

IPv6: A Retrospective Look

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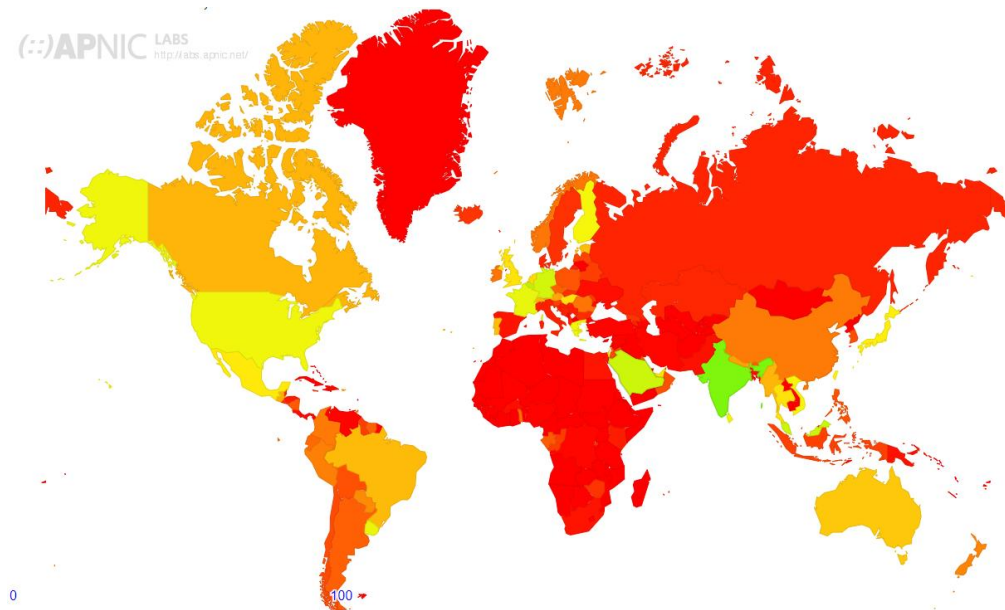
The Region

- 4 Subregions
 - Oceania
 - South East Asia
 - East Asia
 - South Asia

Statistics

Statistics IPv6 – World

- Steady Growth
 - Jan 2020 ~23.28% preferred
 - Nov 2022 ~30.78% preferred
 - Major increases seen:
 - Mexico 31% to 47%
 - Guatemala 11% to 32%
 - Netherlands 25% to 43%
 - Austria 10% to 23%
 - Finland 30% to 51%



<https://stats.labs.apnic.net/ipv6/>

Statistics IPv6 – World

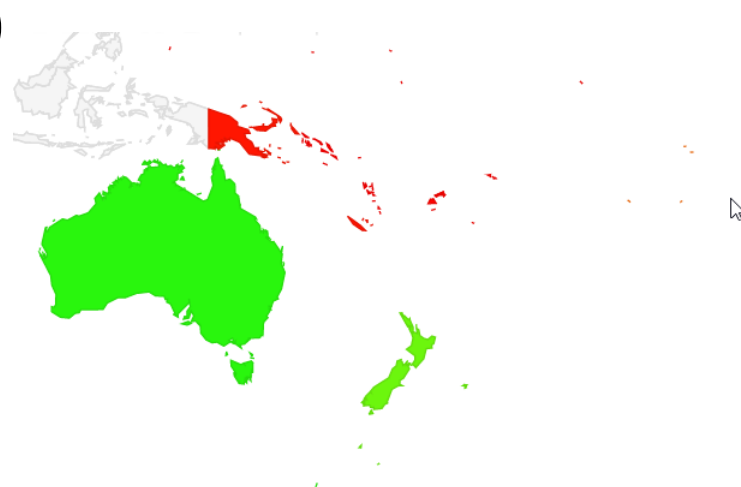
	CC	Country	IPv6 Preferred
➡	IN	India, Southern Asia, Asia	79.21%
	BL	Saint Barthelemy, Caribbean, Americas	77.33%
	BE	Belgium, Western Europe, Europe	66.09%
➡	MY	Malaysia, South-Eastern Asia, Asia	60.52%
	SA	Saudi Arabia, Western Asia, Asia	60.20%
	DE	Germany, Western Europe, Europe	59.50%
	FR	France, Western Europe, Europe	54.55%
	UY	Uruguay, South America, Americas	54.39%
	MS	Montserrat, Caribbean, Americas	53.64%
➡	LK	Sri Lanka, Southern Asia, Asia	52.75%
	GR	Greece, Southern Europe, Europe	52.54%
	US	United States of America, Northern America, Americas	51.51%
	FI	Finland, Northern Europe, Europe	51.06%
➡	VN	Vietnam, South-Eastern Asia, Asia	51.06%
	IL	Israel, Western Asia, Asia	49.86%
	LU	Luxembourg, Western Europe, Europe	48.57%
➡	TW	Taiwan, Eastern Asia, Asia	47.80%
➡	JP	Japan, Eastern Asia, Asia	47.26%
	AE	United Arab Emirates, Western Asia, Asia	46.15%
	MX	Mexico, Central America, Americas	46.10%
	GB	United Kingdom of Great Britain and Northern Ireland, Northern Europe, Europe	45.66%
	HU	Hungary, Eastern Europe, Europe	45.37%
➡	TH	Thailand, South-Eastern Asia, Asia	45.27%
	NL	Netherlands, Western Europe, Europe	44.38%
	AX	Aland Islands, Northern Europe, Europe	43.12%
➡	AU	Australia, Australia and New Zealand, Oceania	40.42%

Oceania

- 24 separate economies
 - Aside from AU/NZ
 - Most have relatively small population
 - Geographically dispersed
 - Limited access to good international backhaul connectivity
 - Limited competition within the markets

Statistics IPv6 – Oceania

- Sub-Region - ~33.7% IPv6 Capable (Up from ~22% 2020)
 - Top 3 in the region
 - AU – 40.42%
 - NZ – 22.56%
 - PF – 9.02%
 - The rest of the region is ~3% Combined



<https://stats.labs.apnic.net/ipv6/XF>

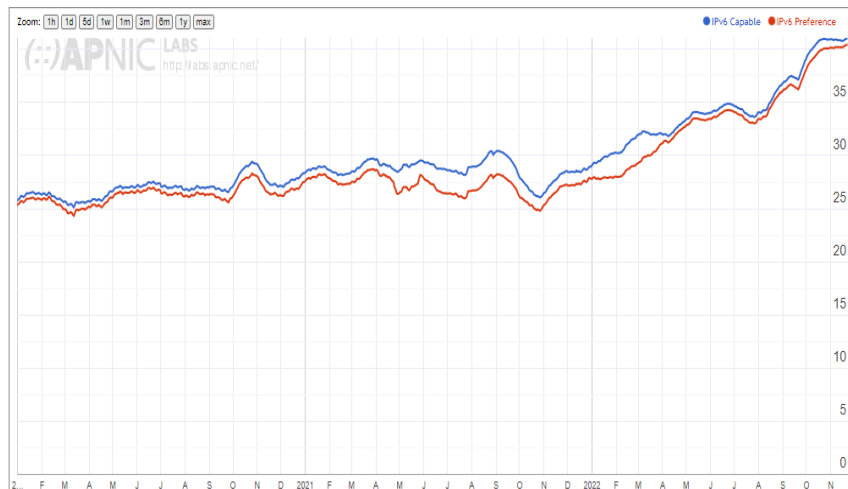
Statistics IPv6 – Oceania

CC	Country	IPv6 Preferred
AU	Australia, Australia and New Zealand, Oceania	40.42%
NZ	New Zealand, Australia and New Zealand, Oceania	22.56%
PF	French Polynesia, Polynesia, Oceania	9.02%
PG	Papua New Guinea, Melanesia, Oceania	3.87%
NC	New Caledonia, Melanesia, Oceania	1.35%
TO	Tonga, Polynesia, Oceania	0.89%
MH	Marshall Islands, Micronesia, Oceania	0.56%
FJ	Fiji, Melanesia, Oceania	0.19%
TV	Tuvalu, Polynesia, Oceania	0.00%
AS	American Samoa, Polynesia, Oceania	0.13%
CK	Cook Islands, Polynesia, Oceania	0.08%
GU	Guam, Micronesia, Oceania	0.07%
NR	Nauru, Micronesia, Oceania	0.07%
MP	Northern Mariana Islands, Micronesia, Oceania	0.06%
FM	Micronesia (Federated States of), Micronesia, Oceania	0.03%
PW	Palau, Micronesia, Oceania	0.02%
WS	Samoa, Polynesia, Oceania	0.02%
SB	Solomon Islands, Melanesia, Oceania	0.02%
VU	Vanuatu, Melanesia, Oceania	0.01%
WF	Wallis and Futuna Islands, Polynesia, Oceania	0.00%
NF	Norfolk Island, Australia and New Zealand, Oceania	0.00%
KI	Kiribati, Micronesia, Oceania	0.00%
TK	Tokelau, Polynesia, Oceania	0
NU	Niue, Polynesia, Oceania	0

