



32C3 NOC Review

Fritz!Box Edition

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Backbone
No sauna this year



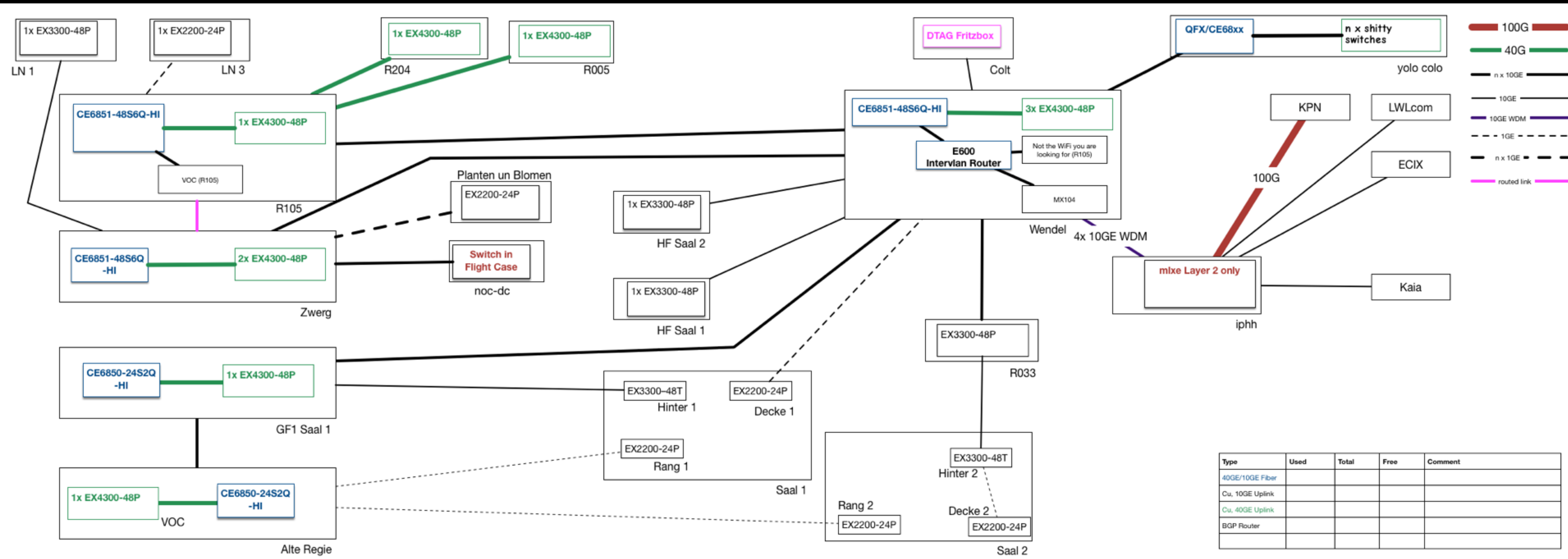
Operations
Center

SAPocalypse now - Emergency planning

- much phone calls, many offers, such wow
- A lot of help from:
 - teamix
 - Huawei/TenICT
 - SecureLink
 - ecix

Backbone Equipment in use

- Huawei Fritzbox Cloud Engine 6800
- Juniper Fritzbox EX4300
- Juniper Fritzbox EX3300
- Juniper Fritzbox EX2200
- Juniper Fritzbox MX104 and MX80
- Force10 Fritzbox E600
- Brocade Fritzbox MLXe8



Tier 1 Problems

- Such uplinks:
 - 10GE Deutsche Telekom (CCH)
 - 10GE ECIX (IPHH)
 - 10GE Kaia Global
 - 10GE KPN
 - 10GE LWLcom

