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IPv6 Council
Community Fibre

From 0% IPv6 to topping the UK chart in 18 months

Sam Defriez – Head of Technology

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- **What we wanted to achieve**
  - **Roll out IPv6 to our customers without spending money**
  - Win some awards!
  - IPv4 is expensive…
    - We'd rather spend money on putting fibre in the ground.
    - First step towards an IPv4 address sharing strategy?

- **The full deployment ended up taking us around a year and we learnt a lot.**
  - Some horror show bugs early on
  - The IPv6 internet has some major blackholes (if you have Cogent as your transit and don't take a full table)
  - We now have 100% of the network running IPv6

- **We talked a big game around MAP-T last time we spoke here**
  - Yeah, it didn't happen

- Despite the name Community Fibre are not….

- Although we are very proud of our presence within much of London's social housing

- Best Consumer ISP of the Year 2020 – ISPA

- World Operator of the Year with Revenues Under €500m – Total Telecoms

- Fastest ISP in UK H1 2020 according to ISP Reviews 6-monthly article on this topic.

- Country's first 3Gb package recently announced.

- 5 *'s on Trustpilot

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Subnetting…. Yay

- ## We have a /28 v6 block from Ripe.
  - /48's to our customers
  - Each cabinet is given a /36 to serve up to 4k live customers.

- ## Ripe were OK to increase our block from a /29 to a /28 in 2020.
  - Customer numbers and the size of the network nearly **trebled** in 2020.
  - We'll probably need to go back and ask for more IPv6 in 2021 as we plan to treble in size again.

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- **Kea – ISCs newest open source DHCP server.**