<https://stats.labs.apnic.net/ipv6/XF>

Statistics IPv6 – Australia

- Australia – 40.22% preferred
 - Up from ~25%

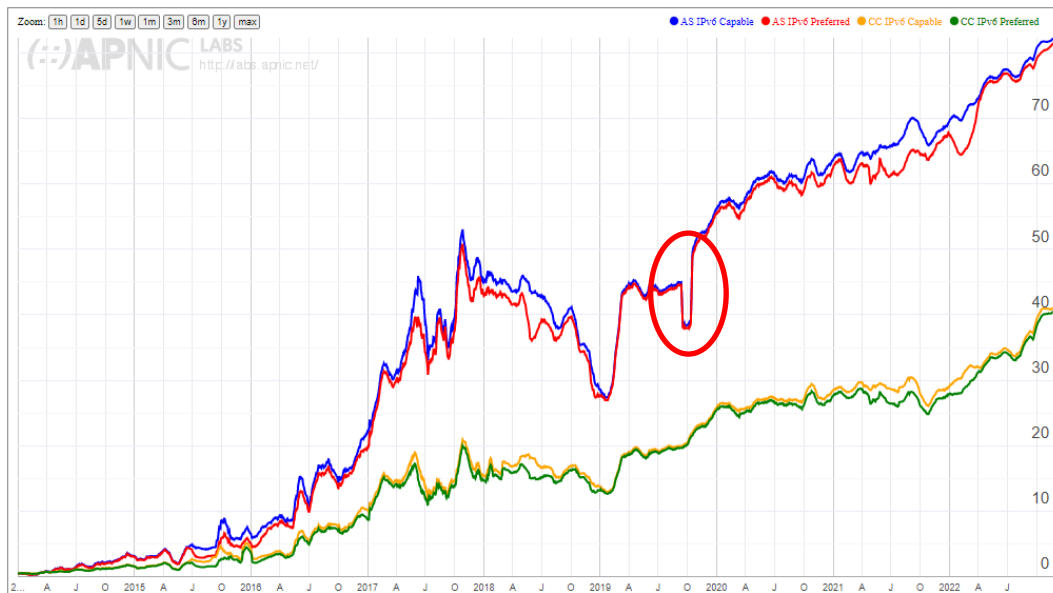


ASN	AS Name	IPv6 Preferred
AS1221	ASN-TELSTRA Telstra Corporation Ltd	81.42%
AS18371	NCABLE-AP Neighbourhood Cable	78.37%
AS10143	EXETEL-AS-AP Exetel Pty Ltd	57.84%
AS133612	VODAFONE-AS-AP Vodafone Australia Pty Ltd	36.03%
AS10214	PENTANET-AS-AP Pentanet Limited	32.55%
AS134697	LAUNTEL-AS-AP Launtel	20.51%
AS4764	WIDEBAND-AS-AP Aussie Broadband	16.98%
AS134141	B2BWHOLESALE-AS-AP B2B Wholesale Pty Ltd	15.08%
AS133480	INTERGRID-AS-AP Intergrid Group Pty Ltd	10.30%
AS136000	LIGHTNING-AS-AP Lightning Broadband Pty Ltd	11.03%

<https://stats.labs.apnic.net/ipv6/AU>

Statistics IPv6 – Australia

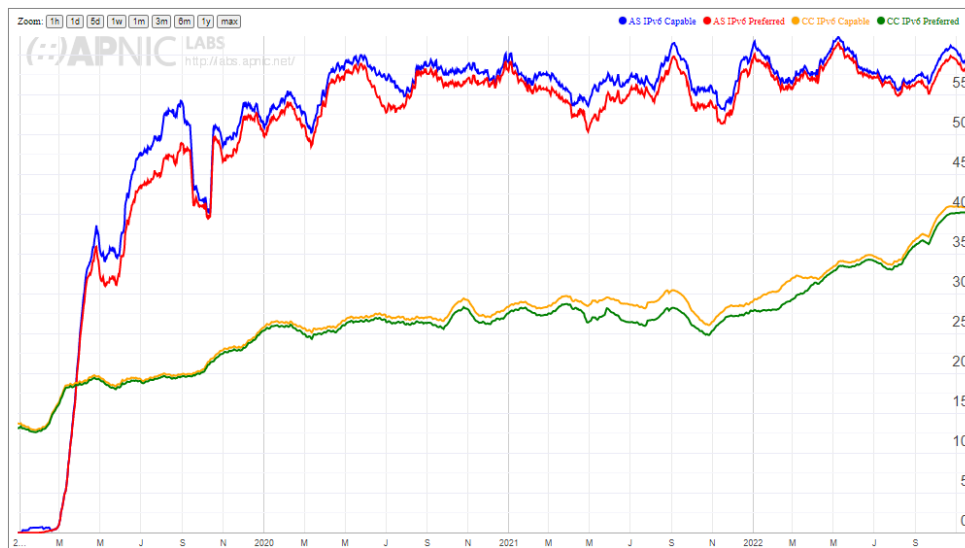
- Telstra – AS1221
 - Full service provider (fixed/Mobile)
 - Up from ~55% in 2020



<https://stats.labs.apnic.net/ipv6/AS1221?a=1221&c=AU&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – Australia

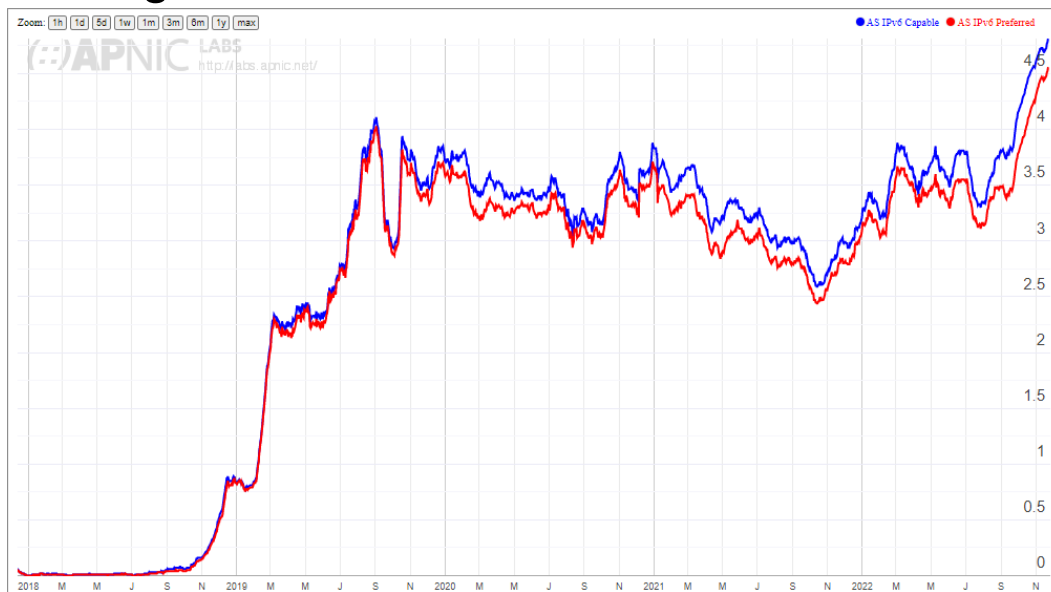
- Exetel – AS10143
 - Fixed Network Provider
 - Up from ~50% in 2020
 - Stable!



<https://stats.labs.apnic.net/ipv6/AS10143?a=10143&c=AU&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – Australia

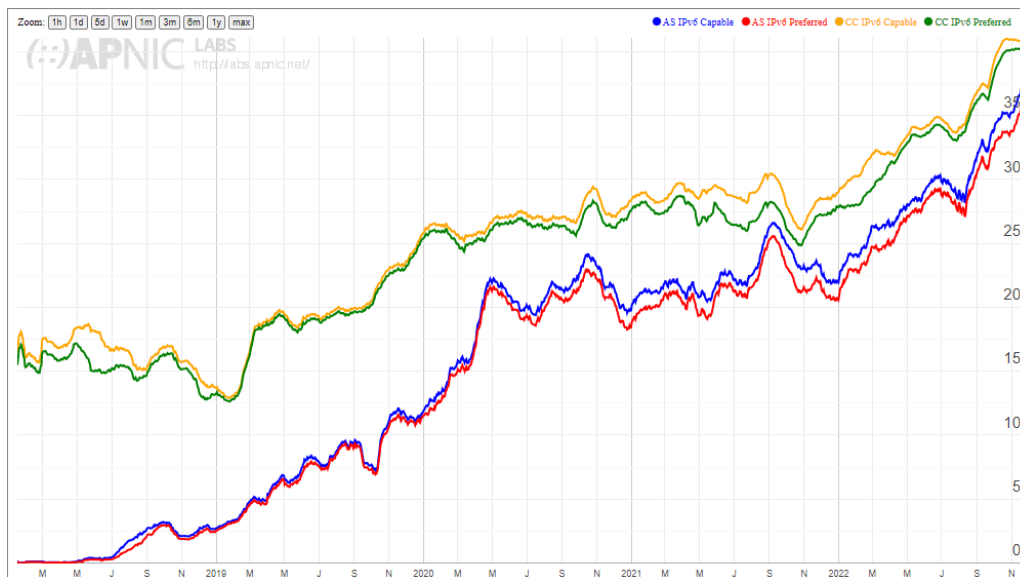
- TPG – AS7545
 - Growth by acquisition
 - No IPv6 Offering



<https://stats.labs.apnic.net/ipv6/AS7545?a=7545&c=AU&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – Australia

- Vodafone – AS133612
 - Acquired by TPG June 2021
 - Not sure where this IPv6 Traffic is going



<https://stats.labs.apnic.net/ipv6/AS133612?a=133612&c=AU&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – Australia

- Vodafone – AS133612
 - Acquired by TPG June 2021
 - Not sure where this IPv6 Traffic is going

Test your IPv6 connectivity.