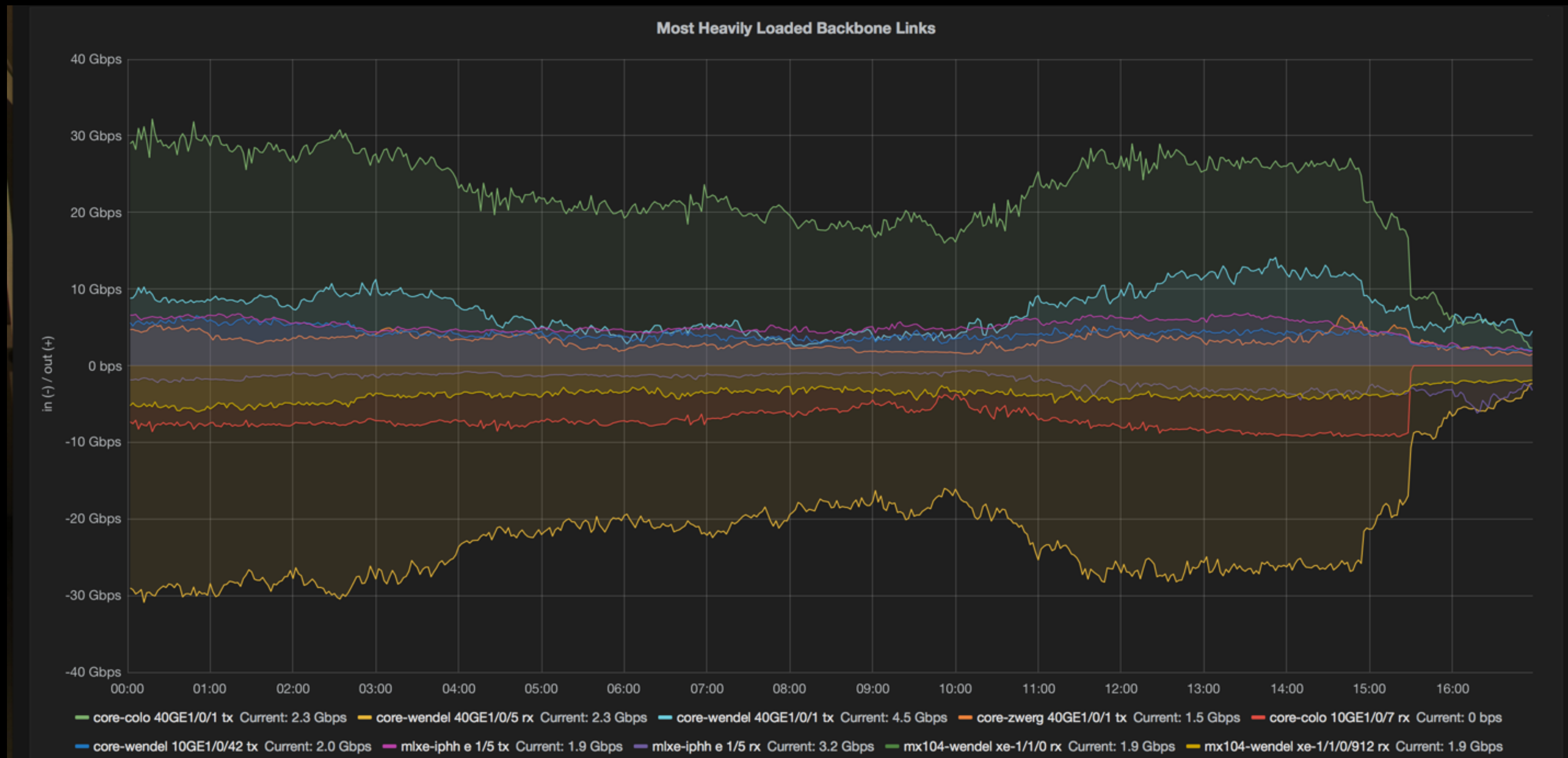
Network turbulences

- we finally broke the E600
- DDoS on Yolo Colo
- 100GE turnup with KPN
- IPv6 routing issues with Huawei
- People trying to be funny with our monitoring host

Bla Misc Derp

- Facebook not in Top 200 of Asstats
- Requirements of Colo users
 - “But we need multiple 10GE 1!!!!!!!”
- 40GE Optics over OM2 Multimode Fibre and 190m Maximum outgoing traffic: 21.4 Gbp





