

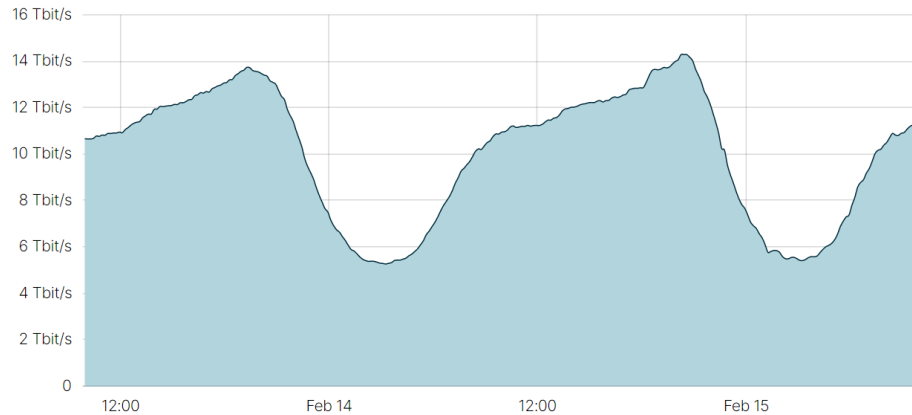
Peering LAN 2.0 - Introduction of EVPN at DE-CIX

Thomas King, CTO

Challenges of Large Peering LANs

- DE-CIX Frankfurt

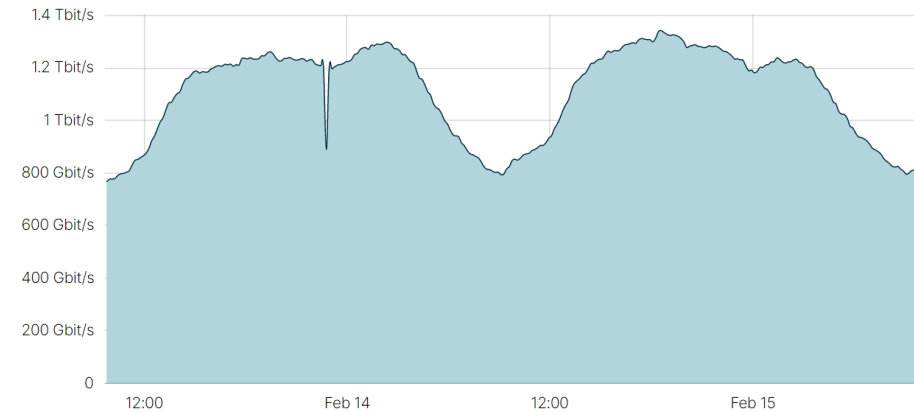
- 1080 ASNs
- Peering Sessions via Route Server: 1314 for IPv4 & IPv6