Summary Tests Run Share Results / Contact For the Help Desk

- Your IPv4 address on the public Internet appears to be 120.22.49.22
- Your Internet Service Provider (ISP) appears to be VODAFONE-AS-AP Vodafone Australia Pty Ltd
- No IPv6 address detected [\[more info\]](#)
- You appear to be able to browse the IPv4 Internet only. You will not be able to reach IPv6-only sites.
- To ensure the best Internet performance and connectivity, ask your ISP about native IPv6. [\[more info\]](#)
- Your DNS server (possibly run by your ISP) appears to have no access to the IPv6 Internet, or is not configured to use it. This may in the future restrict your ability to reach IPv6-only sites. [\[more info\]](#)

Your readiness score
0/10 for your IPv6 ability and readiness, when publishers are forced to go IPv6 only

rmnet_data1

MAC
02 00 00 00 00 00

MTU
1500

Link-Local
fe80::a037:95ff:fee4:4c8

Unknown
2405:6e00:743:a5b2:a037:95ff:fee4:4c8

rmnet_data2

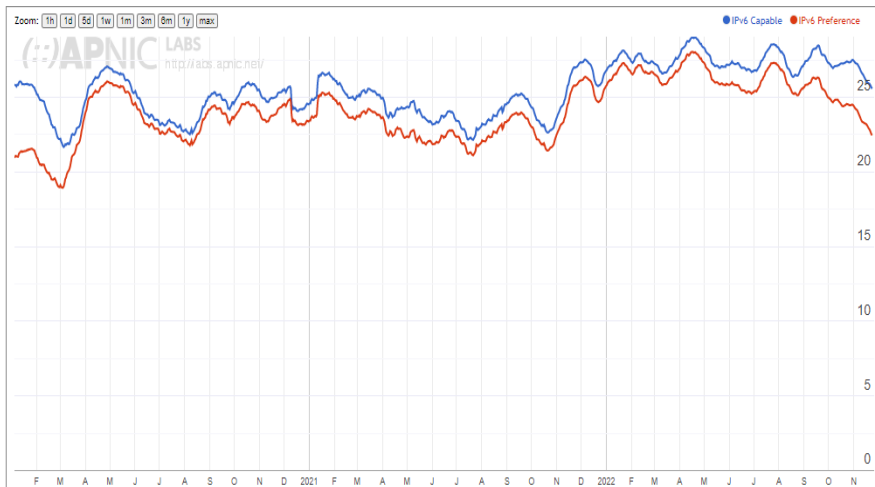
MAC
02 00 00 00 00 00

MTU
1500

Private
10.185.8.177

Statistics IPv6 – New Zealand

- New Zealand – 22.56% preferred
 - Marginal Increase
 - ~400 Unique ASN



ASN	AS Name	IPv6 Preferred
AS139054	DATACENTRELIMITED-AS-AP Auckland Data Centre Limited	98.73%
AS140220	SKYTELEVISION-AS-AP Sky Network Television Ltd	85.41%
AS555850	MERCURYNZ-AS-AP Mercury NZ Limited	48.49%
AS9500	VODAFONE-TRANSIT-AS Vodafone NZ Ltd.	45.81%
AS23655	TWODEGREES-NZ-AS 2degrees Networks Limited	43.24%
AS9790	VOCUSGROUPNZ VocusGroup	42.41%
AS45177	DEVOLI-AS-AP Devoli	27.66%
AS45267	LIGHTWIRE-AS-AP Lightwire LTD	24.91%
AS132347	MIKI-PRO-AS-AP MikiPro Ltd	2.21%
AS132268	VELOCITYNET-AS-AP Velocity Net Limited	1.96%

<https://stats.labs.apnic.net/ipv6/NZ>

Statistics IPv6 – New Zealand

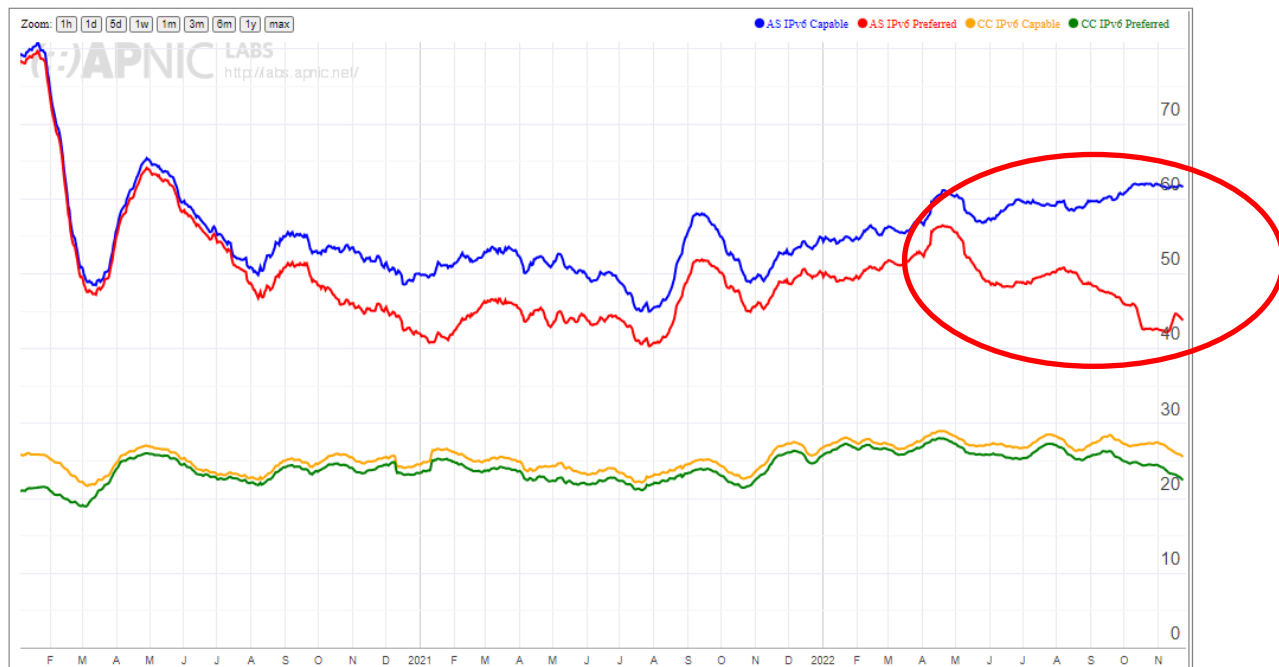
- Sky Television - AS140220 – 85.41% Preferred



<https://stats.labs.apnic.net/ipv6/AS140220?a=140220&c=NZ&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – New Zealand

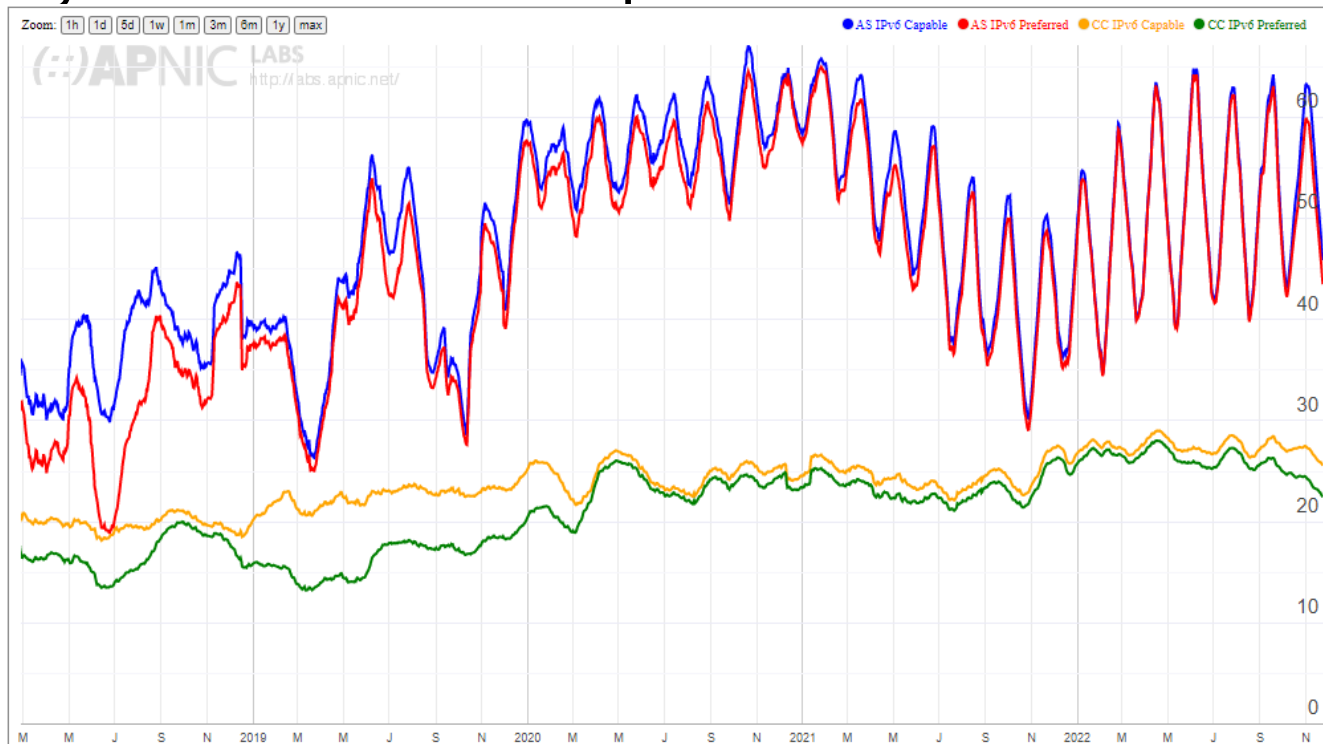
- 2Degrees - AS23655 – 43.24% Preferred
 - Down from ~79%



<https://stats.labs.apnic.net/ipv6/AS23655?a=23655&c=NZ&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – New Zealand

- Mercury – AS55850 – It Depends.....

