



RIPE NCC
RIPE NETWORK COORDINATION CENTER

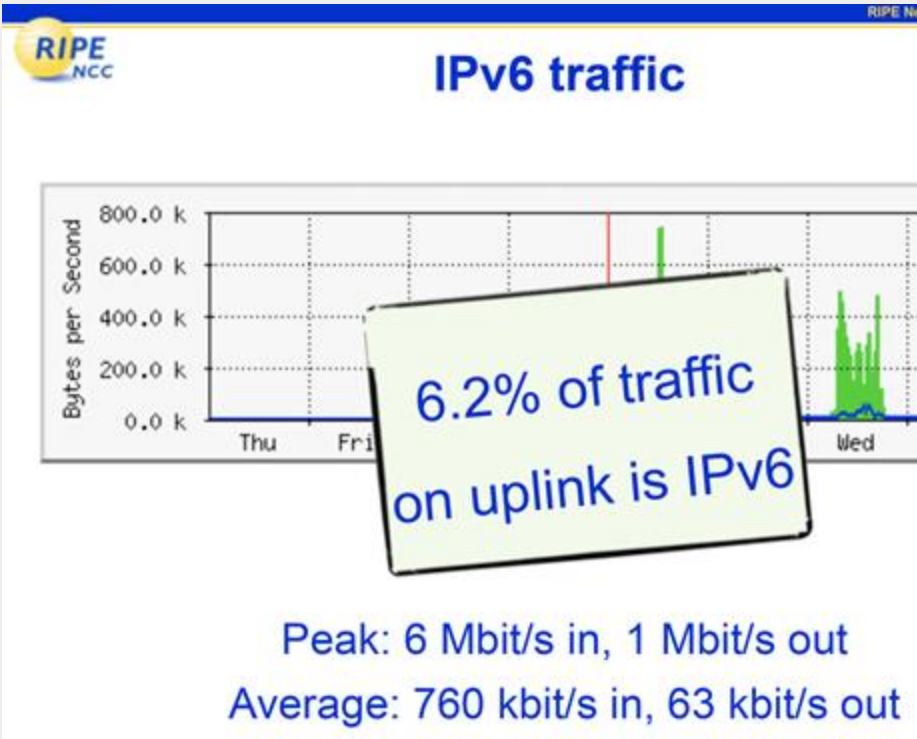
RIPE 89

Technical Report

Last Time We Here Was RIPE 60



And things were quite different back then...



But Some Things Still Look Quite Familiar...



RIPE Network Coordination Centre

Flash Streaming



You can also read the [RTSP stream](#) (experimental) directly with your favorite video player.

Want help? Read [Help to Read Stream](#).



The Technical Team

Preparations



- Responsible for most of the technical aspects of the meeting
- 3 days to set up -> 3 hours to pack up on Friday
- We bring:
 - 2 SuperMicro Servers (E300-9D-8CN8TP)
 - 2 boxes of 300 meter ethernet cable
 - 300 ethernet cables (ranging from 1 to 30 meters)
 - Wi-Fi Access Points
 - 20 Raspberry Pis
 - 3 presentation kits
 - Power blocks
 - Lots of gaffer tape



Halloween Scare Came Early



Dear all,

Confirm 36 pieces arrived to the hotel.

FYI one case fell to the ground by the driver, marked O.

I am sending photos of all packages in the attachment.