ALL-TIME PEAK
14.40 Tbit/s

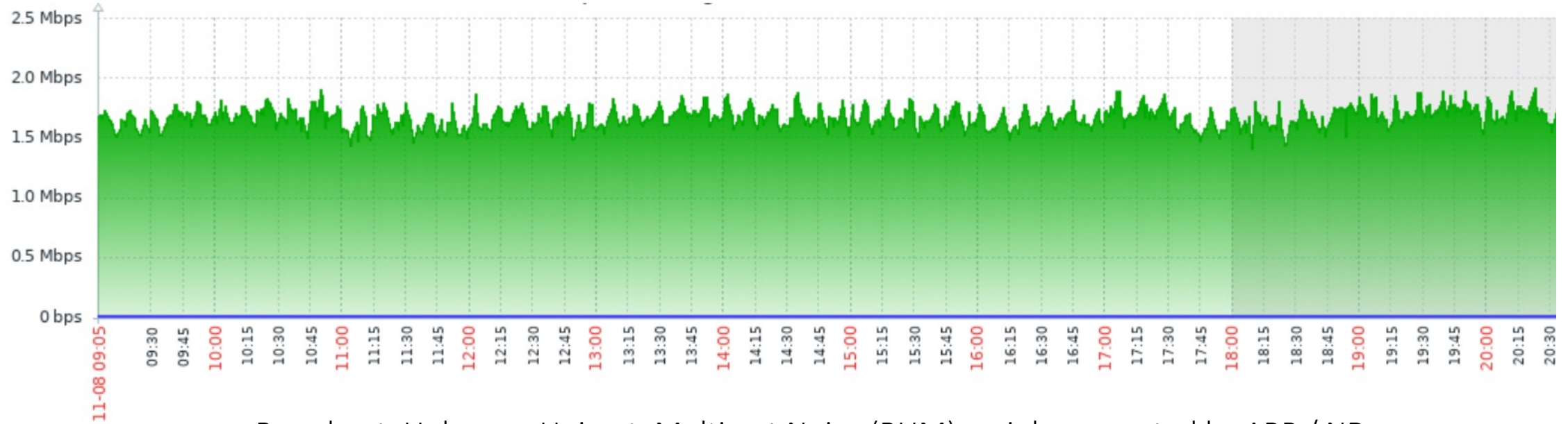
- DE-CIX New York

- 262 ASNs
- Peering Sessions via Route Server: 302 for IPv4 & IPv6



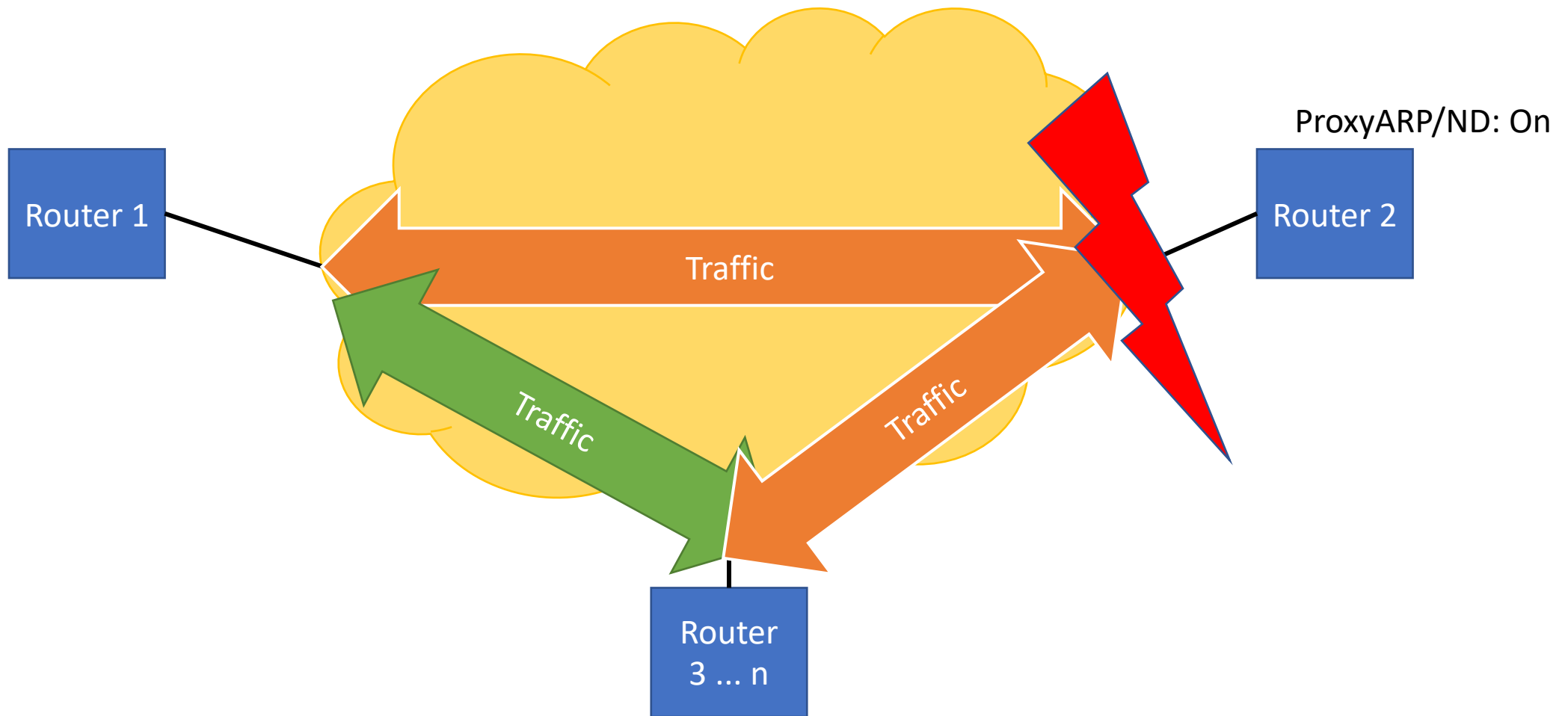
ALL-TIME PEAK
1.34 Tbit/s

High Rate of BUM Traffic