YOLO Colo
shutdown announced

WiFi

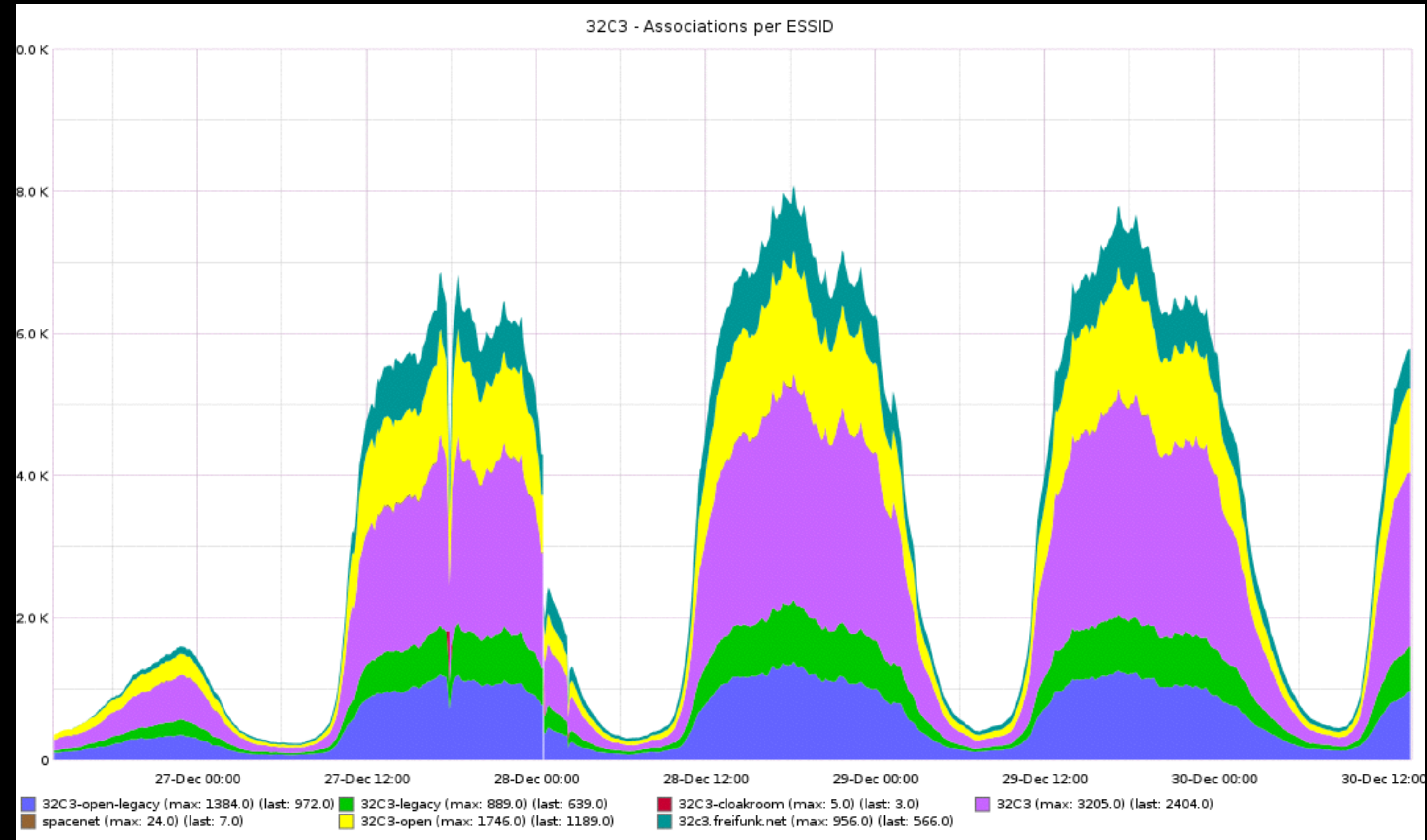


Real WiFi



WiFi stats & figures

- 2x Aruba 72xx controllers
- 145 Aruba APs deployed
- 20K unique clients
- Peak of 8150 clients
- 70% clients on 5GHz
- 40% of clients on unencrypted network