Thank you

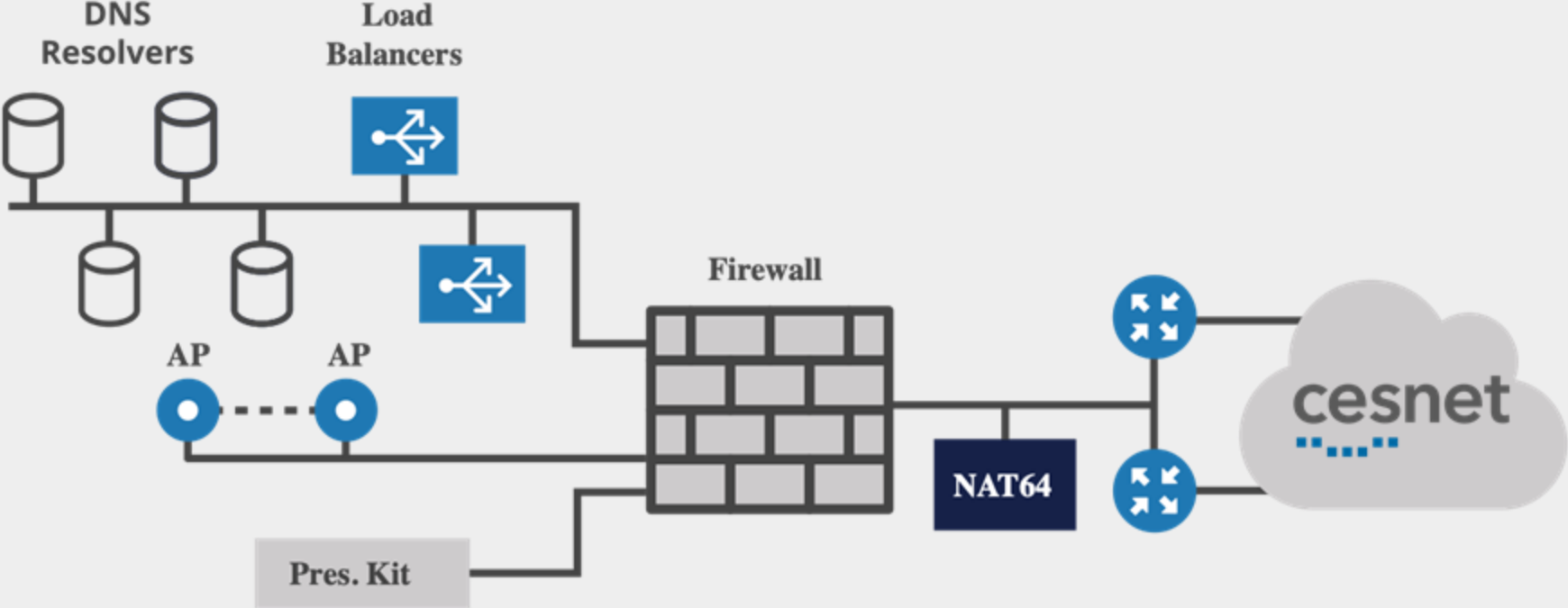


DESCRIPTION OF GOODS			QTY
Flightcase O - wood with metal trim and wheels			1
Bottom section under board			
WiFi base station	Ubiquity AC-HD		19
Top section above board			
Gator case Network Kit2			
Network switch	Juniper EX2300	mtgsw-j6	1
Network switch	Juniper EX2300	mtgsw-j4	1
Gator 2U Presentation kit3			
HDMI matrix switcher	Gator 2U rackmount case plastic		1
Computers in rackmount	Aten VM5808h		1
Monitor Dell P2222H	Apple mac mini in rackmount		2
	Dell		2



Meeting Infrastructure

Logical Topology



Infrastructure Challenges



- All sockets already patched (very neatly!)
- All fibres already occupied

- Infrastructure inherited from previous vendor
 - No documentation
 - Patch numbers do not match
 - LLDP/CDP used to identify correct port