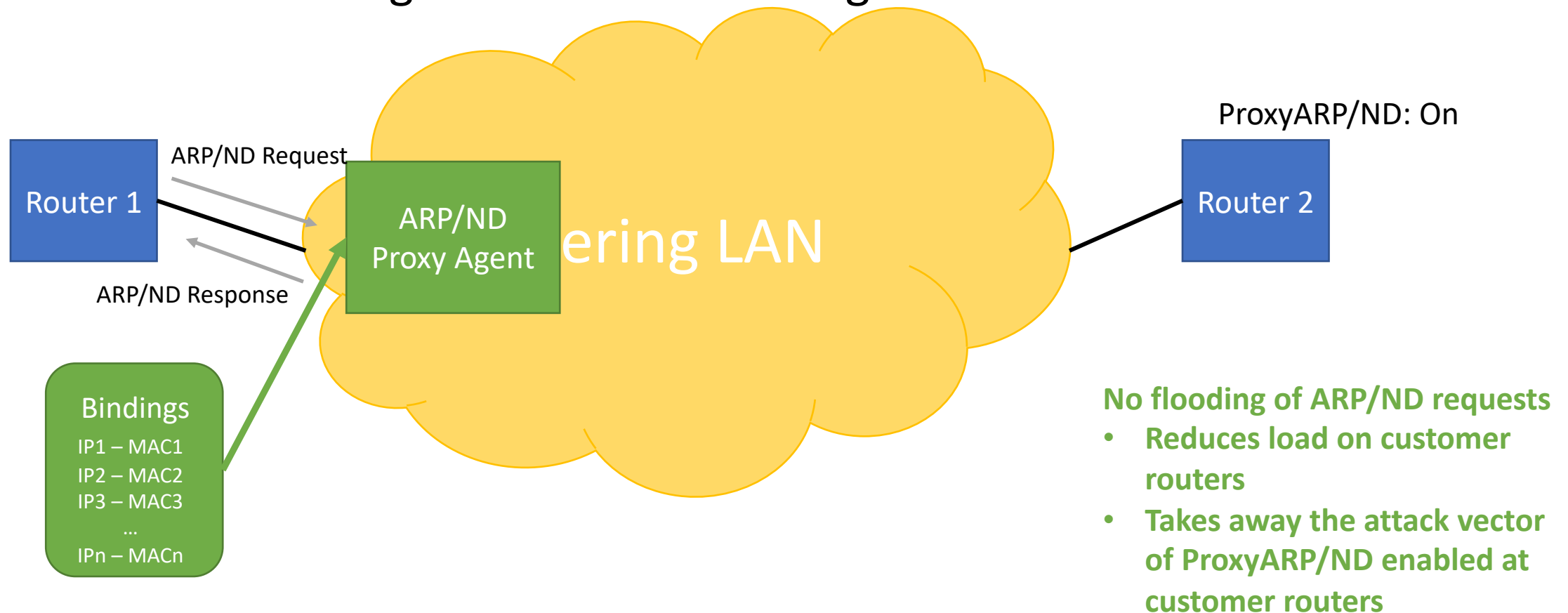
Broadcast, Unknown Unicast, Multicast Noise (BUM) mainly generated by ARP / ND

Proxy-ARP/ND at Customer's Router



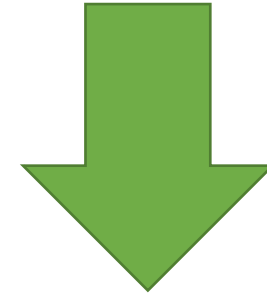
Solution: Peering LAN 2.0

RFC9161: Enhancing EVPN for the Peering LAN use-case:





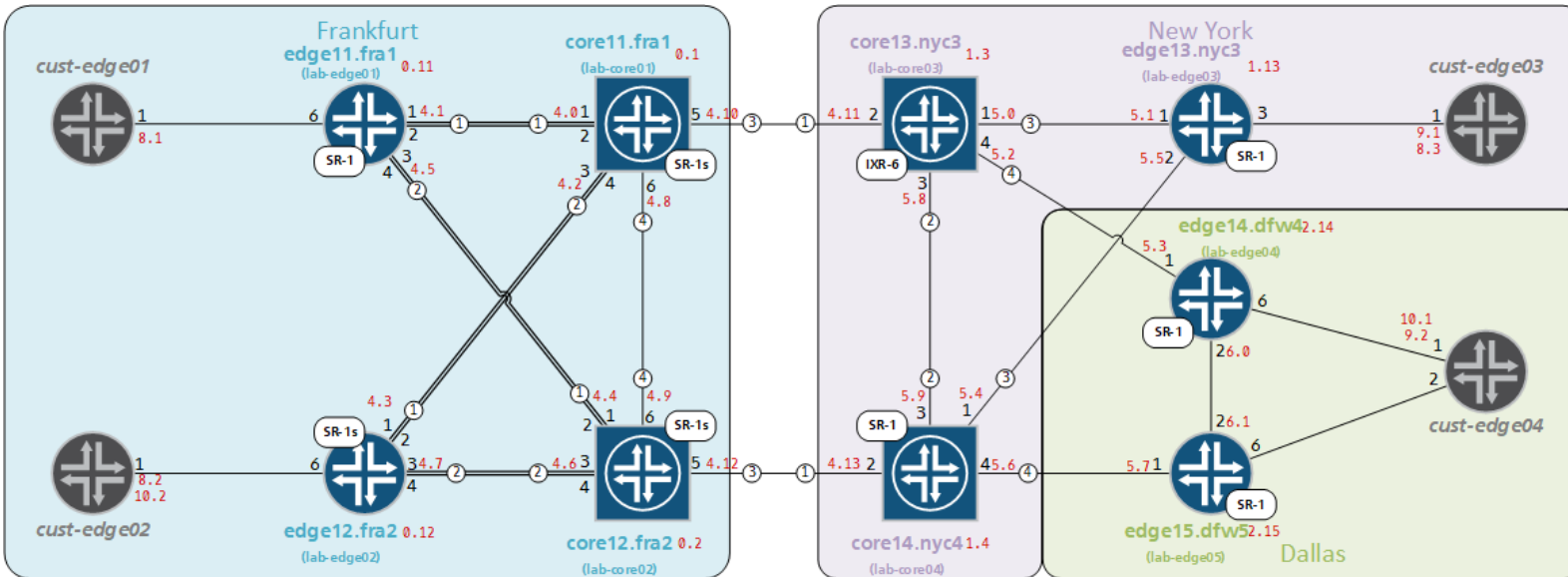
Migration Scenarios



Scenario	Small Steps	Reduce Complexity	Reduce Customer's Downtimes
Router by Router	👍👍	👎👎	👎👎
Location by Location	👍	👎	👎
Service by Service	👎	👍👍	👍👍

Testing, Testing, Testing ...

