Cloud & IPv6

Agenda

- 13:30 - 13:45 - **Welcome & Why IPv6 matters for Cloud now?** (UK IPv6 Council)

- 13:45 - 14:30 - **IPv6 in Azure** (Fabrizio Ferri, Microsoft Azure, UK)

- 14:30 - 15:15 - **Current state of IPv6 support in AWS** (Scott Hogg, Hexabuild, USA)

- *15:15 - 15:45 - **tea & coffee break***

Agenda - continued

- 15:45 - 16:15 - **The challenge of getting delegated IPv6 connectivity in cloud environments** (Radek Zajic, unassociated, CZ)

- 16:15 - 16:45 - **The reasons for IPv6-only hosting** (Nico Schottelius, Ungleich, CH)

- 16:45 - 17:15 - **Overview of IPv6 support in container technologies** (Pieter Lewyllie, Cisco & Belgium IPv6 Council, BE)

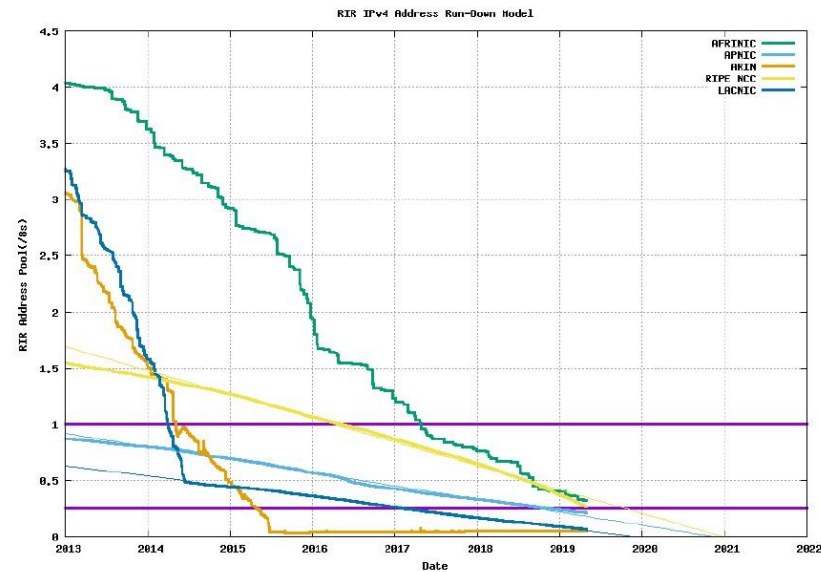- 17:15 - 17:30 - *closing & relocation to [Queen's Arms](#)*

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Why Cloud & IPv6? Why now?

All your Servers need IP addresses...

What about IPv4 Address Exhaustion?

RIR Address Pool runout projections (as of April 2019):

ARIN – no free pool left
AFRINIC – May 2020
LACNIC – November 2019
APNIC – November 2020
RIPE NCC – January 2020

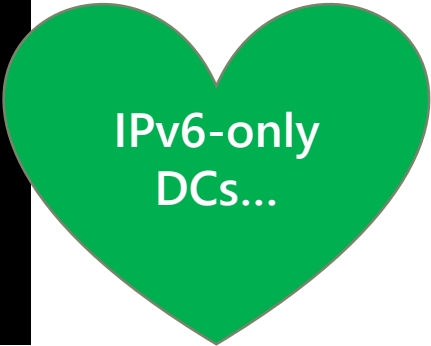Source: Geoff Huston – Routing in 2018 (RIPE78, May 2019)

Why IPv6 in Cloud?

- IPv4 costs money
  - Current price > $19/IPv4 (source: IPv4 Market Group)
  - Connecting a lot of servers (physical and virtual) costs a LOT of money
- Providers charging for IPv4
  - Google Cloud charging for IPv4 (as well as NAT) from 2020
- What about addressing Containers?

Facebook solved it...

/64 per host

- Every server at Facebook gets a dedicated /64
- Adapted container address allocation
- IP Address per task
  - Each task get's it's own IPv6 /128
  - Each task get's it's own port number space
  - Simplifies task scheduling and accounting
  - Port collisions gone (W00000TTT!!!)

IPv6-only DCs...

Your might resort to this...


```
                                    tcrofts — -bash — 117×21
from ps output
tcrofts 6608 6602 0 20:34 ? 00:00:00 nc -w 28807 app1234 22

from lsof
sshd 6602 tcrofts 3u IPv6 1455547370 0t0 TCP bastion01:ssh->[2600:19:          ]:49887 (ESTABLISHED)
nc 6608 tcrofts 3u IPv4 1455548022 0t0 TCP bastion01:51794->app1234:ssh (ESTABLISHED)

snipit from sshd_config
Match Address 172.16.0.0/12,!172.31.0.0/16
    RequiredAuthentications2 publickey
    Banner none
    ForceCommand /etc/issue.sh

file /etc/issue.sh
#!/bin/bash
echo "connecting using legacy IPv4"
echo "You need to use IPv6 to connect to this host"
echo "Raise a support ticket if your client doesn't support IPv6"
exit 1
```

Linked in

Source: Tim Crofts, LinkedIn – The beginning of the End (UK IPv6 Council meeting, December 2018)

For this to be reality, we need Cloud providers to support IPv6(-only)

That's why we are here today.