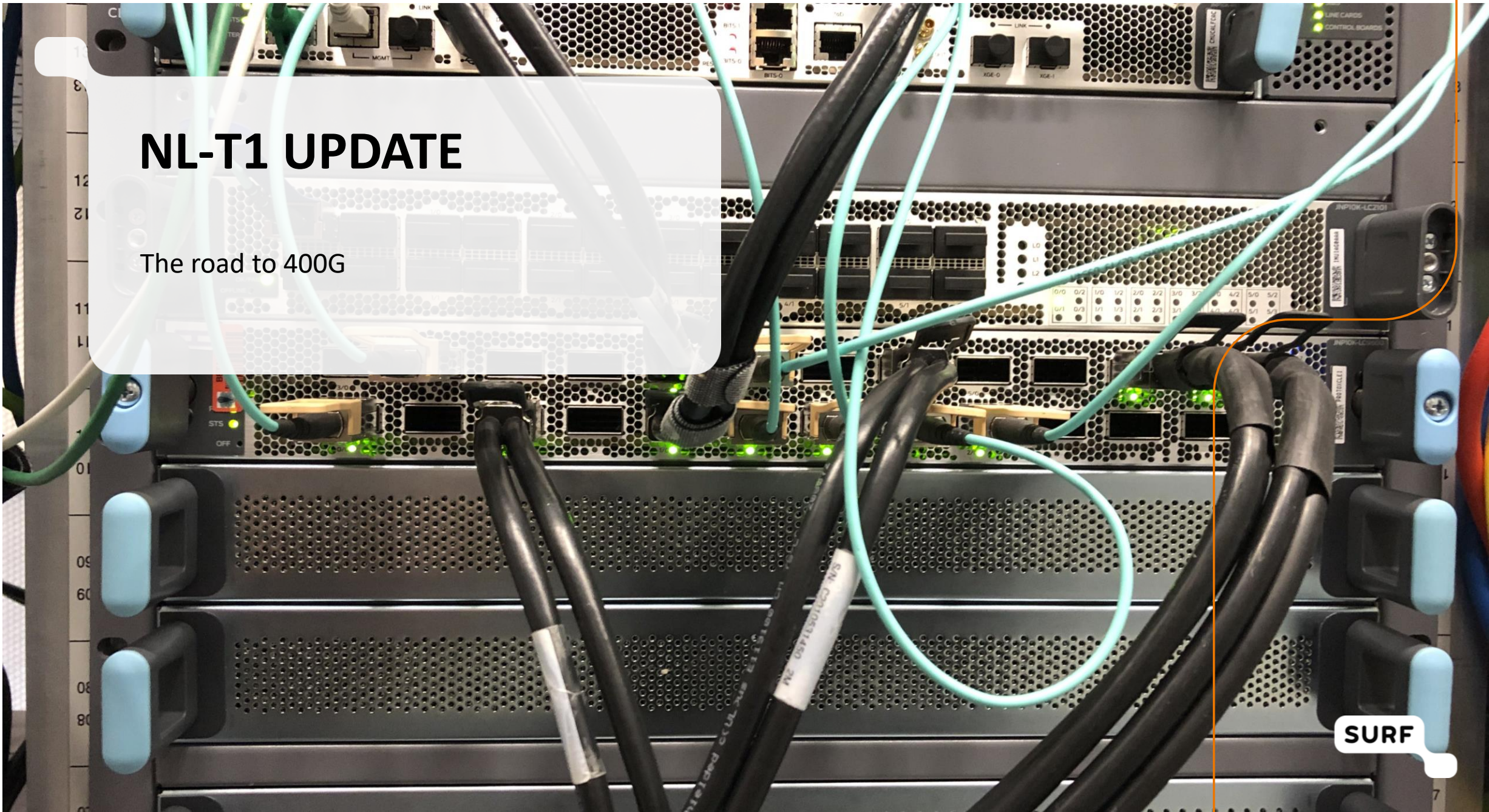


NL-T1 UPDATE

The road to 400G

SURF

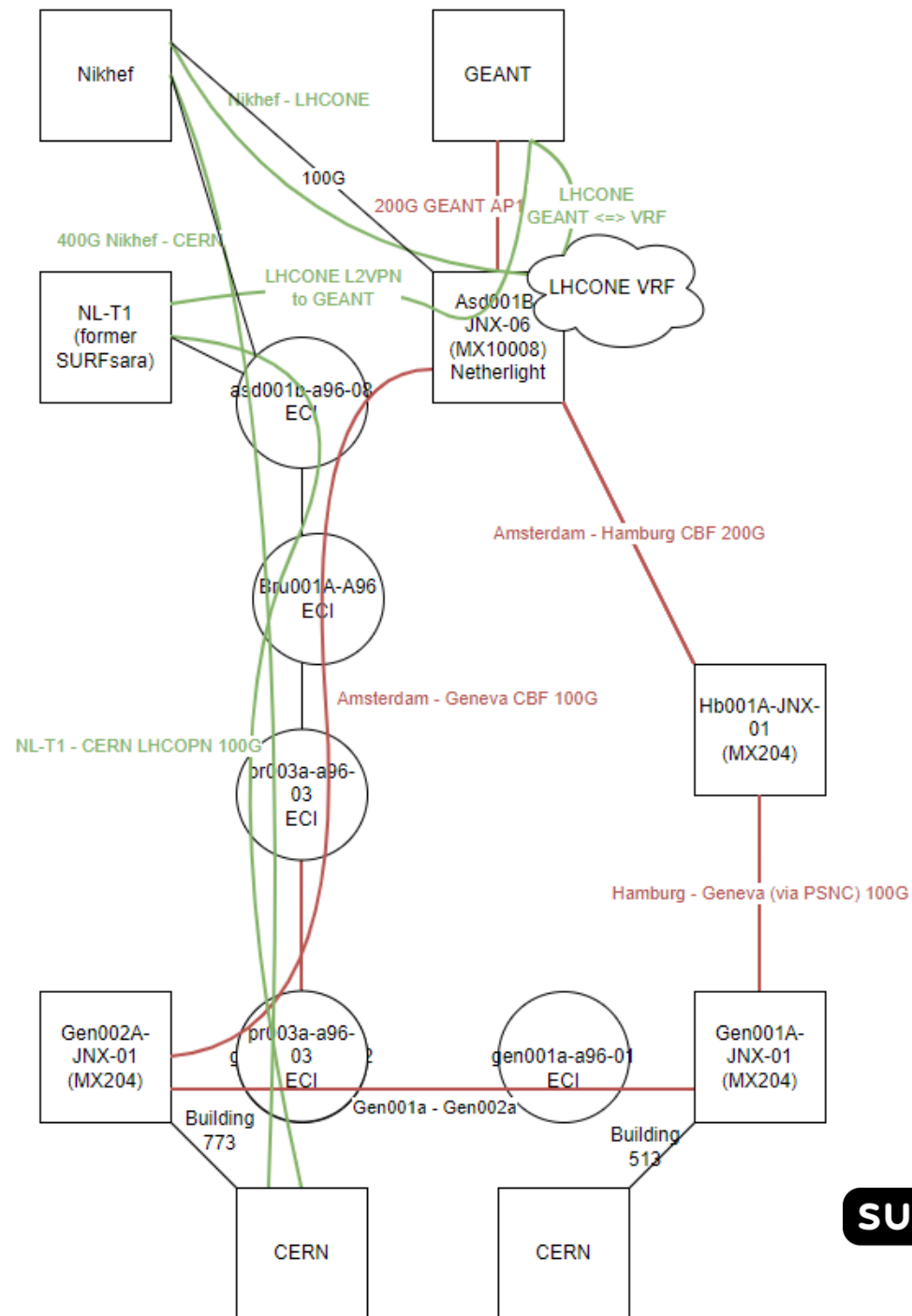


SURF

- Merger of SURFnet, SURFsara, SURFmarket and SURF on December 31st 2019
- SURFnet → NREN of the Netherlands (AS1103)
- SURFsara → National Super Computing Centre (AS1162)
- NL-T1
 - Former SURFsara (AS1162)
 - Nikhef (AS1104)
- I'm Technical Product Manager Netherlight / Network expert International
 - Former SURFnet (AS11103) (and before 2011 (SURF)sara) / Networking & Campus department
- Former SURFsara NL-T1 network (AS1162) folks now at Internal Services department