Infrastructure Challenges



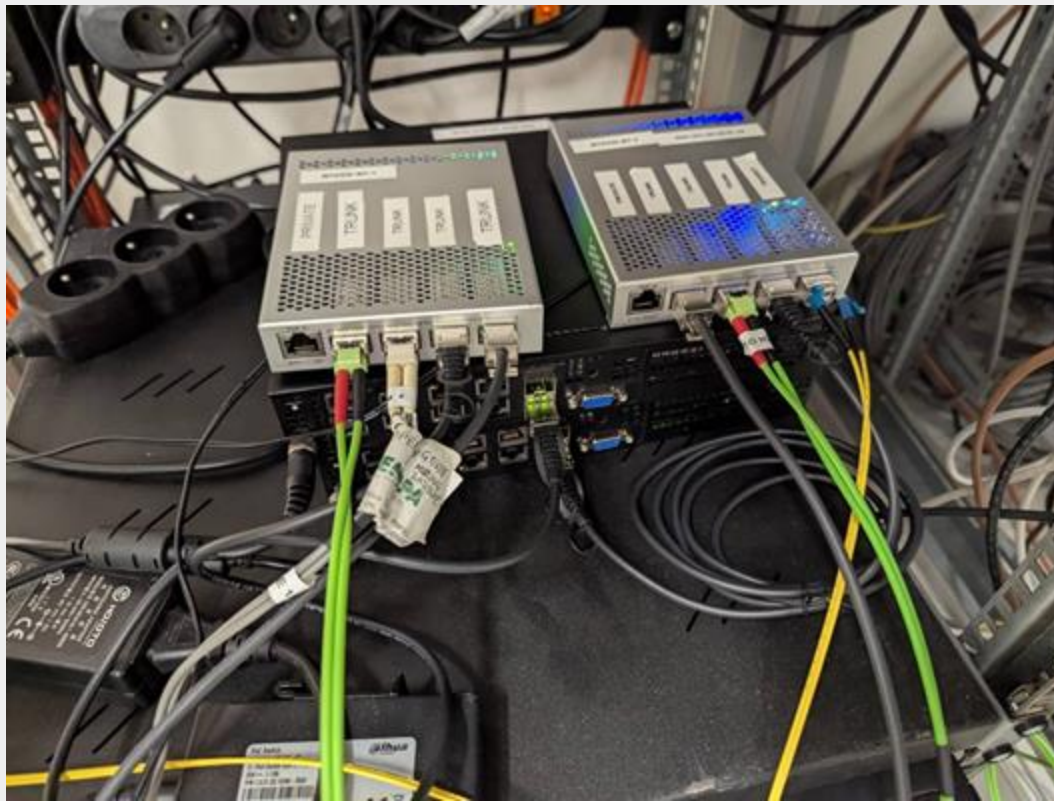
- 1 Gbit/s for everything the hotel does
- Also includes hosting the Internet for the entire shopping mall adjacent to the hotel
- CESNET arranged a 14km dark fibre with 10 Gbit/s service for us
- Not allowed to use hotel's switches for the meeting network
- Instead, they freed some fibre pairs and marked cables for us.



Physical Infrastructure



- The hotel allowed us to place our equipment in their server rooms
- Hypervisors running 25 VMs
 - Routers
 - Firewalls
 - DHCP servers
 - DNS Resolvers
 - Wifi controller
- Mostly deployed with Ansible