- Android App + Apple + Windows profiles available for 802.1X network this year

Obligatory username statistics

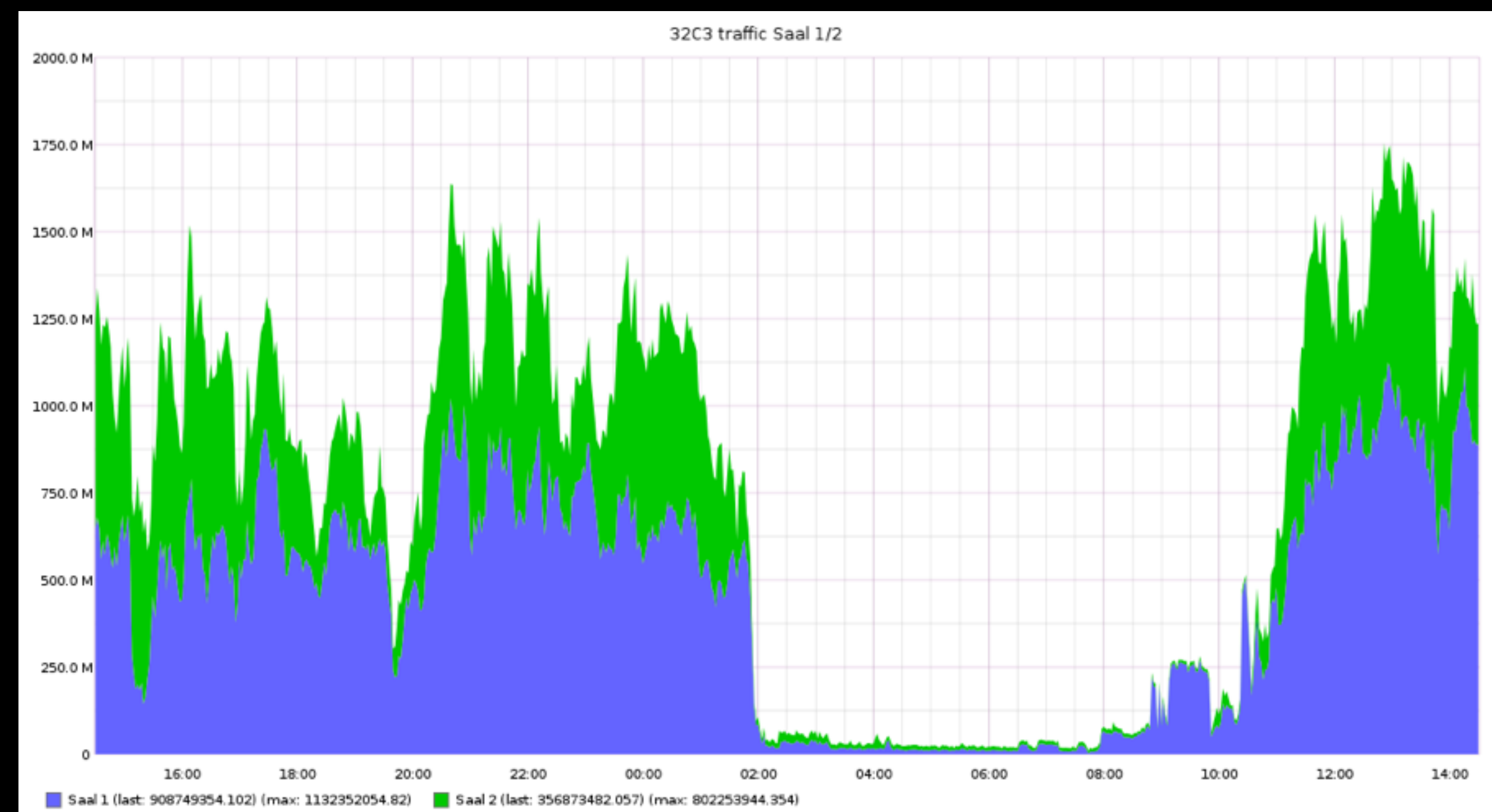