Current situation

- (former SURFsara) SURF (AS1162)
 - LHCOPN 100G transponder wave to CERN
 - LHCONE 100G L2VPN to GEANT LHCONE
- Nikhef (AS1104)
 - Nikhef already on 400G connected to LHCOPN (via transponder wave)!!!
 - LHCONE 100G to LHCONE VRF (with upstream form GEANT LHCONE)
- In short LHCOPN waves have no protection
 - Theoretically could but out of 100G ports on MX204's @CERN



AS1103 (SURFnet) in LHCOPN/LHCONE

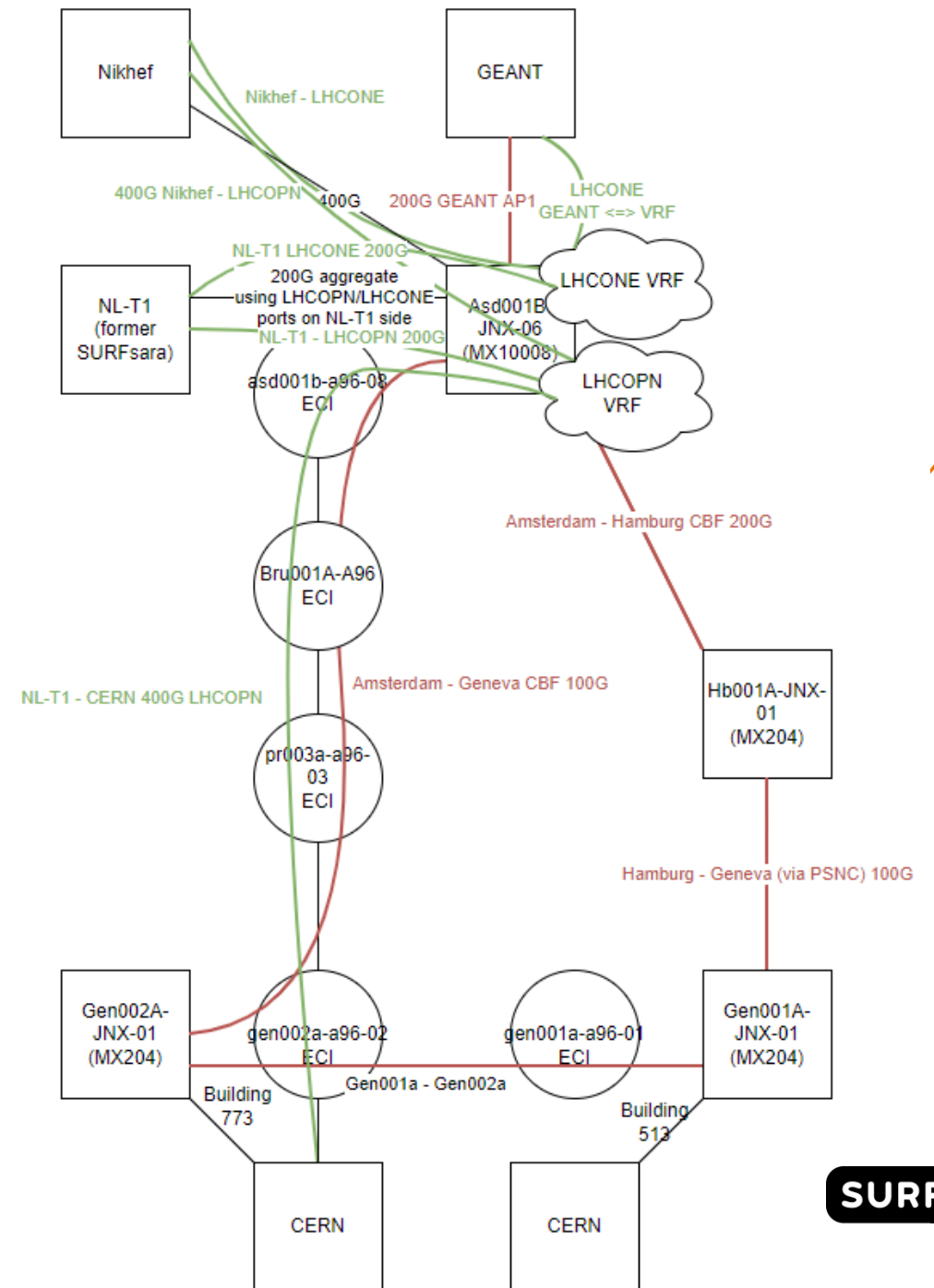
- We'll add AS1103 (former SURFnet) into the mix for LHCOPN/LHCONE via L3VPN's on SURF infra
- Both NL-T1 sites will (eventually) connect to VRF's putting them behind AS1103
- Enables us to provide redundancy via the (International) SURF network
 - We have capacity over PSNC via Hamburg-Geneva
 - We have dark fiber to Hamburg
 - Initially multiple 100G's → 400G future
- Move peerings with CERN to Geneva (via LHCOPN VRF)
- Will increase peers for LHCONE (next to GEANT), looking into: Internet2/ESnet/Nordunet/Canarie