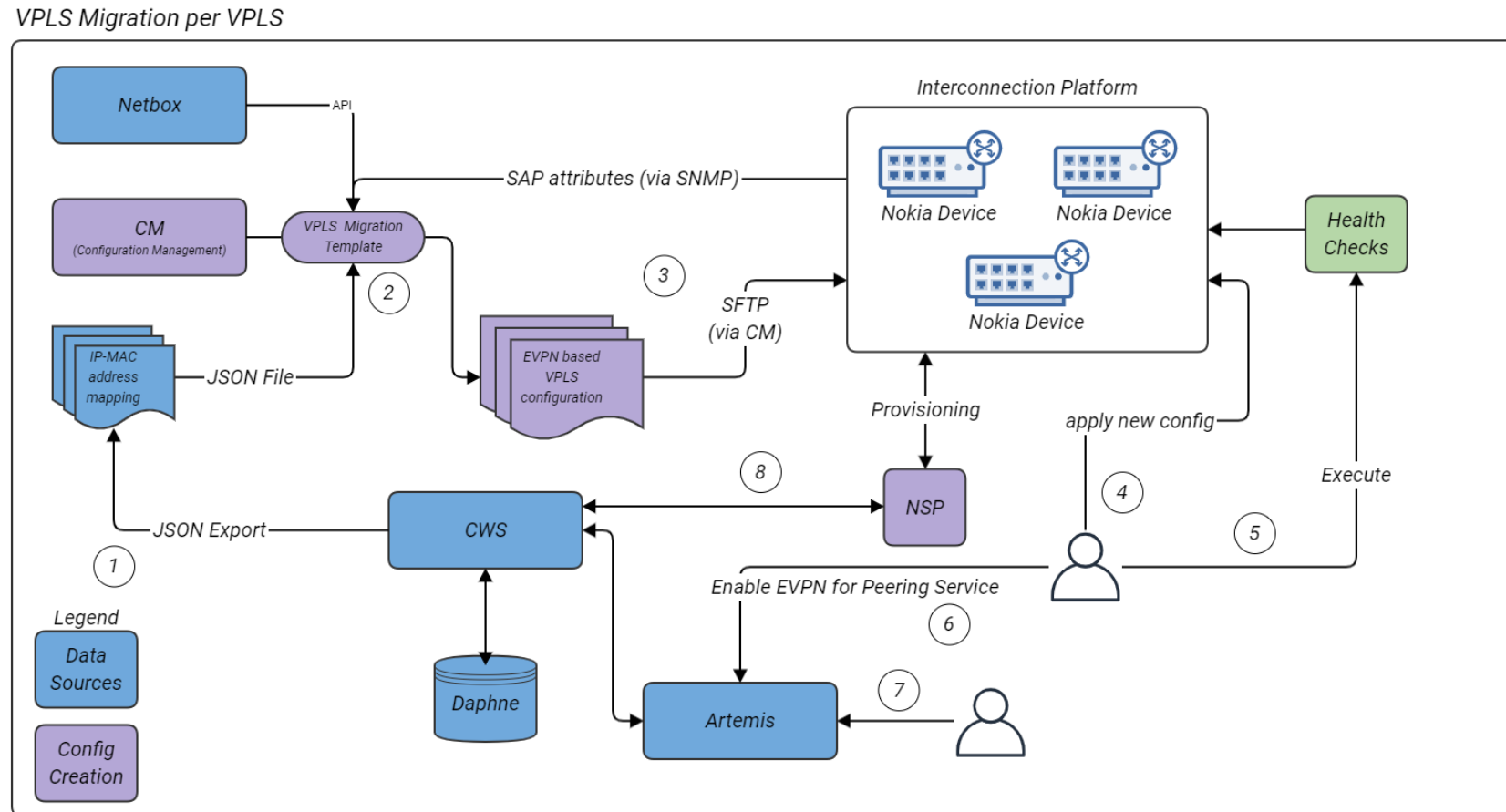
- Hardware: Recreating critical parts of the network in our lab



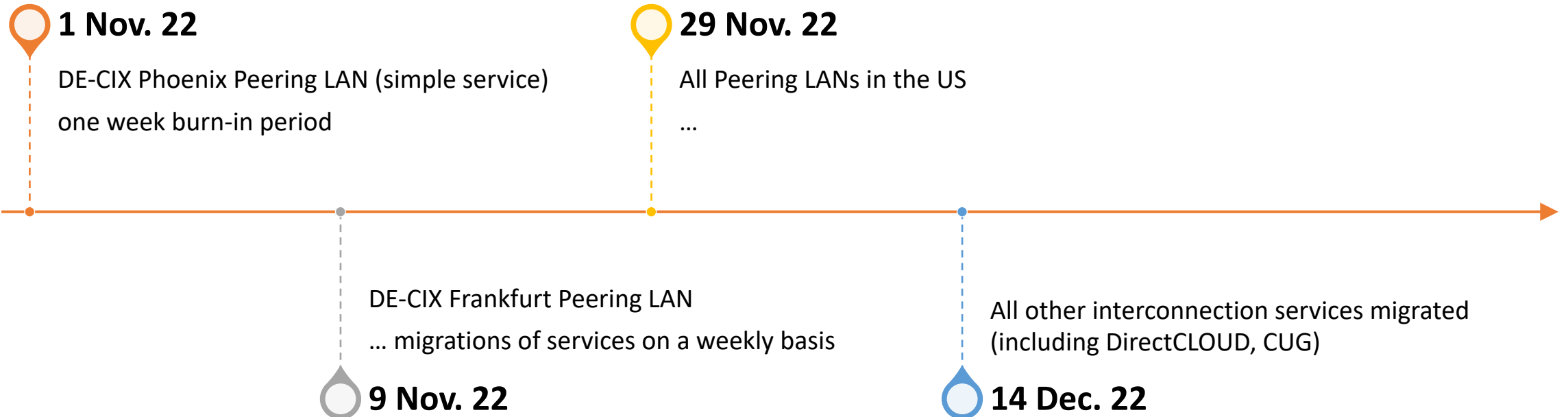
- Software
 - Emulating the network in software
 - Detect anomalies in the configuration of the Peering LAN (e.g., manual configuration, “borrowed linecards”)
 - Test cases for configuration generators

More Software ... More Testing ...