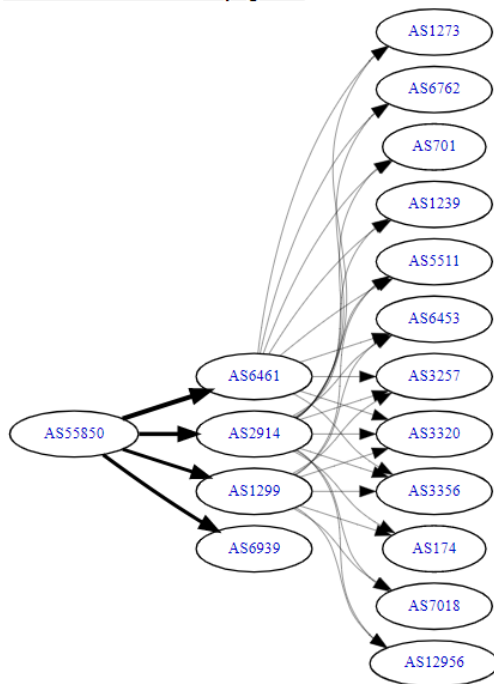


<https://stats.labs.apnic.net/ipv6/AS55850?a=55850&c=NZ&x=0&s=0&p=1&w=30&s=1>

Statistics IPv6 – New Zealand

- Mercury – AS55850 – It Depends.....

AS55850 IPv6 Route Propagation



```
route-views.sg.routeviews.org> sh ipv6 bgp regexp _55850$
BGP table version is 0, local router ID is 27.111.228.208
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete
```

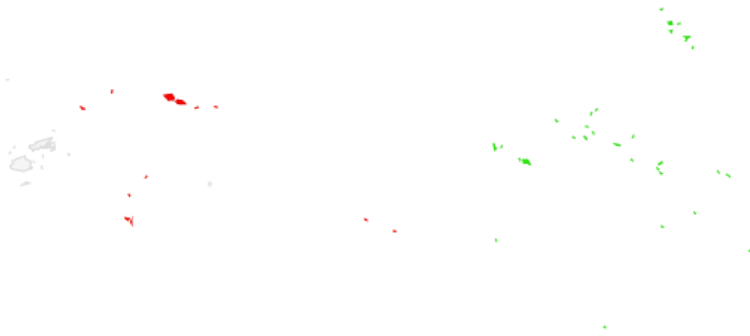
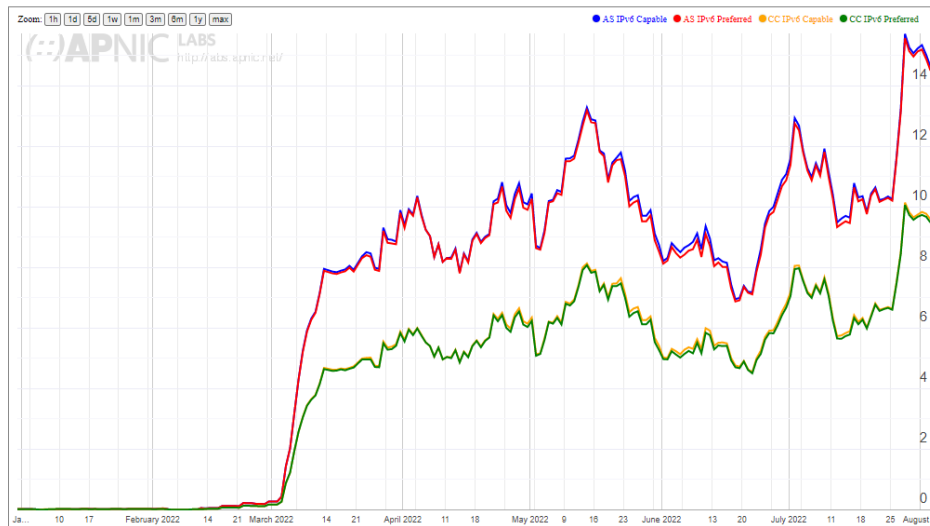
Network	Next Hop	Metric	LocPrf	Weight	Path
* 2406:5a00::/32	2001:de8:4::3257:1	370		0	3257 2914 55850 i
*	2001:de8:4::5:5850:1			0	7713 55850 i
*	2001:de8:4::5:5850:1			0	24482 55850 i
*	2001:de8:4::3:8880:1	0		0	38880 55850 i
*>	2001:de8:4::5:5850:1			0	24516 55850 i
*	2001:de8:4::5:5850:1			0	9268 55850 i
*	2001:de8:4::8220:1			0	8220 6939 55850 i
*	2001:de8:4::5:5850:1			0	18106 55850 i
*	2001:de8:4::5:5850:1			0	7713 55850 i
*	2001:de8:4::3491:1			0	3491 2914 55850 i
*	2001:de8:4::5:5850:1			0	58511 55850 i
*	2001:de8:4::1:6552:1			0	16552 55850 i

Total number of prefixes 1

https://bgp.he.net/AS55850#_graph6

Statistics IPv6 – Polynesia

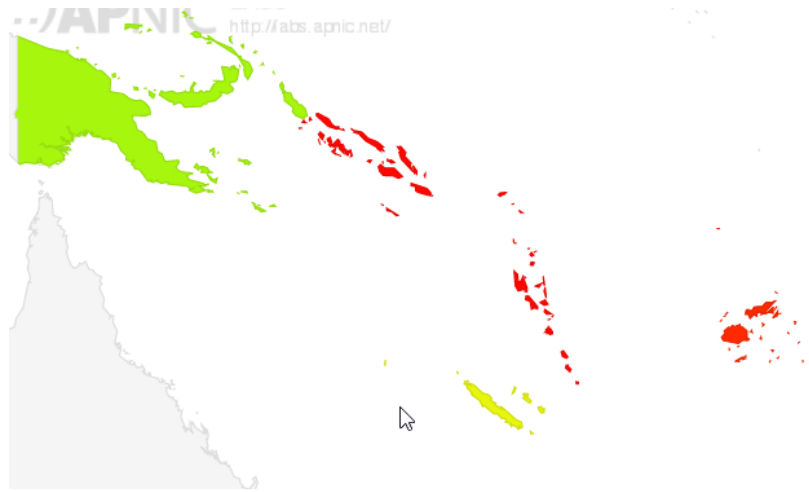
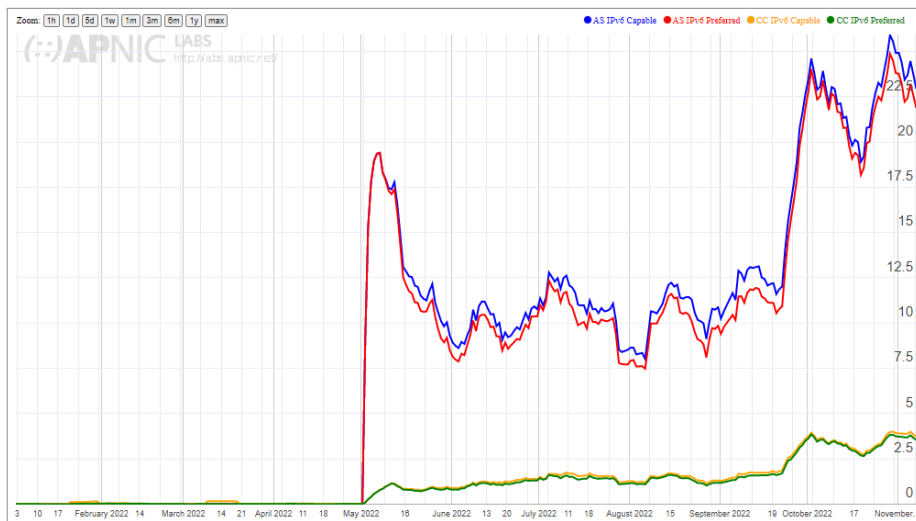
- Polynesia – 4.22% Preferred
 - PF - 9.02%
 - AS9471-ONATI ~14%



