IPv6

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UberGroup Ltd

- 10 Staff
- 93 Towers
- ~170 Client access radio’s
- 5500-6000 km2 of coverage
- ~1200 Internet clients
- ~50 site-to-site clients

IPv6 Intro

- Address's are different

192.168.1.1(v4)

2405:5000:2:31f:250:56ff:fe9b:7d6c(v6)

- Subnetting is simpler, really!

2403:d200:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx/32

2403:d200:beef:xxxx:xxxx:xxxx:xxxx:xxxx/48

2403:d200:beef:aabb:xxxx:xxxx:xxxx:xxxx/64

IPv6 Intro

- Making address's sane
  - 2403:d200:beef:aabb:0000:0000:0000:0001/64 becomes 2403:d200:beef:aabb::1.64
  - 2403:d200:beef:0000:aabb:0000:0000:0001/64 becomes 2403:d200:beef:0000:aabb::1/64
- Stateless and stateful autoconfig
  - Stateless is simple and works 99% of the time
  - DHCPv6 for Stateful LAN

IPv6 Intro

- DNS will keep us sane – DNS entries for internal things
- NAT Is not a firewall! No NAT in v6
- Routable IP’s to clients is a must
- Client computers will have public IP’s now
- uPnP not needed and remote apps easier now

Chicken little

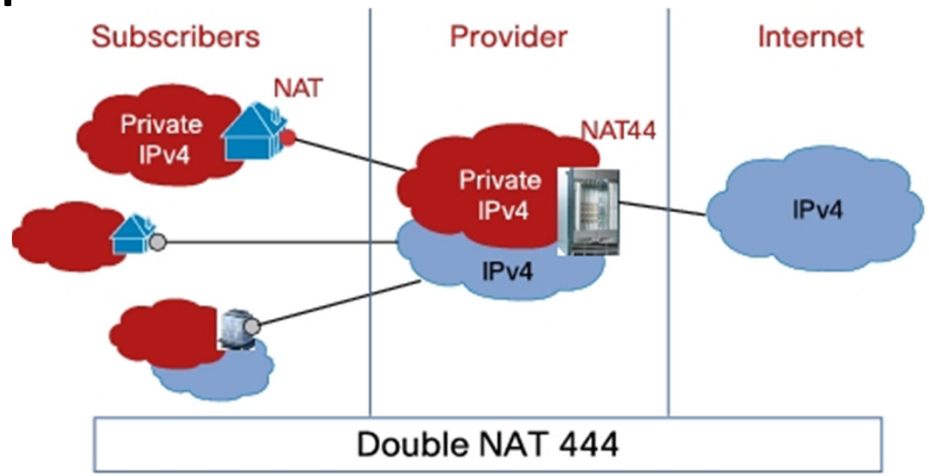
- The sky isn’t falling
- End of v4 has been 6-12 months away for the past 10 years
- The chicken and the egg problem
- We are actually at the v4 runout point
- APNIC is expected to run out first
- Tunnel Brokers wont be free forever