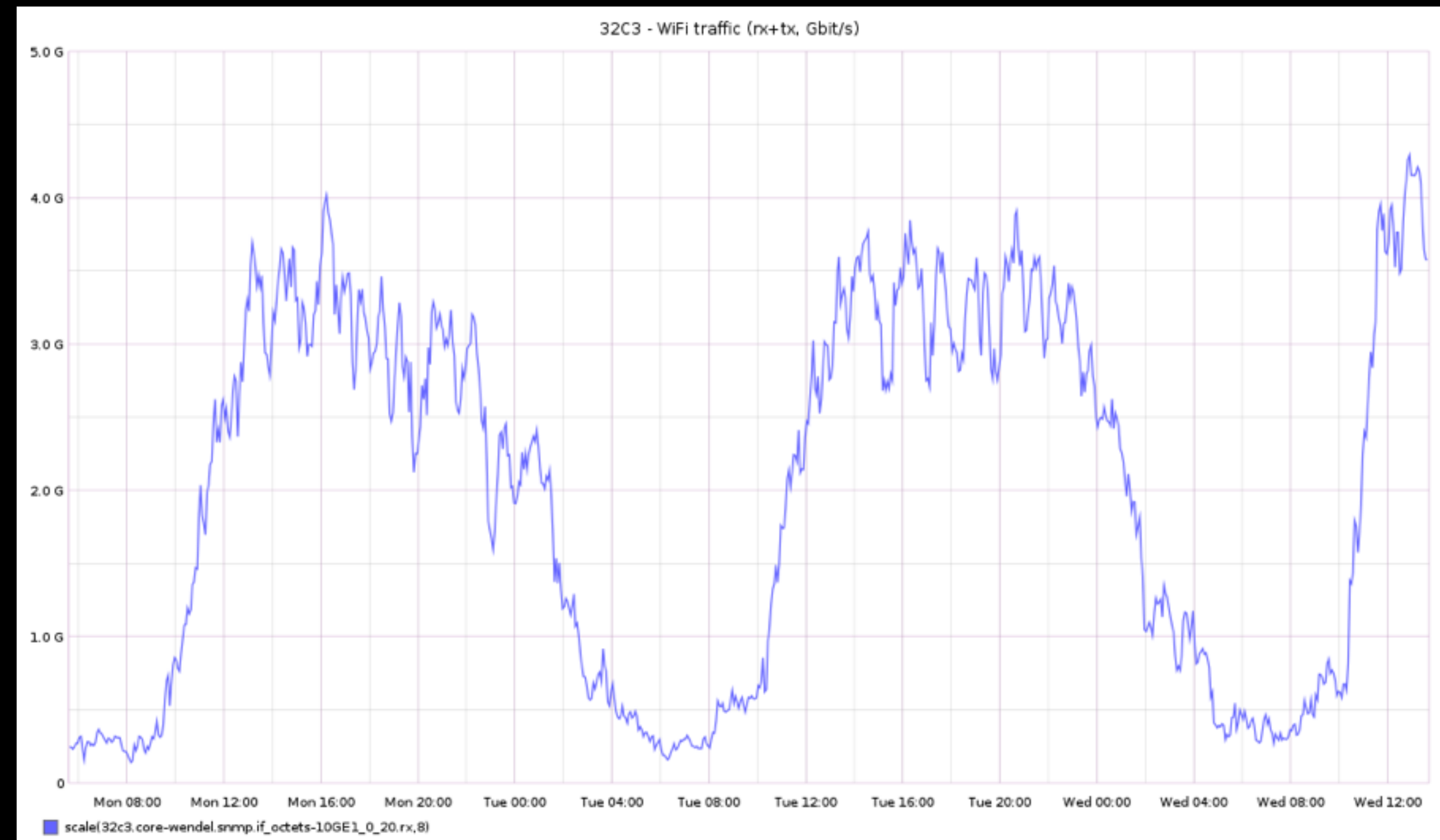
1. anonymous: 1609 (17.3%)
2. 32c3: 886 (9.5%)
3. 32C3: 677 (7.3%)
4. edward: 347 (3.7%)
- ...
7. penis: 82 (0.9%)