Addressing The Most-heard Complaint From RIPE 88

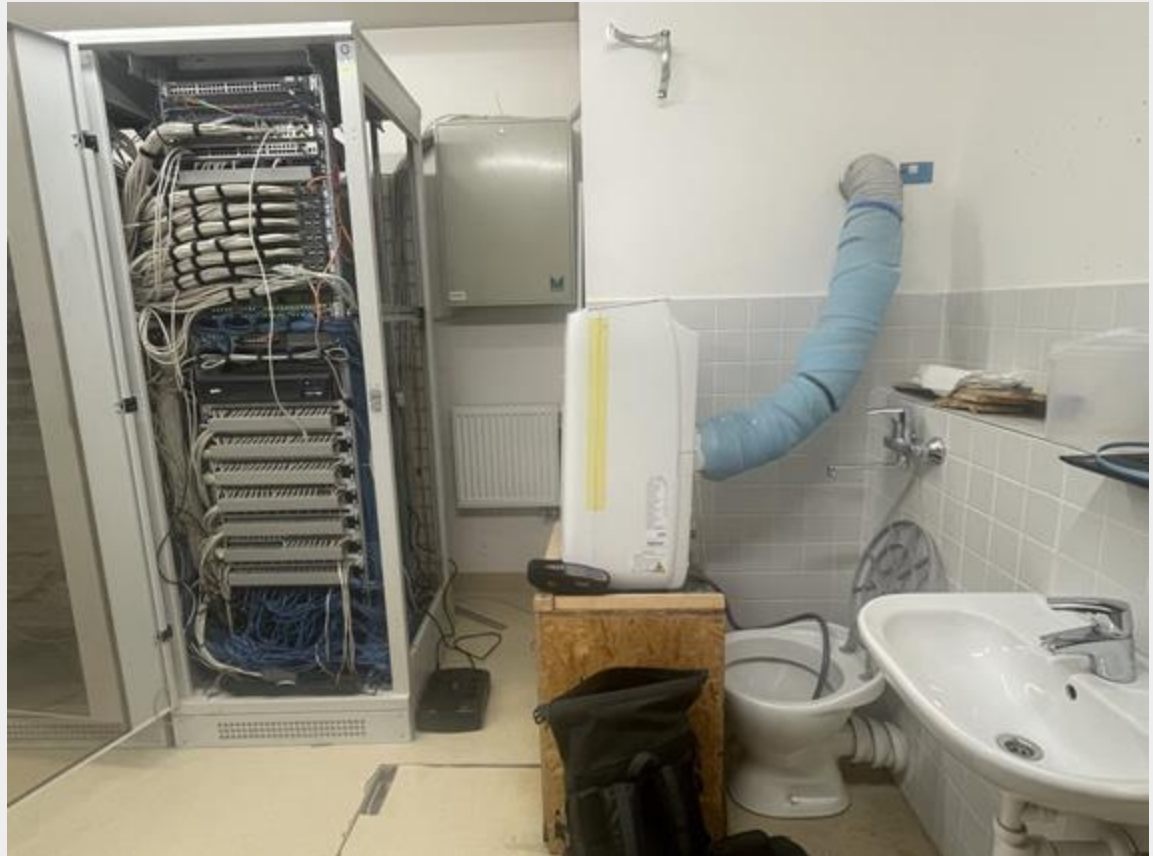


Addressing The Most-heard Complaint From RIPE 88



Finally:

Proper connectivity in
the restroom



The RIPE Meeting Network Runs On Open Source Tech



Component	Technology used
Edge routers	BIRD
Firewall	nftables
DNS Load balancer	keepalived
DNS Resolvers	BIND9
DHCP	Kea
NAT64	Jool
Statistics	collectd + InfluxDB + Grafana
Config management	Ansible

Edge Routers Running Oracle Linux 9



- NetworkManager did not like the full BGP feed in the routing table
- Patch created soon after RIPE 88
- Fix landed in RHEL 9.4z
- Special thanks to Robert Scheck



BGP Sessions Flapping Due To DNS



- During set-up, BGP sessions with our upstream **kept flapping** every few minutes
- CESNET was not propagating our prefixes
- DNS resolvers did not work
- BIRD was trying to resolve RPKI validator domain name, got stuck for 24 seconds
- BIRD developers: just **don't use DNS** or [upgrade to BIRD 3](#) which is multithreaded



The Meeting Networks



- **Main network**
 - 5 GHz-only
 - IPv6-mostly
- **IPv6-only experiment**
 - 5 GHz-only
 - no IPv4
- **Legacy network**
 - 5 GHz and 2.4 GHz, dual-stack, WPA2
 - 2.4 GHz used by 1,3% of devices
 - We are always happy to hear your reasons for using it





Typically related to “fixing IPv6 bypass”

- VPN client **connects to the concentrator via IPv4**
 - Traffic is actually **translated to IPv6** by CLAT
- Full tunnel gets established, **native IPv6 is killed**
- **Oops the tunnel stopped working**
- Observed this week with:
 - ProtonVPN client on macOS
 - TunnelBlick (OpenVPN) on macOS
 - Cisco AnyConnect on macOS