Transition Paths To IPv6

- CGN or Carrier Grade Nat
- DSL or DualStack Lite
- Dual Stack
- NAT64/DNS64

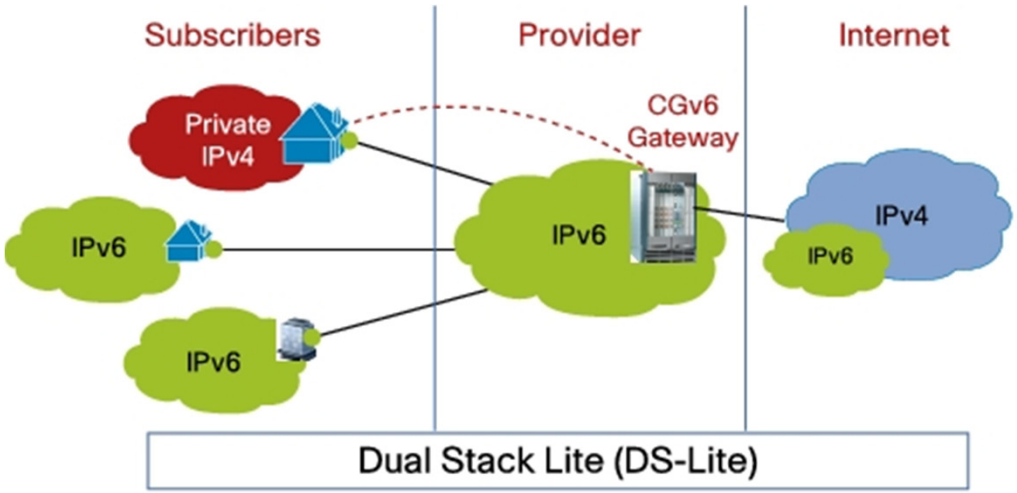
CGN

- Put's the whole ISP behind a giant Linksys Router
- Double NAT = Support hell
- Your XBOX/PS3/SIP Phone/Anything will complain about NAT during checks
- Easiest path for ISP's almost out of v4 space



DSL

- Has CGN still
- Runs IPv4 as islands over IPv6 core/access/edge networks

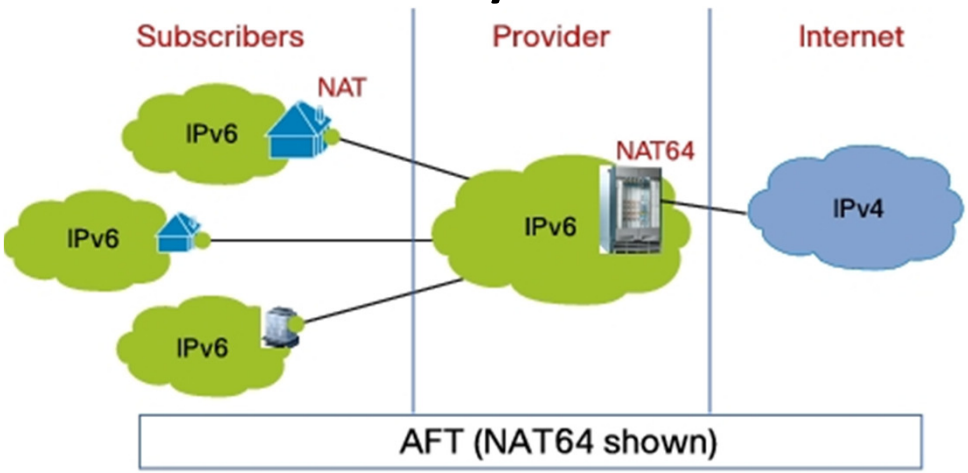


Dual Stack

- Pretty simple
- Public v4 and v6 space to the CPE
- Good untill we really all run out
- Gets everyone used to v6
- Should start now
- Right now can break things

NAT64

- Aimed at mobile networks
- Needs DNS64 to translate A records to AAAA
- App break that contain IPv4 info inside the packet so you need ALG to translate
- Can’t goto IP’s directly – Needs DNS



RouterOS and IPv6

- PPP
  - Only working in ROS 5.0
  - Was in ROS 3.0 for a while by mistake
  - Simple to do
  - Requires the IPv6 address to be placed on the CPE LAN manually
- Access to the router
  - ROS 5.0 only, SSH/Telnet/WWW/Winbox working, Check security when turning on

RouterOS and IPv6

- IPv6 in ROS 4.0
  - Works – Kinda
  - Not really suitable for deployments past trials
- Dynamic routing
  - Dont, really just dont!
- Bugs
  - Dynamic routing
  - Local Link based routing is hit and miss

How to do it now - stable

- Assumes you run MT CPE and MT core
- Run 6to4 tunnels over your current network
- Put in a deadicated ROS 5.0 beta core to put all tunnels on
- Statically add CPE Lan IP’s and routes (API – Learn it!)
- Static everything – it’s a pain but it works

Some things

- APNIC is expected to run out of v4 very soon
- 3.5 /8's left (APNIC burns a /8 every 2-4 weeks)
- Only 2.5 /8's left until it's very, very hard to get v4 space
- Address trading is on the cards but unlikely since it will blow out the global route table

Some things

- Next 12-24 months v6 will ramp up
- 2010 saw the global v6 route table double
- Those that burry their head in the sand will lose in the long run

Questions?