<https://stats.labs.apnic.net/ipv6/QS?o=cXFW30x1r1>

Statistics IPv6 – Melanesia

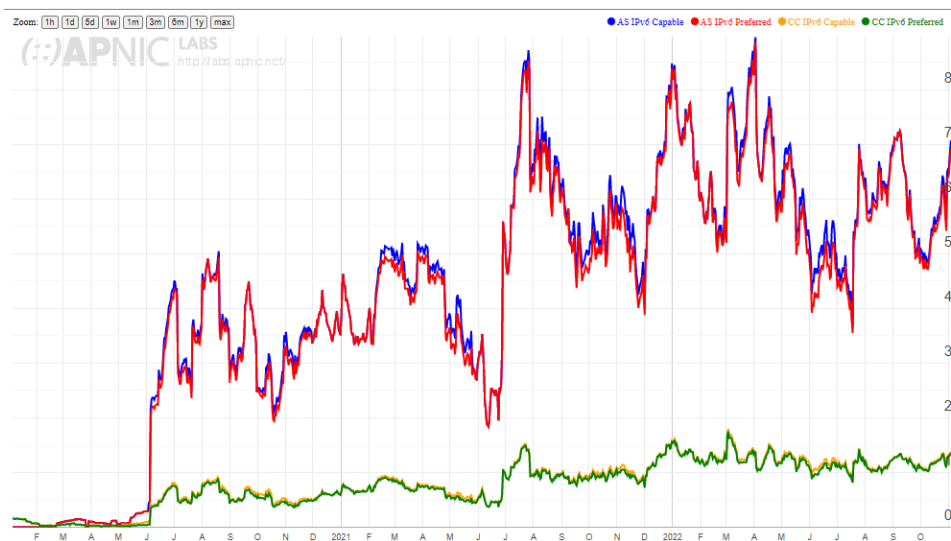
- Melanesia – 2.19% Preferred
 - PG – 3.37%
 - AS139898 – Digitec (Vodafone PNG) - ~20%



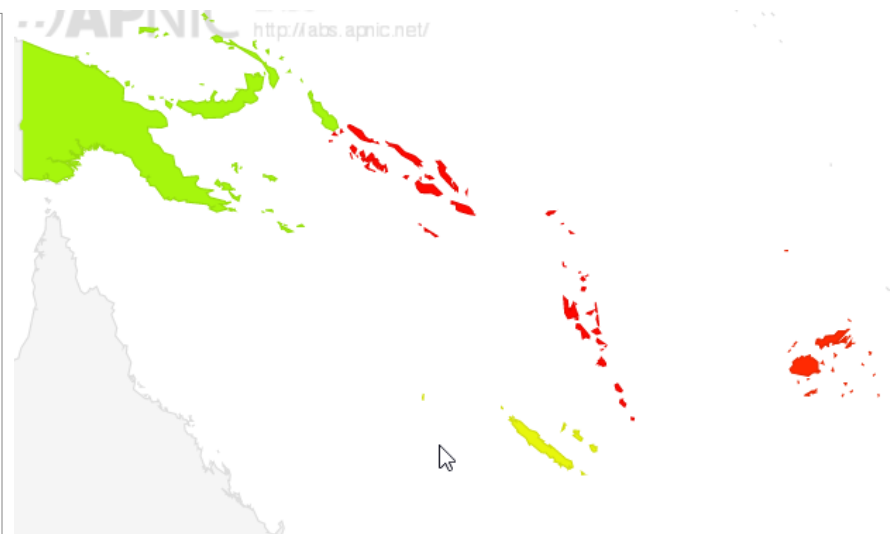
<https://stats.labs.apnic.net/ipv6/AS139898?a=139898&c=PG&x=0&s=0&p=1&w=10&s=1>

Statistics IPv6 – Melanesia

- Melanesia – 2.19% Preferred
 - NC – 1.33%
 - AS56055 – Micro Logic Systems – 6.86%

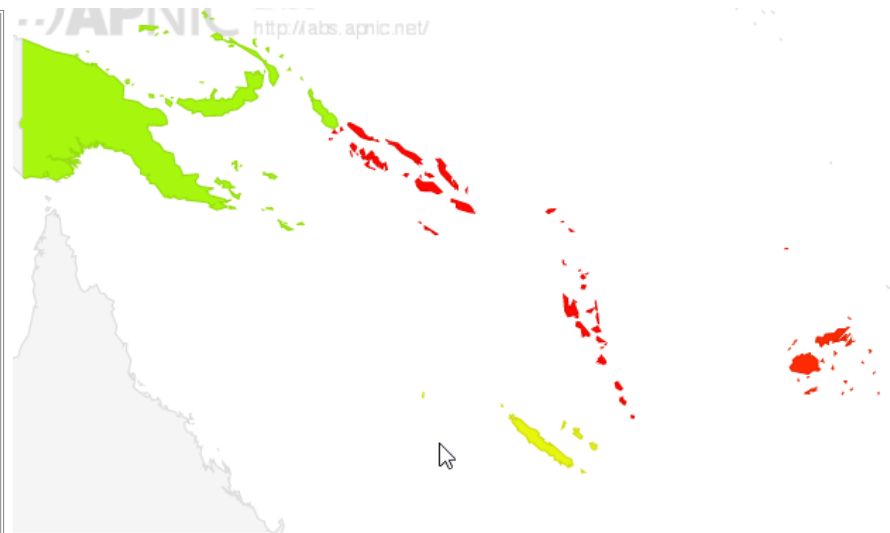
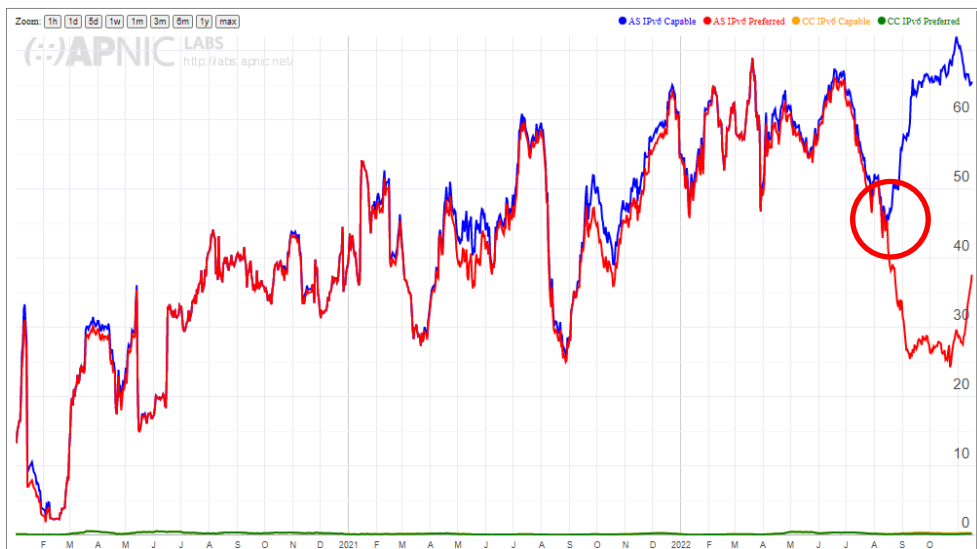


<https://stats.labs.apnic.net/ipv6/AS56055?c=NC&p=1&v=1&w=30&x=1>



Statistics IPv6 – Melanesia

- Melanesia – 2.19% Preferred
 - FJ – 0.13%
 - AS24390 – USP – 25.12% - Climbing back up



<https://stats.labs.apnic.net/ipv6/AS24390?c=FJ&p=1&v=1&w=30&x=1>

Statistics IPv6 – Melanesia

- What Happened to USP-Fiji? – SYD-SIN

traceroute to 139.162.xxx.xxx (139.162.xxx.xxx), 30 hops max, 60 byte packets

```
1  irb-400.leaf6.dc.gdpt.qld.internal.aarnet.net.au (182.255.120.78) 0.681 ms 0.659 ms 0.641 ms
2  138.44.129.209 (138.44.129.209) 0.631 ms 0.616 ms 0.592 ms
3  138.44.129.210 (138.44.129.210) 0.580 ms 0.556 ms
4  et-5-3-0.pe1.brwy.nsw.aarnet.net.au (113.197.15.16) 15.753 ms 15.807 ms 15.865 ms
5  et-2-0-5.bdr1.sing.sin.aarnet.net.au (113.197.15.233) 107.038 ms 107.052 ms
6  ae1.bdr2.sing.sin.aarnet.net.au (113.197.15.235) 107.070 ms
7  ae1.bdr2.sing.sin.aarnet.net.au (113.197.15.235) 105.042 ms
   akamai-linode.sgix.sg (103.16.102.249) 107.121 ms 107.096 ms
8  et-2-1-2.bdr2.sing.sin.aarnet.net.au (113.197.15.247) 104.494 ms 104.501 ms
   xxxx.gw1.sin1.sg.linode.com (139.162.xxx.xxx) 107.367 ms
```


Statistics IPv6 – Melanesia

- What Happened to USP-Fiji? – SYD-SIN

traceroute6 to 2600:3c0f:9::XXX (2600:3c0f:9::XXX) from 2001:388:XX::XX, 64 hops max, 12 byte packets