The Presentation System

Presentation System

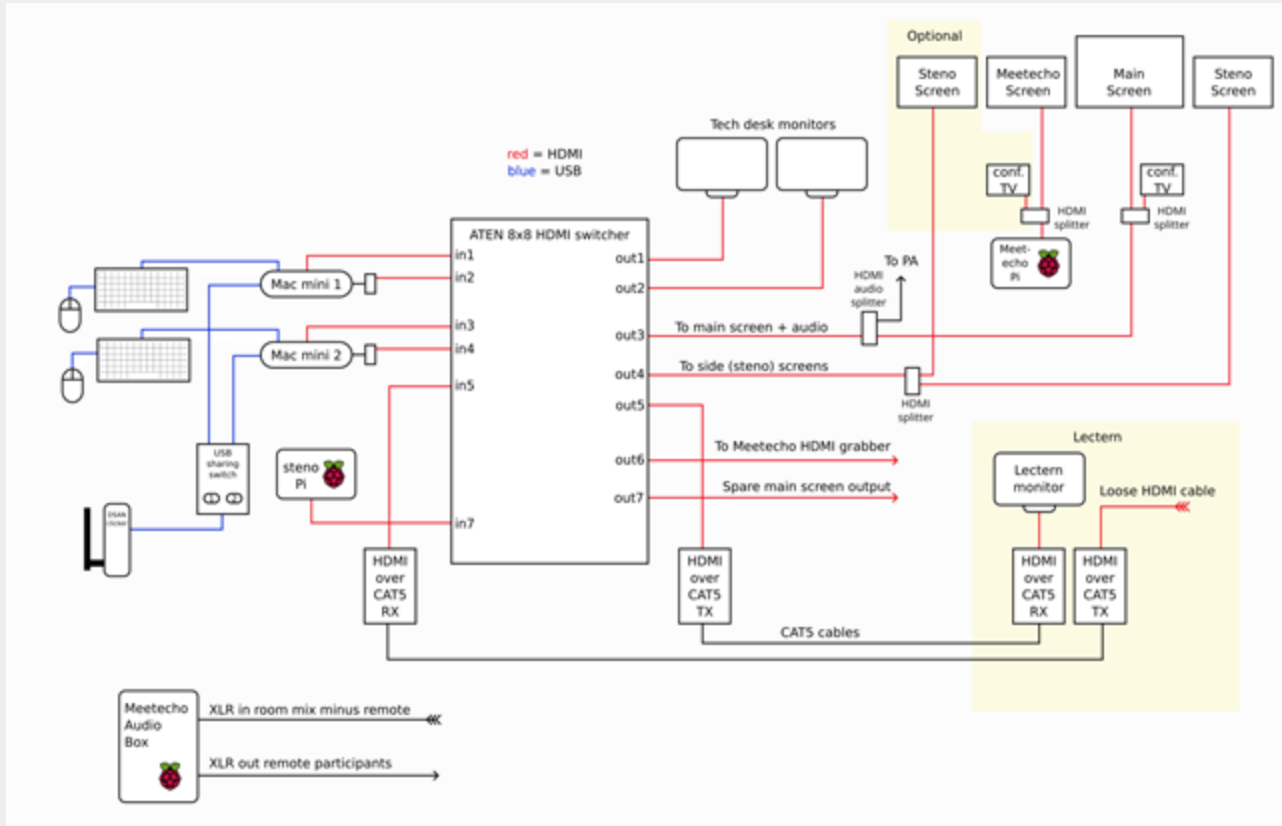


Each room has:

- Two MacMini's
- ATEN HDMI Matrix switcher
- DSAN clicker
- Limitimer clock
- HDMI Grabber for Meetecho
- RPi for Streamtext (steno)



Presentation System Wiring



New: Supporting Sound Through HDMI



Addressing the RIPE 88 General Meeting's pre-recorded video debacle

- Added HDMI audio de-embedders to the chain
- No more USB sound card
- No more issues playing videos
- Supports audio also from laptop HDMI input