- **Quickly able to test**
  - Newbie (us) friendly

- **Kea met requirements:**
  - DHCPv4 server
  - DHCPv6 server + PD
  - Support for DS-Lite, MAP-T etc
  - Static assignments for v4 and v6
  - Forensic logging of customer to IP
  - Redundancy
  - Flexible REST API
  - Super helpful support team and very flexible to put in support for our requirements.
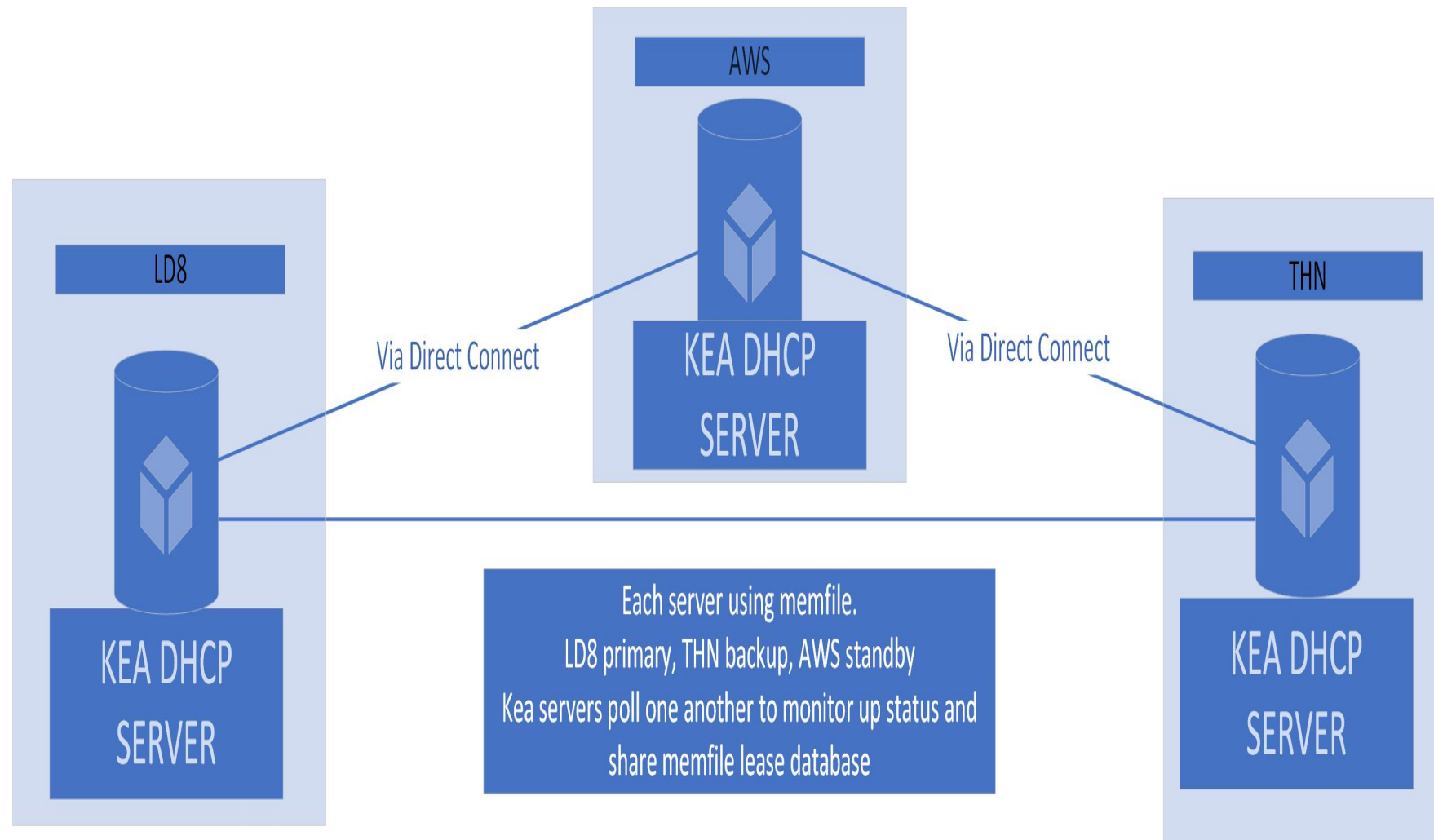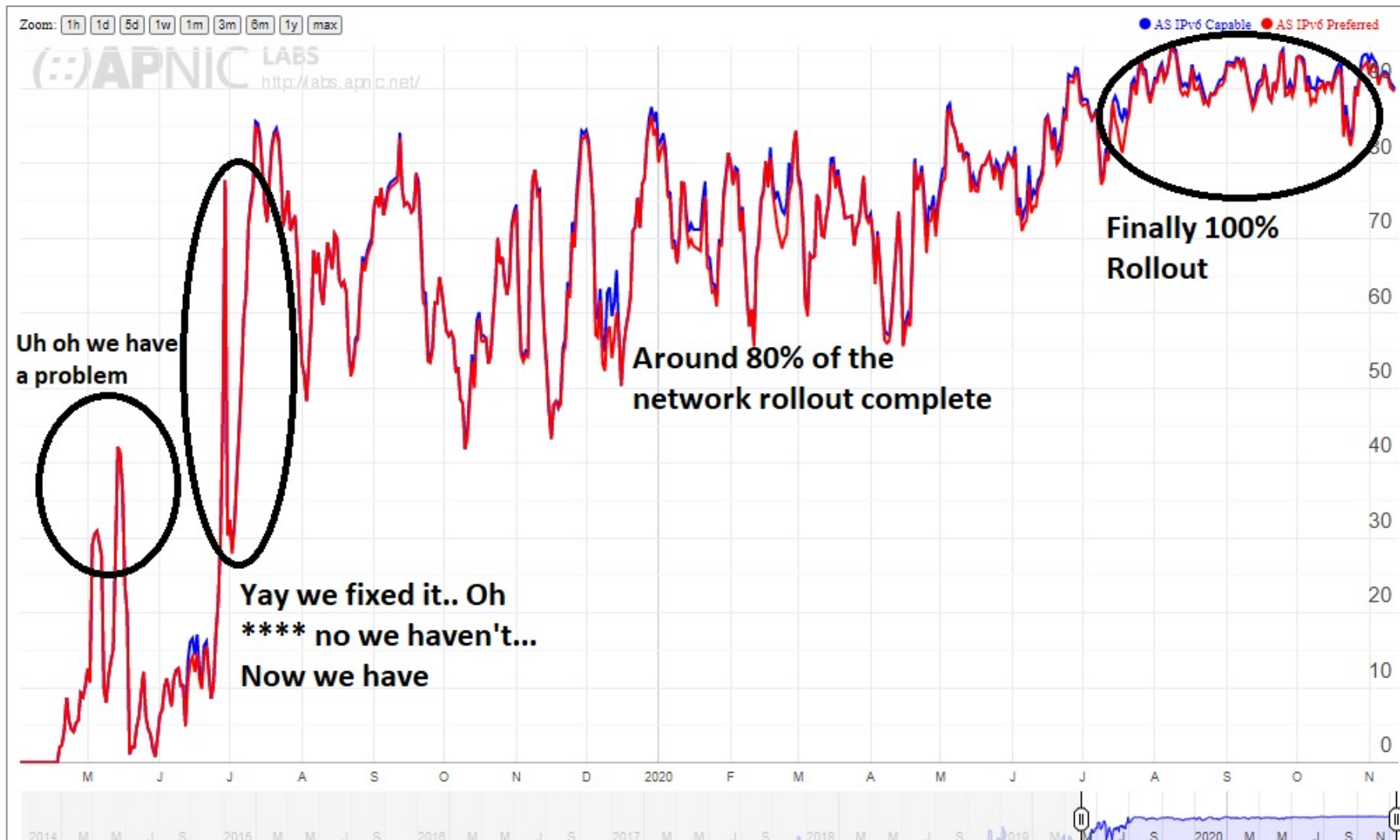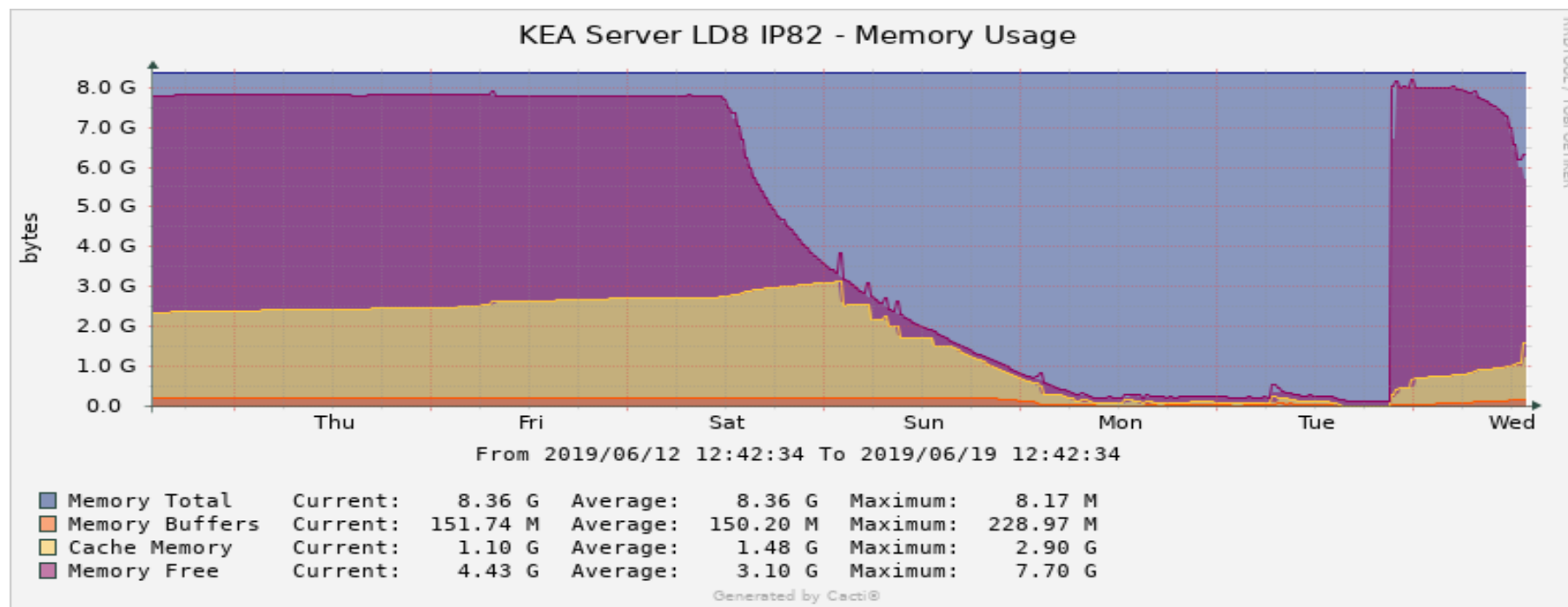
Teething Problems….