- Enhancing the DE-CIX automation tool-chain



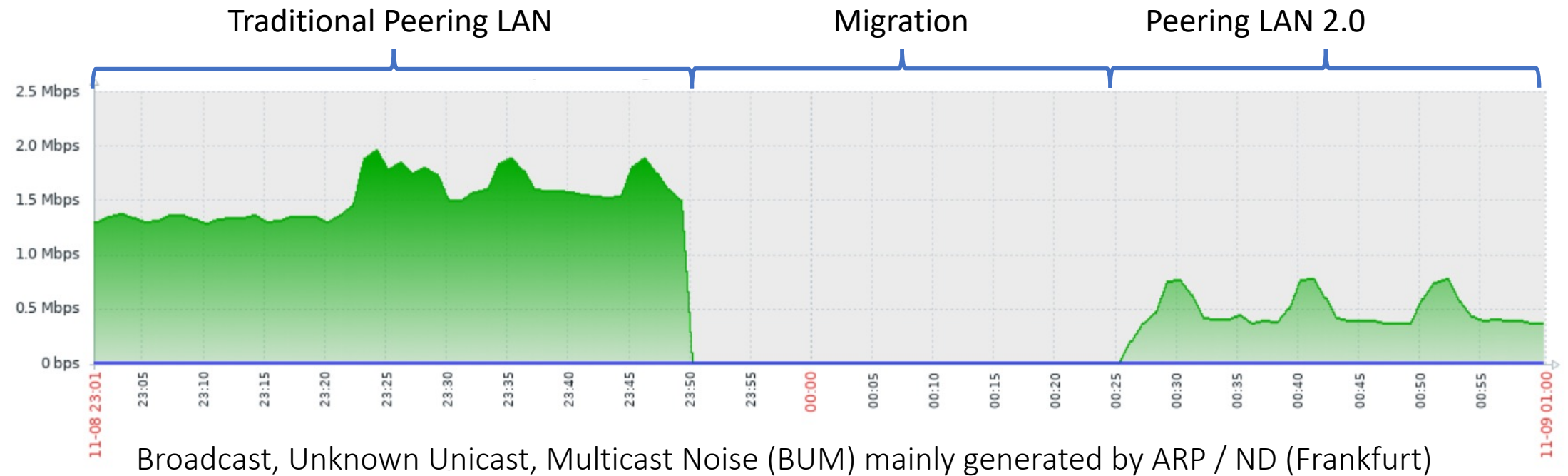
Migration Happened Successfully



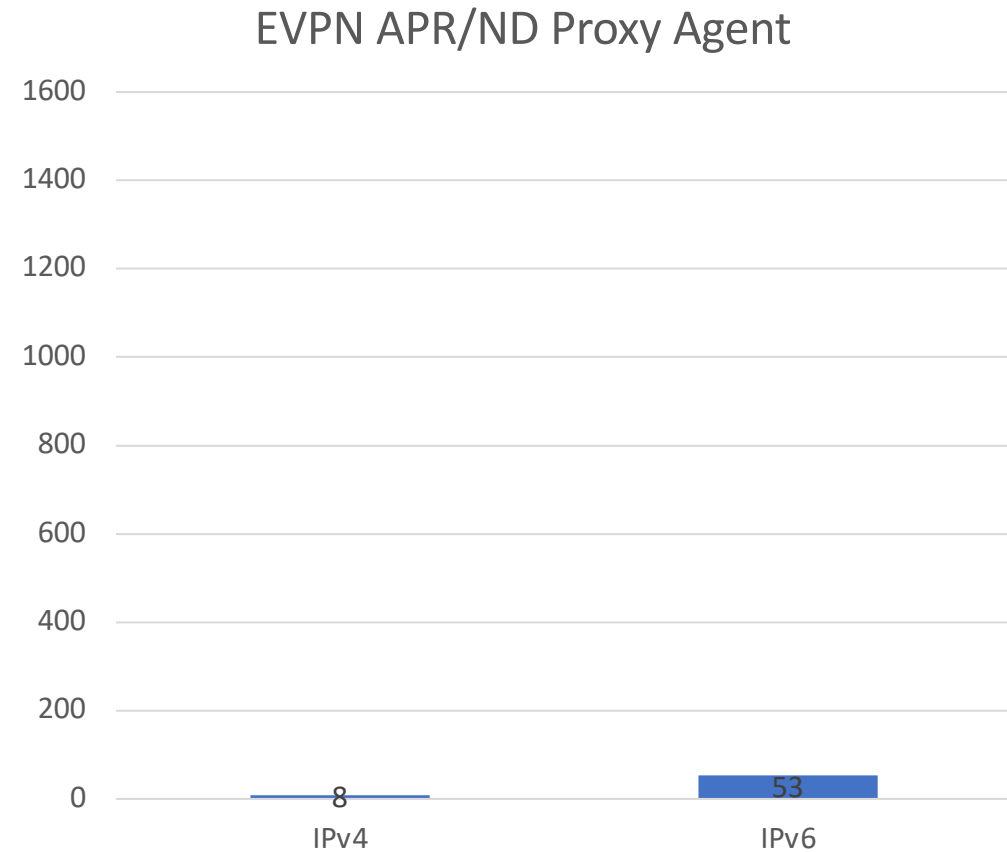
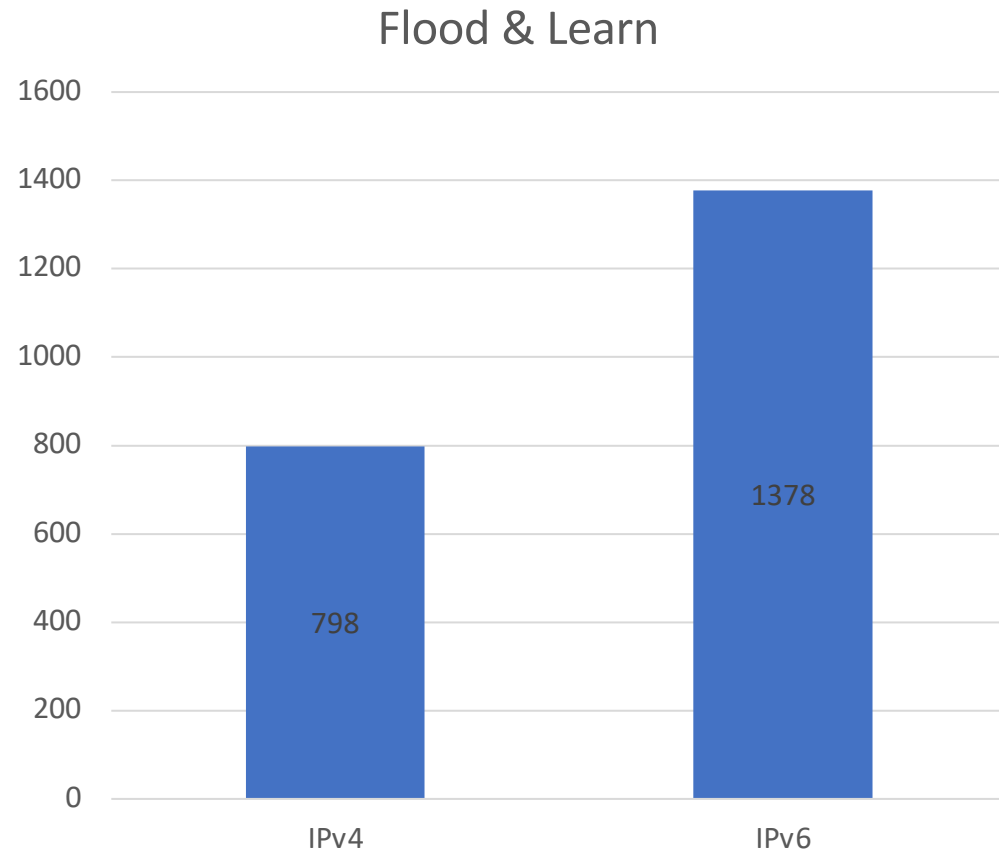


Migration Happened Successfully

Results: Low Rate of BUM Traffic



Results: Low Rate of BUM Traffic – Customer View



Broadcast, Unknown Unicast, Multicast Noise (BUM) traffic per second (Frankfurt, edge01.fra9)

Bugs and Issues

- Traffic distribution with LDP entropy labels not working as expected -> Workaround implemented -> Investigation still ongoing with Nokia
- IPv6 ND Agent replies with wrong source IP Address
 - Disabled at the moment
 - Router OS upgrade required (expected Q2 '23)

QnA