400G hardware on order

- Netherlight (MX10008)
 - LC9600 (MX10008 400G card) → H1 2023
 - Tested LC9600 in beta → card is solid
 - For those
- International pop sites (London, Paris, Geneva (both), Hamburg)
 - MX304 → H2 2023
- Plan is LHCOPN VRF (put AS1103 in the mix) to enable redundancy
 - Peerings with CERN in Geneva (with MX304's)

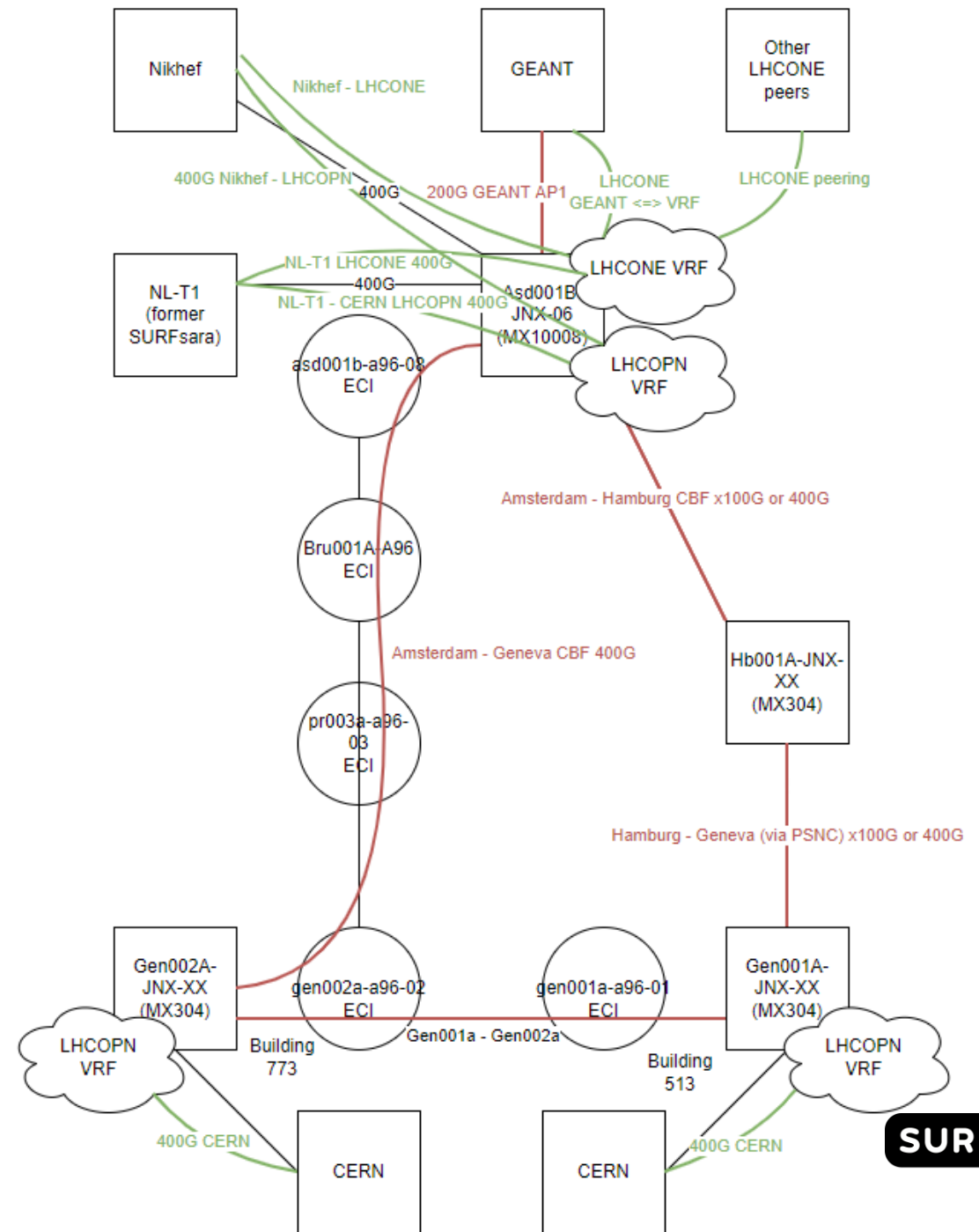
Interim Nikhef (AS1104)

- Move 400G Amsterdam-Geneva wave to LHCOPN VRF
- Entire NL-T1 on same Amsterdam-Geneva 400G
- Nikhef (AS1104) connected with 400G (LHCOPN/LHCONE)
- No redundance (yet)



Future SURF (former SURFsara) AS1162

- 400G connection for LHCOPN/LHCONE
- 400G Peerings with CERN in Geneva in LHCOPN VRF → enabling redundancy via Amsterdam-Hamburg-Geneva link
- Initial x times 100G or 400G
- Former SURFsara (AS1162) is procuring new routing gear at the moment