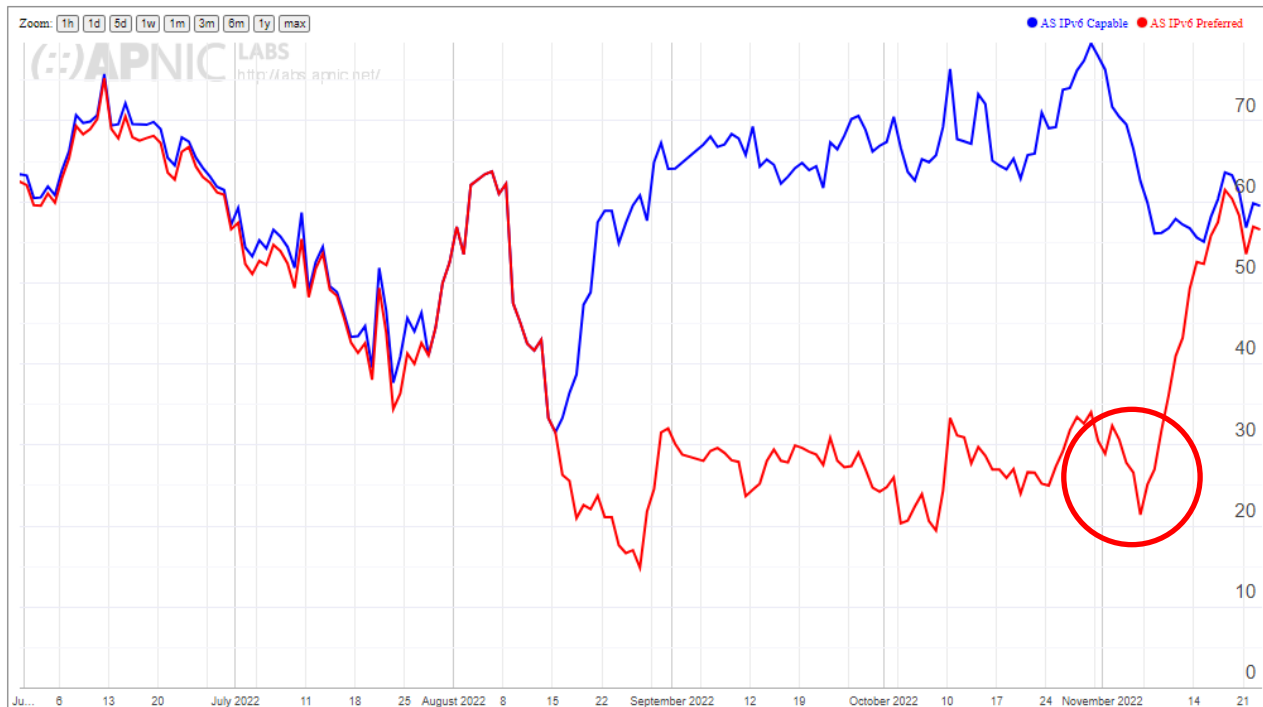
```
1 xe-0-0-2.pe1.bkvl.nsw.aarnet.net.au (2001:388:bc:12::1) 35.630 ms 35.460 ms 37.074 ms
2 et-3-1-0.pe1.brwy.nsw.aarnet.net.au (2001:388:bc:5::1) 36.782 ms 36.444 ms 35.969 ms
3 0-1-0-et.bdr1.brwy.nsw.aarnet.net.au (2001:388:1:a0::2) 35.802 ms 36.747 ms 35.841 ms
4 e0-36.core2.syd1.he.net (2001:470:0:51c::2) 190.750 ms * 191.562 ms
---- SNIP ----
9 sjeGCS002.int-gw.kddi.ne.jp (2001:268:fb81:7e::1) 194.091 ms 190.826 ms
10 * * *
11 2001:268:fa00:200::1008 (2001:268:fa00:200::1008) 296.484 ms * *
12 6oteJIN301.int-gw.kddi.ne.jp (2001:268:fa02:14f::2) 295.868 ms
13 2001:268:f702:291::2 (2001:268:f702:291::2) 285.464 ms 285.736 ms 295.163 ms
14 ae2.r02.tyo03.icn.netarch.akamai.com (2600:1488:4002:111::a) 287.144 ms 318.322 ms 291.506 ms
15 ae0.r01.tyo03.icn.netarch.akamai.com (2600:1488:5fc0:35::a) 294.419 ms 299.436 ms 304.380 ms
16 ae7.r01.sin01.icn.netarch.akamai.com (2600:1488:5fc0:31::b) 363.009 ms 353.734 ms 354.090 ms
17 ae1.r02.sin01.ien.netarch.akamai.com (2600:1488:4100:209::b) 368.095 ms 363.261 ms 362.702 ms
18 g2600-1488-4100-0000-0000-0000-0009.deploy.static.akamaitechnologies.com (2600:1488:4100::9)
241.331 ms 244.669 ms 241.782 ms
19 2600:3c0f:9:32::2 (2600:3c0f:9:32::2) 246.662 ms
20 2600:3c0f:9:XXX::XX (2600:3c0f:9:XXX::XX) 249.211 ms 247.288 ms 247.252 ms
```

Statistics IPv6 – Melanesia

- What Happened to USP-Fiji?
 - IPv4 and IPv6 routing paths were different.
 - RFC7511 Issue
 - ~150ms slower on IPv6
 - Happy Eyeballs (RFC6555/8305)
 - Either 200ms or 50ms
 - How can it be fixed?
 - Make sure that IPv4 and IPv6 Paths are the same
 - Both Routing and DNS
 - Check for asymmetric Paths

Statistics IPv6 – Melanesia

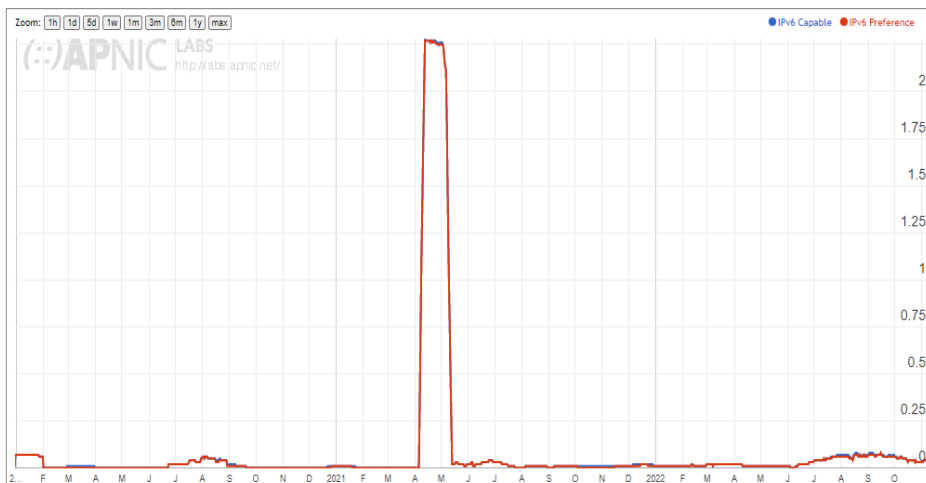
- What Happened to USP-Fiji?



<https://stats.labs.apnic.net/ipv6/AS24390?a=24390&c=FJ&x=0&s=0&p=1&w=10>

Statistics IPv6 – Micronesia

- Micronesia – < 0.1% Capable
 - Less “Need” to deploy due to population



CC	Country	IPv6 Capable
<u>MH</u>	Marshall Islands, Micronesia, Oceania	0.28%
<u>GU</u>	Guam, Micronesia, Oceania	0.13%
<u>FM</u>	Micronesia (Federated States of), Micronesia, Oceania	0.11%
<u>KI</u>	Kiribati, Micronesia, Oceania	0.07%
<u>MP</u>	Northern Mariana Islands, Micronesia, Oceania	0.05%
<u>NR</u>	Nauru, Micronesia, Oceania	0.03%
<u>PW</u>	Palau, Micronesia, Oceania	0.02%

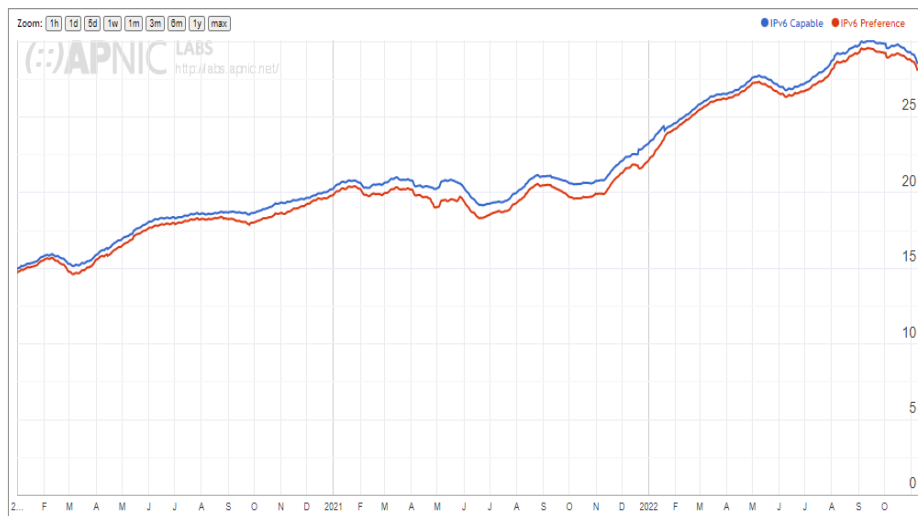
<https://stats.labs.apnic.net/ipv6/QR?o=cXFw30x1r1>

South East Asia

- 11 Separate economies
 - Population ~685m
 - International connectivity generally good
 - Reasonable competition within the markets
 - 1 NIR (IDNIC)

Statistics IPv6 – South East Asia

- 28.06% Preferred
 - 3 of 11 Economies over 40%
 - 7 of 11 Economies over 10%
 - Steady Growth since 2020 (14%)