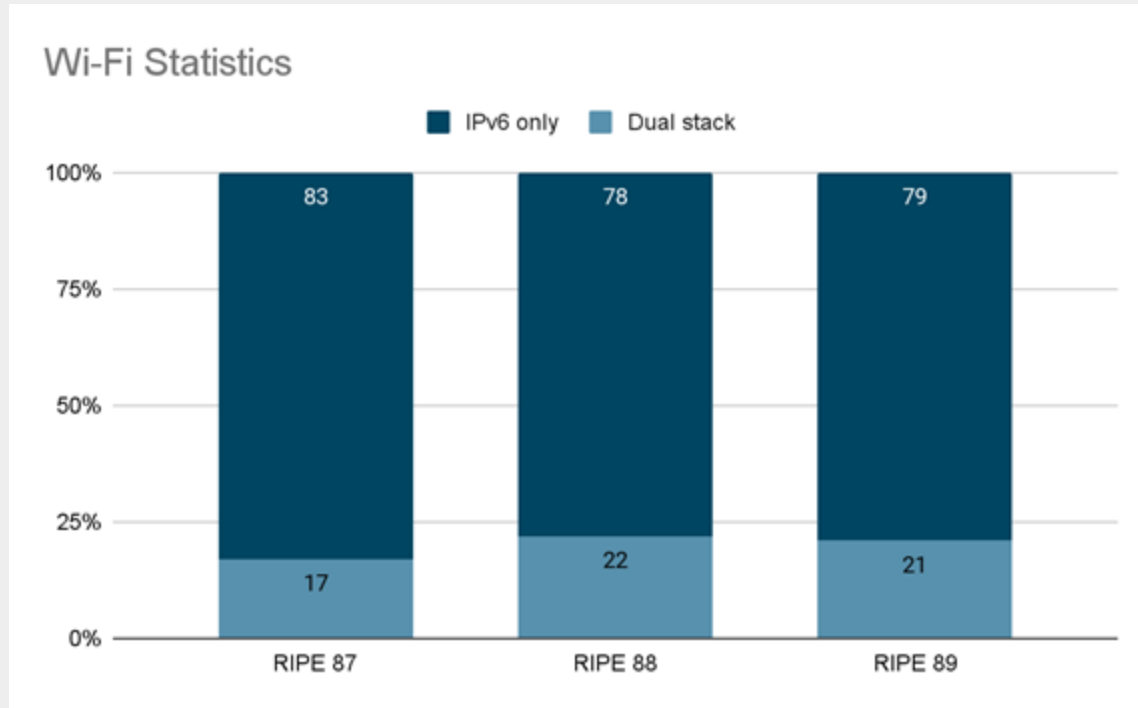


Statistics

IPv6 Only vs Dual Stack On Main Network



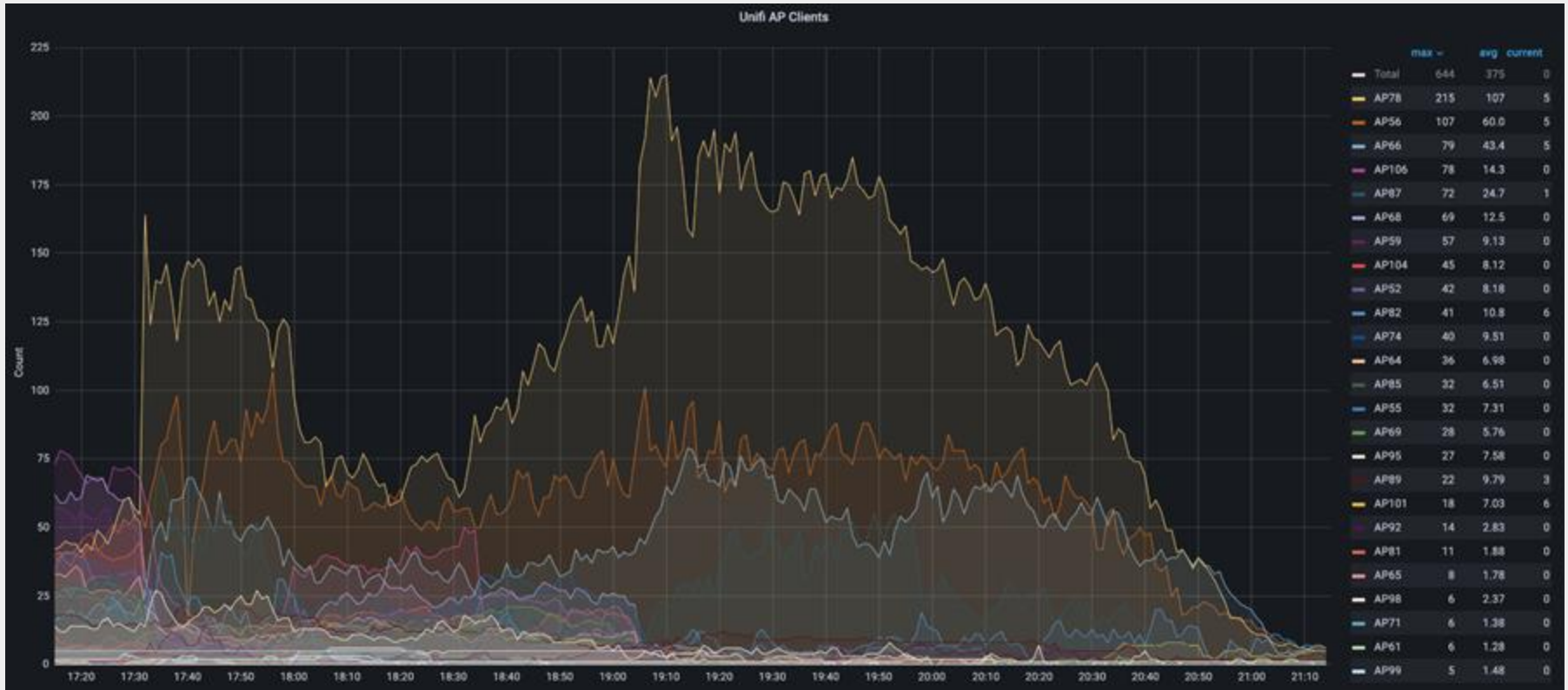
Dual stack remained stable, likely related to option 108 adoption