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- ## CPU / memory exhaustion
  - 100% CPU use and resulting memory exhaustion.
  - Kea bug to do with HA
  - The graph of server death.....
  - This bug has been fixed for a good year now, and we've had no repeat episodes.
  - This is what you get for being an early adopter!

KEA Server LD8 IP82 - Memory Usage

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- Around 20% of our PoPs ran a BNG that didn't support DHCPv6 relay.
- Equipment refresh or beg the vendor to release a new feature
- Yeah equipment refresh was never going to happen.
- We got lucky with Huawei eventually building support for DHCPv6 relay allowing us to take IPv6 to our whole network early this year.
  - This was almost certainly not done for Community Fibre, thank you to whichever big ISP pressured them

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- Cogent!
  - Upon first testing IPv6 in the lab we could not reach Google.
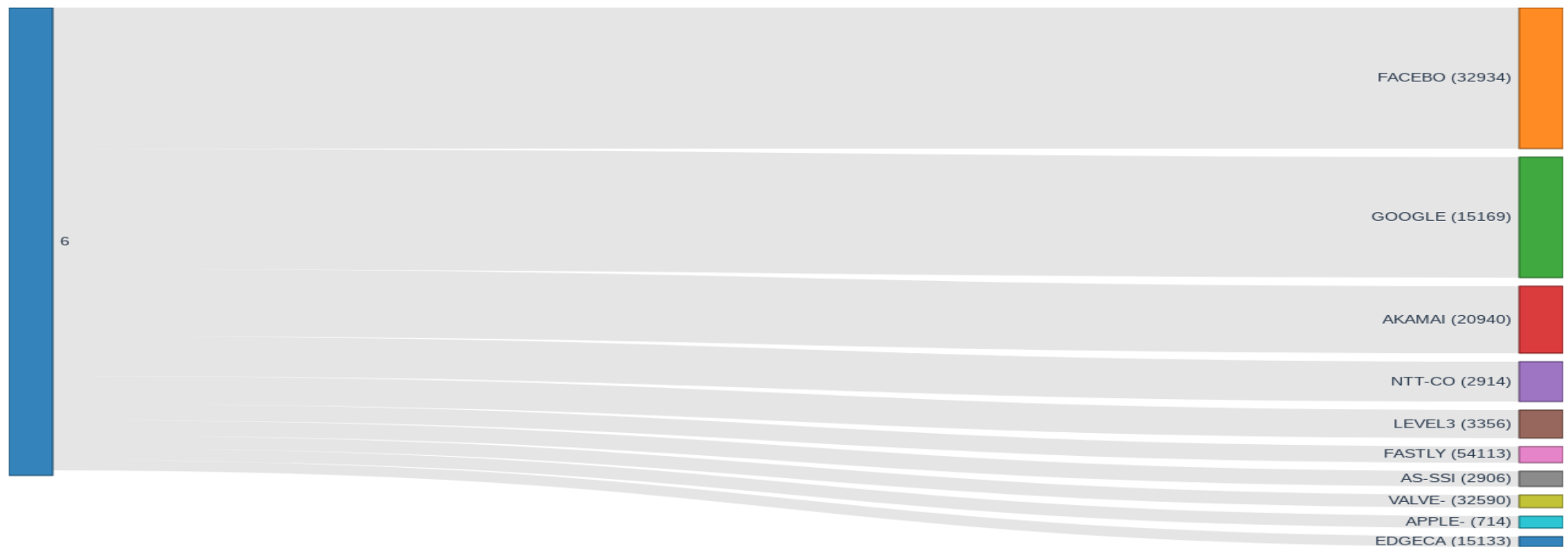 - Cogent blackhole to Google
  - Cake needed?