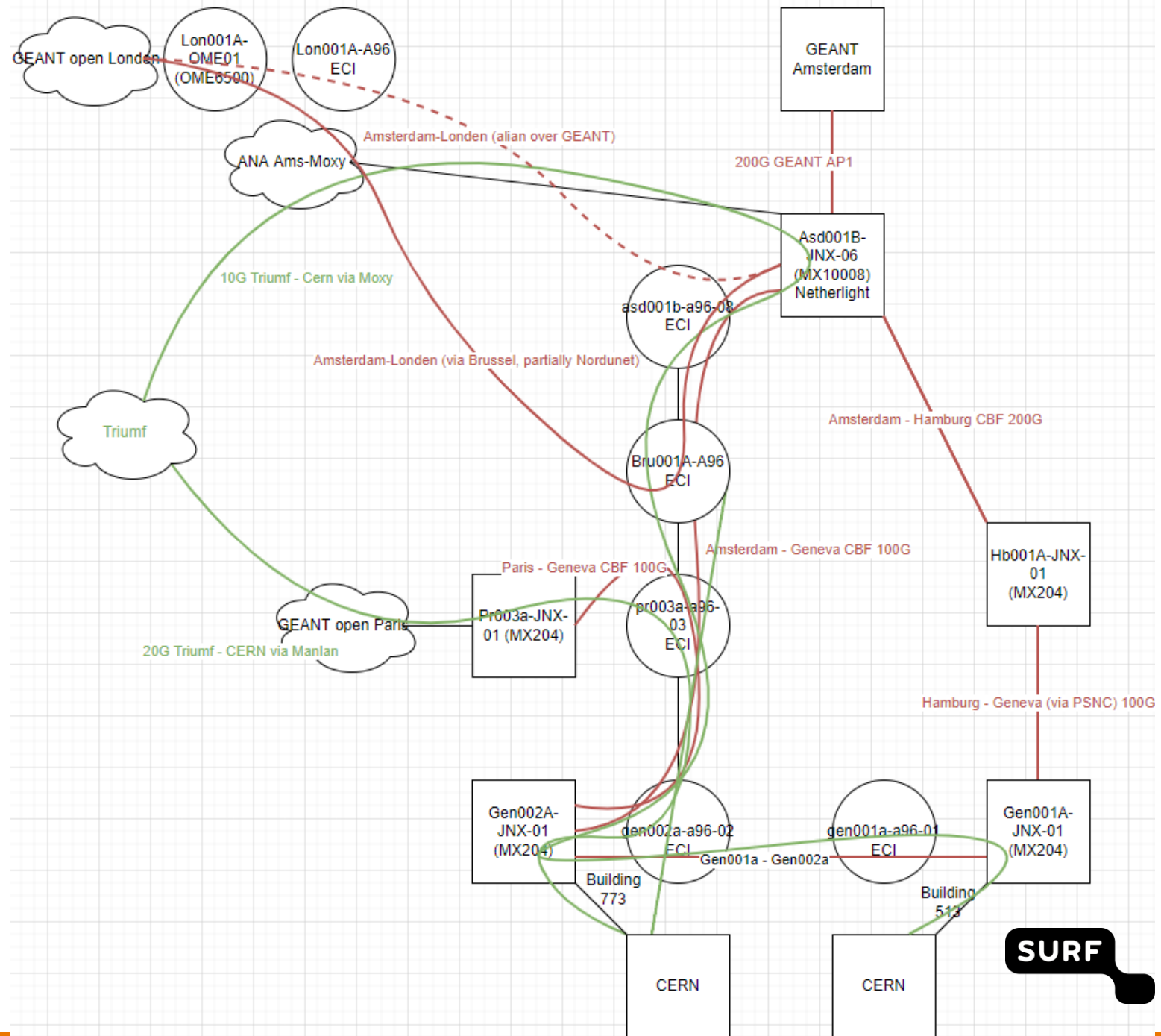
To summarize

- SURF AS1103 (former SURFnet NOC) will take new role for external connections
 - Contact: noc@surf.nl or +31 88 787 3660 (24x7)
- NL-T1 remains
 - Former SURFsara → SURF Internal Services (AS1162) → focus on datacentre/storage/compute
 - Contact: noc@surfsara.nl or +31 88 787 30 00 (general SURF number) (9x5)
 - Nikhef (AS1104) as is
- We're gearing up for 400G (Nikhef has it, SURF AS1162 is gearing up)