<https://stats.labs.apnic.net/ipv6/XU?o=cXDw30x1r1>

Statistics IPv6 – South East Asia

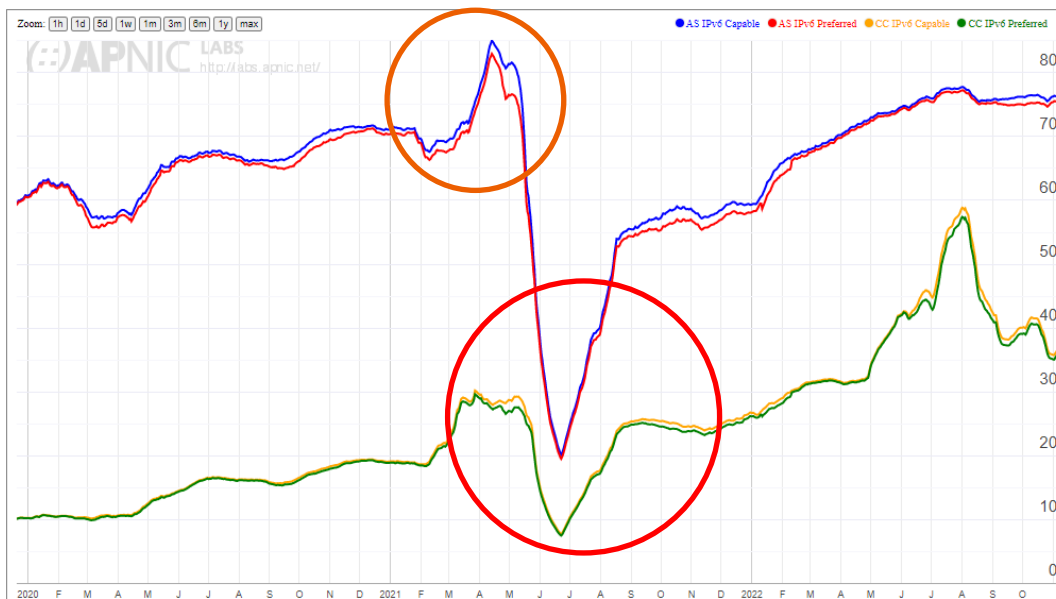
- 28.06% Preferred
 - 3 of 11 Economies over 40%
 - 7 of 11 Economies over 10%
 - Steady Growth since 2020 (14%)

CC	Country	IPv6 Pref 2022	IPv6 Pref 2020	Diff
MY	Malaysia, South-Eastern Asia, Asia	60.42%	46.36%	14.06%
VN	Vietnam, South-Eastern Asia, Asia	50.75%	39.85%	10.90%
TH	Thailand, South-Eastern Asia, Asia	45.08%	29.61%	15.47%
MM	Myanmar, South-Eastern Asia, Asia	37.47%	10.37%	27.10%
SG	Singapore, South-Eastern Asia, Asia	28.24%	13.10%	15.14%
PH	Philippines, South-Eastern Asia, Asia	16.46%	2.75%	13.71%
ID	Indonesia, South-Eastern Asia, Asia	11.98%	0.32%	11.66%
LA	Lao People's Democratic Republic, South-Eastern Asia, Asia	0.34%	0.01%	0.33%
BN	Brunei Darussalam, South-Eastern Asia, Asia	0.05%	0.02%	0.03%
TL	Timor-Leste, South-Eastern Asia, Asia	0.04%	0.12%	-0.08%
KH	Cambodia, South-Eastern Asia, Asia	0.04%	0.02%	0.02%

<https://stats.labs.apnic.net/ipv6/XU?o=cXDw30x1r1>

Statistics IPv6 – South East Asia

- Myanmar
 - 97 Originated ASN
 - 1 ASN making up the volume – AS136255



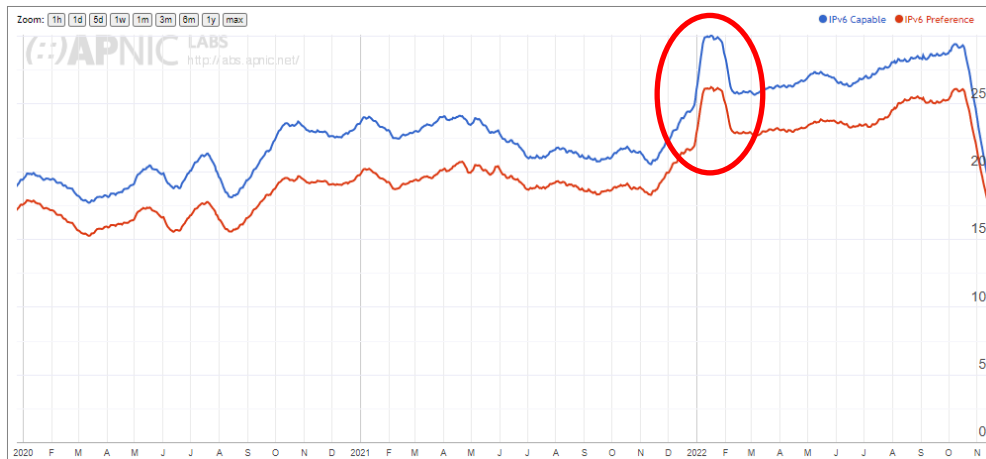
<https://stats.labs.apnic.net/ipv6/AS136255?c=MM&p=1&v=1&w=30&x=1>

East Asia

- 8 Separate economies
 - Population ~1.6b
 - Generally Good Connectivity
 - Good Competition
 - 4 NIR (CNNIC, JPNIC, TWNIC, KRNIC)

Statistics IPv6 – East Asia

- 17.84% Preferred
 - 2 of 8 Economies over 40%
 - 5 of 8 Economies over 10%
 - Growth in some regions (No net growth)



<https://stats.labs.apnic.net/ipv6/XU?o=cXDw30x1r1>

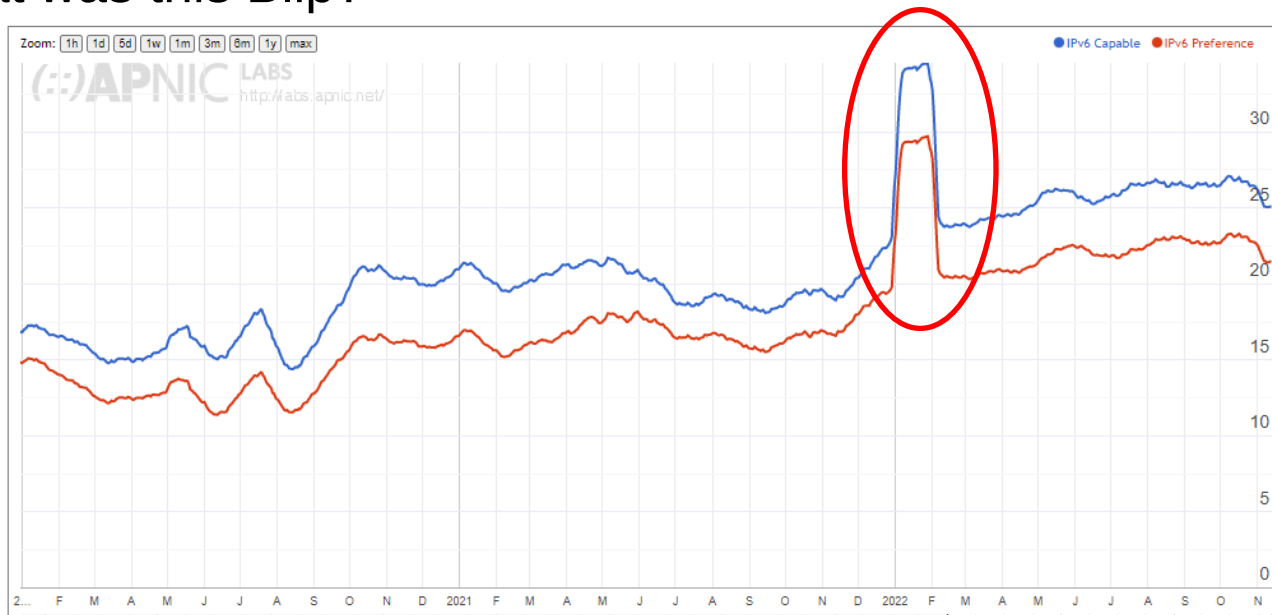
Statistics IPv6 – East Asia

- 17.84% Preferred
 - 2 of 8 Economies over 40%
 - 5 of 8 Economies over 10%
 - Growth across the regions (No Net Growth)

CC	Country	IPv6 Pref 2022	IPv6 Pref 2020	Diff
<u>TW</u>	Taiwan, Eastern Asia, Asia	47.04%	41.82%	5.22%
<u>JP</u>	Japan, Eastern Asia, Asia	47.22%	34.02%	13.20%
<u>CN</u>	China, Eastern Asia, Asia	21.50%	15.11%	6.39%
<u>MO</u>	Macao Special Administrative Region of China, Eastern Asia, Asia	23.55%	11.63%	11.92%
<u>KR</u>	Republic of Korea, Eastern Asia, Asia	15.22%	13.87%	1.35%
<u>HK</u>	Hong Kong Special Administrative Region of China, Eastern Asia, Asia	0.98%	0.29%	0.69%
<u>MN</u>	Mongolia, Eastern Asia, Asia	0.08%	0.01%	0.07%
<u>KP</u>	Democratic People's Republic of Korea, Eastern Asia, Asia	0	0	0

Statistics IPv6 – South East Asia

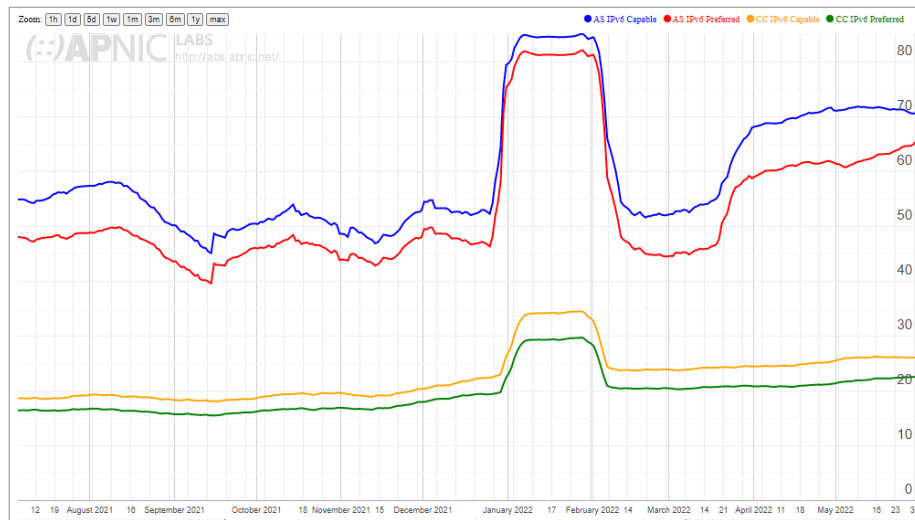
- China
 - 570 Originated ASN
 - What was this Blip?