Obligatory device statistics

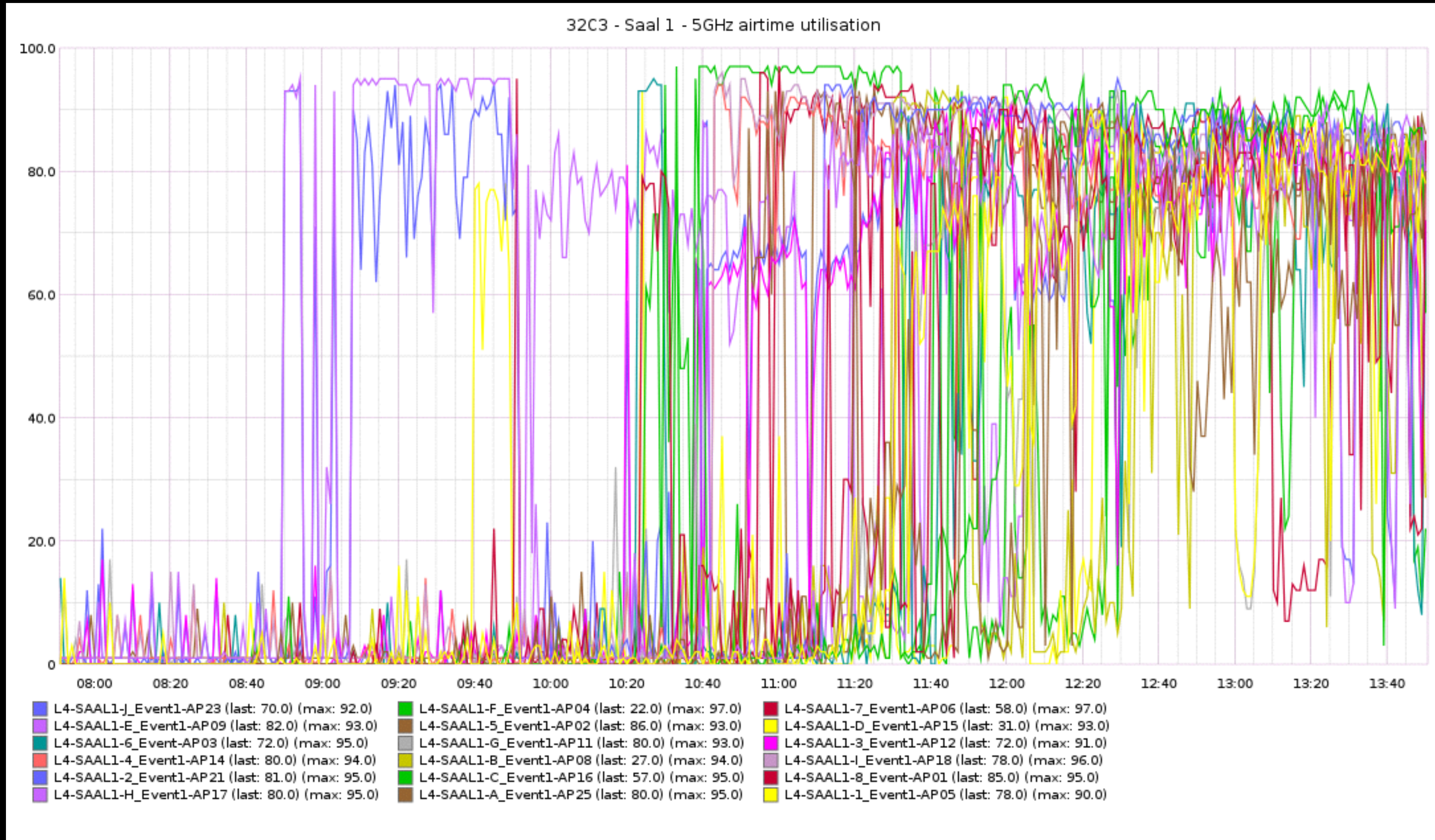
1. Linux: 4656 (24.1%)
2. Android: 3396 (17.6%)
3. Apple iPhone: 2701 (14%)
4. Apple Mac: 2050 (10.6%)
5. Apple iPad: 637 (3.3%)
6. Windows 7: 400 (2.1%)
7. Motorola Nexus 5: 387 (2%)
8. Intel Corporate: 374 (1.9%)
9. Windows 10: 367 (1.9%)
10. Google Nexus 4: 270 (1.4%)

WiFi traffic stats

- Average of 3Gbit/s (rx+tx)
- Peak of 4.5Gbit/s (rx+tx)
- Peak of 1.75Gbit/s (rx+tx) in Saal 1 & 2