Triumpf

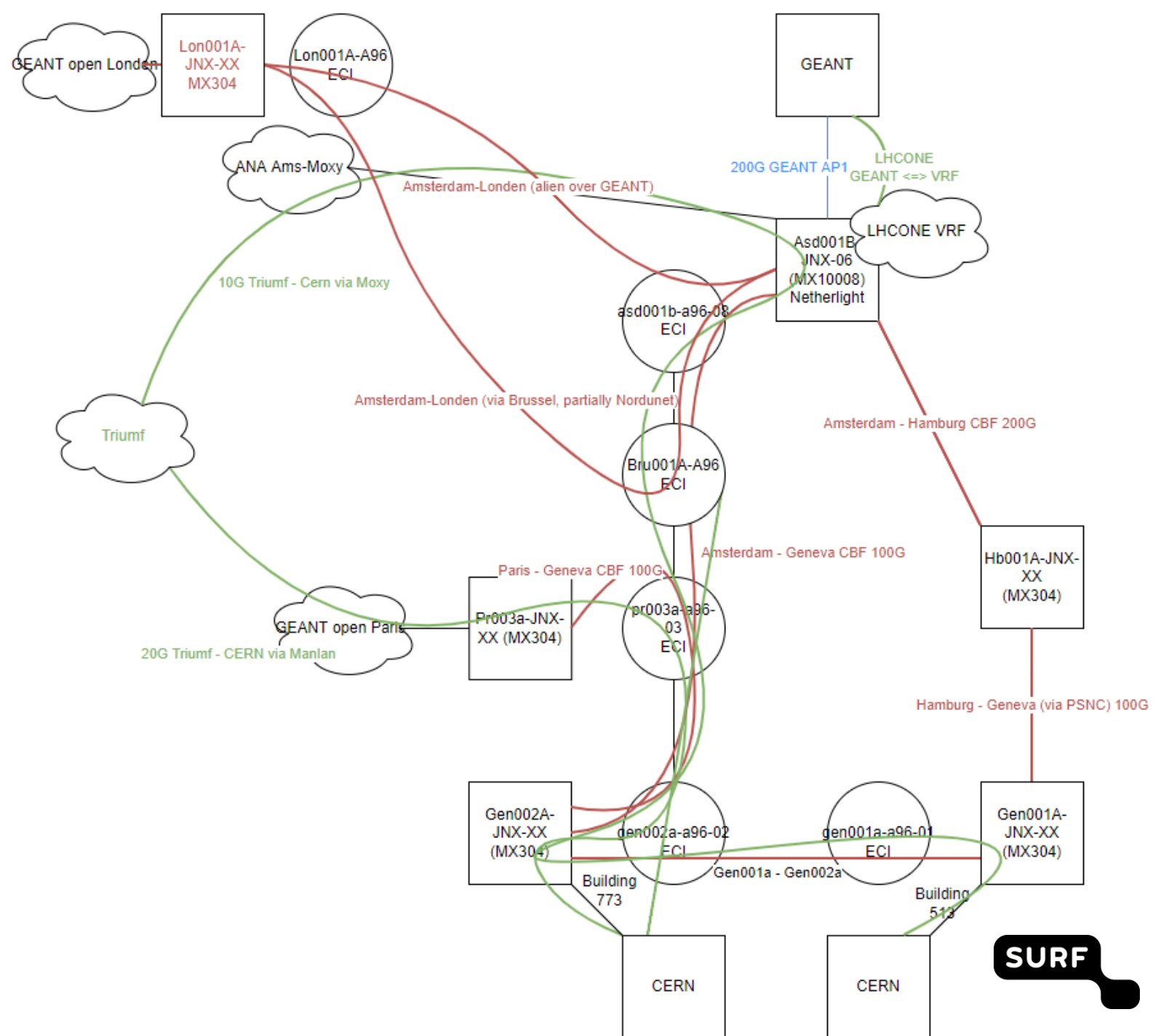
- 20G Paris-Geneva service
- 10G Amsterdam-Geneva
 - Should have been upgraded → will to 20G (needs 100G port in Geneva)
 - Will be primary
- Services are protected (is better than contracted)
- SURF is present on all 3 ANA landing points (London/Paris/Geneva)
- Provides services to other (Nordunet/ASGC/PSNC), if interested talk to [Alexander van den Hil](#)

10



Redundancy to GEANT open sites

- 400G capable MX304 in London/Paris/Hamburg/Geneva
- Redundant connections to GEANT open sites
 - London (backup via Brussel)
 - Paris (backup via Geneva/Hamburg)
- Interested in LHCONE peerings → [mail admin@netherlight.net](mailto:admin@netherlight.net)



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SURF



NL-T1 FOR 400G AND BEYOND, WE'RE GETTING THERE

 Name + surname

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Driving innovation together

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