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- Around 30% of our traffic now running over IPv6
  - Expected destinations – Google, Facebook, Akamai, Netflix etc.

Top INET Family, Src AS Number by Average bits/s

Last 1w | 2 of 2 data sources | 2 Filters

FACEBO (32934)

GOOGLE (15169)

AKAMAI (20940)

NTT-CO (2914)

LEVEL3 (3356)

FASTLY (54113)

AS-SSI (2906)

VALVE- (32590)

APPLE- (714)

EDGECA (15133)

kentik.

- **Me in 2019…** "Let's use MAP-T, it's soooo much cheaper than NAT444 or other CGN style technologies, and there's no centralized state – YAY."
- *CPE issues….*

- **A slightly greyer me in mid-2020** "maybe DS-Lite? I know its CGN based but at least it keeps the idea of treating IPv4aas."
- *CPE issues…*

- **Me in summer 2020** "**** sake fine, NAT444 it is."
- The IPv6 deployment reduces load on our CGN devices and therefore saves us money.
- CGN enabled for lower 2 packages only.

- **We're going to have another go at MAP-T in 2021.**

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- I read a book about presentations that said always make sure the conclusion sums up the key take-aways for the audience

- **Key take-aways**

stats.labs.apnic.net/ipv6/AS201838?a=201838&c=GB&x=1&s=1&p=1&w=5

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS201838	ASN-COMMUNITYFIBRE	94.86%	94.39%	214
AS5607	BSKYB-BROADBAND-AS	92.67%	92.28%	65,768
AS56478	BCUBE-AS	79.67%	77.77%	1,210
AS2856	BT-UK-AS BTnet UK Regional network	72.83%	72.44%	61,240
AS9009	M247	55.30%	48.53%	3,262
AS20712	AS20712 Andrews & Arnold Ltd	55.00%	55.00%	60
AS60426	WIGHTFIBRE	48.75%	48.75%	80
AS12576	EE Ltd	35.34%	35.17%	23,706
AS206067	H3GUK	26.34%	26.30%	7,148
AS5413	AS5413	9.35%	8.82%	941
AS42689	CABLECOM-AS	7.86%	7.86%	140
AS786	JANET Jisc Services Limited	5.44%	4.31%	441
AS13213	UK2NET-AS	4.30%	0.57%	697
AS8426	CLARANET-AS ClaraNET LTD	2.88%	1.92%	104
AS59764	ATLANTIC-NET	2.42%	1.98%	455
AS20860	IOMART-AS	2.25%	1.80%	1,109
AS61046	HZ-UK-AS	2.20%	2.20%	91
AS44444	FORCEPOINT-CLOUD-AS	1.96%	1.96%	51
AS13037	ZEN-AS Zen Internet - UK	1.88%	1.88%	959
AS21267	IZR-AS Wavenet offer a range of products from	1.85%	0.00%	54
AS47474	VIRTUAL1	1.11%	0.00%	90