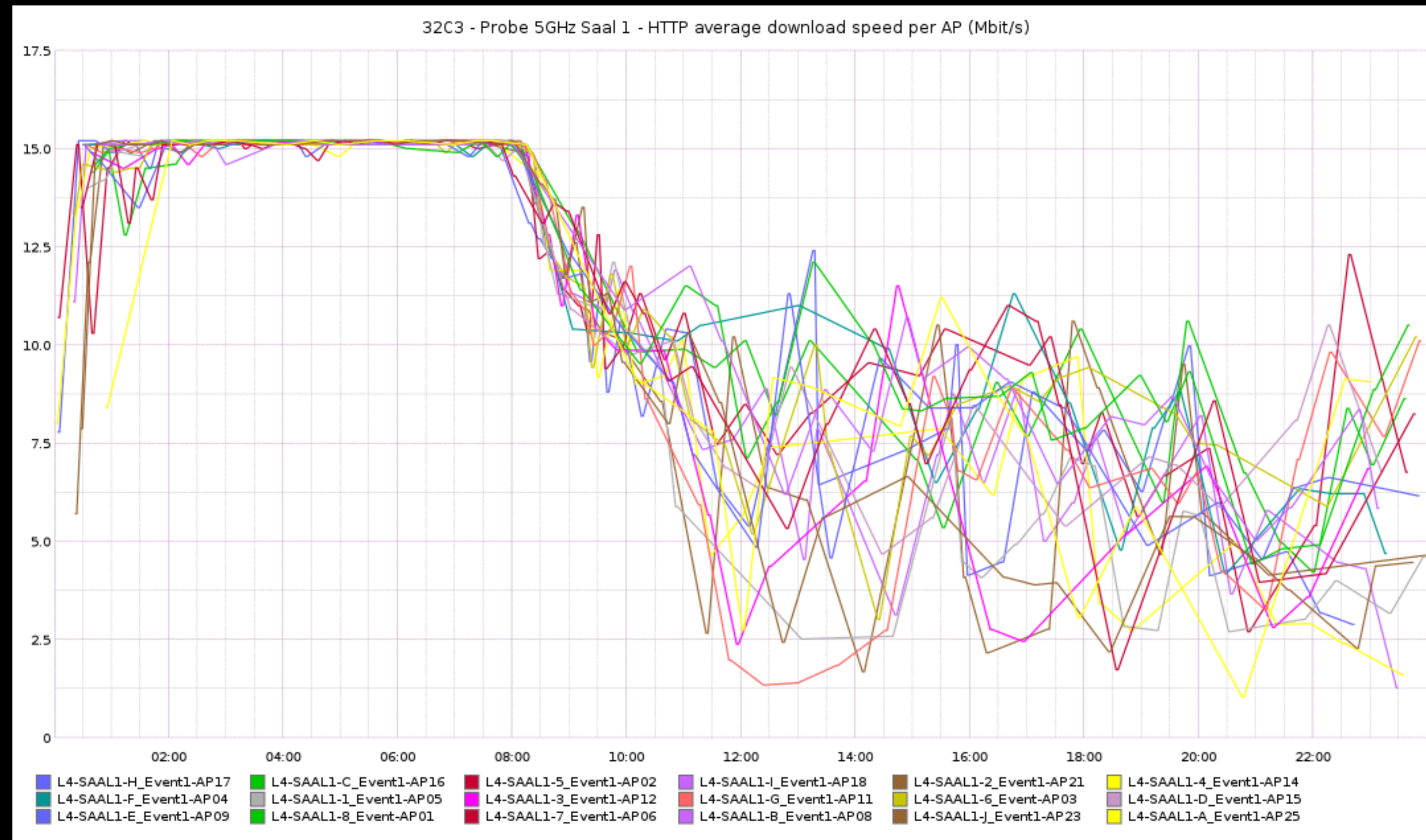


5GHz airtime usage in Saal 1



WiFi probes deployed

- Deployed 5 OpenWRT & wpa_supplicant-based probes in main rooms
- Automated tests for ICMP, DHCP, HTTP, 802.1X, etc



WiFi challenges

- Performance issues because of Force10 E600 router/switch, doubled throughput after day 1
- Hitting physical limits in Saal 1/2/3 most of the time (100% channel utilisation, even on 5GHz). Need more spectrum or more efficient usage of spectrum
- False radar detect events on 802.11n Atheros-based AP's (Aruba AP-13x/11x), still not fixed, newer 802.11ac devices are a lot better



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NOC out - Questions?