Wi-Fi Network During The Monday Social



Unsurprisingly, the bar was most the popular area!

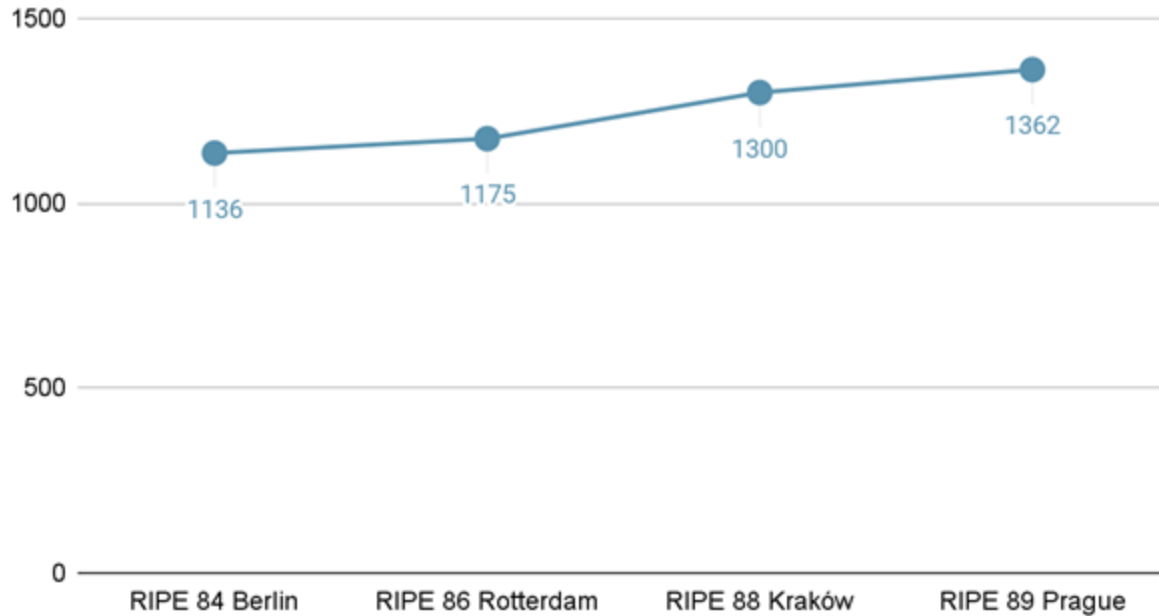


Baristatistics






Redundant barista setup results in higher coffee consumption

Average number of shots pulled per day



Special Thanks



Remote Participation	Stenographers	Connectivity	Host
			
Alessandro Toppi Antonio Bevilacqua Alessandro Amirante Tobia Castaldi	Mary Mckeon Tina Kealy Anna Papa Murphy Aideen Kelly	Radovan Igljar Jakub Mer	Daniel Rozum



Questions & Comments



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