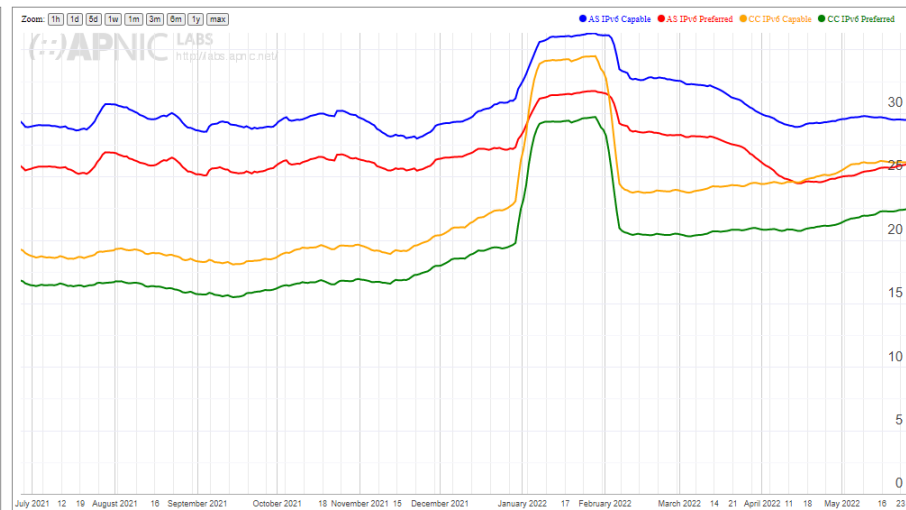
<https://stats.labs.apnic.net/ipv6/CN>

Statistics IPv6 – South East Asia

- China
 - One Specific ASN from China Mobile



AS56041 - CMNET-ZHEJIANG-AP



AS9808 – China Mobile Core

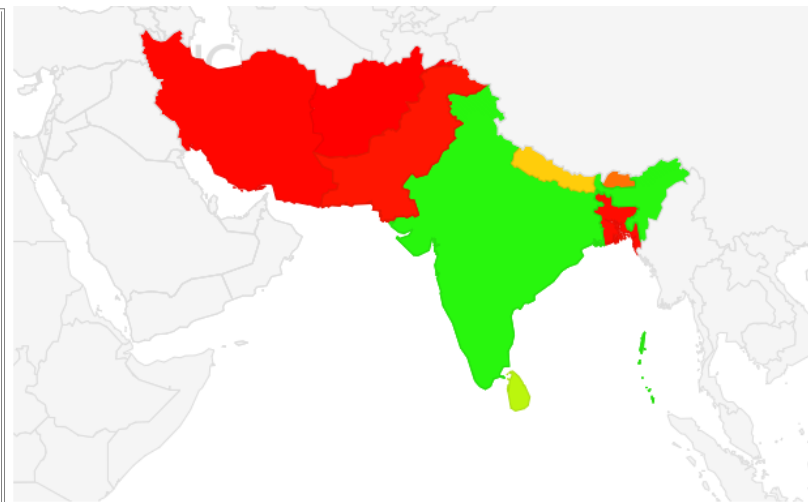
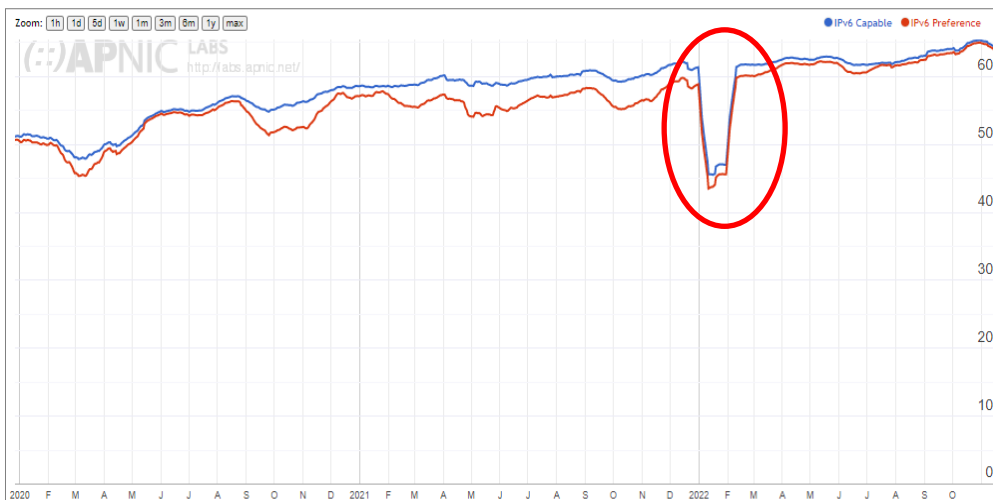
<https://stats.labs.apnic.net/ipv6/CN>

The Region

- South Asia
- 8 separate economies
 - Reasonable International Connectivity
 - Generally good competition
 - There are some exceptions
 - Some Regulatory Challenges
 - 1 NIR (IRINN)

Statistics IPv6 – South Asia

- 63.88% Preferred
 - 2 of 8 Economies over 40%
 - 4 of 8 Economies over 10%
 - Good Growth in some regions



<https://stats.labs.apnic.net/ipv6/XT?o=cXDw30x1r1>

Statistics IPv6 – South Asia

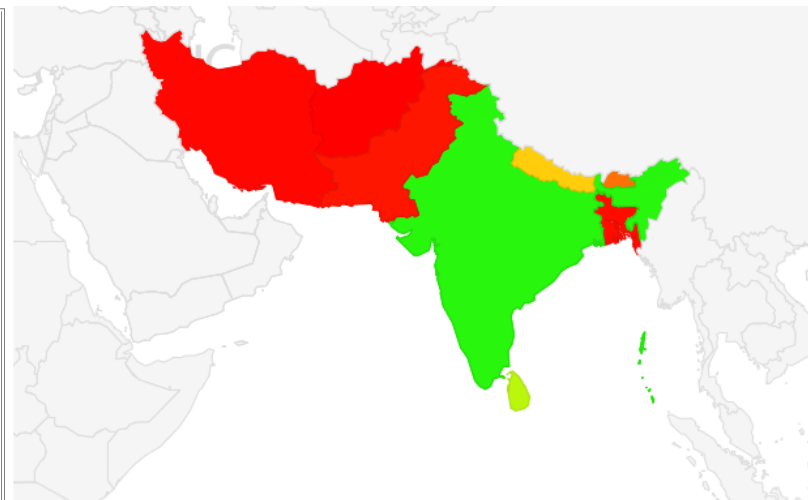
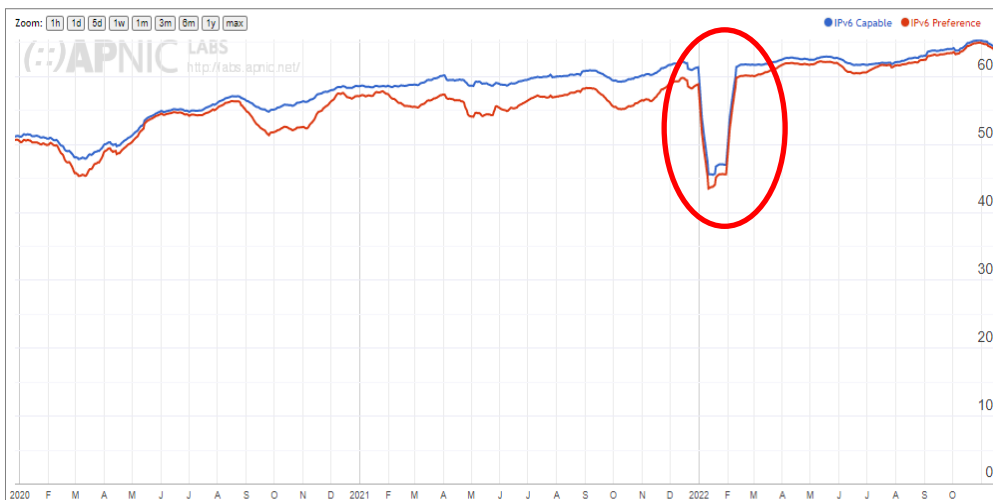
- 63.88% Preferred
 - 2 of 8 Economies over 40%
 - 4 of 8 Economies over 10%
 - Growth in some regions

CC	Country	IPv6 Pref 2022	IPv6 Pref 2020	Diff
<u>IN</u>	India, Southern Asia, Asia	78.96%	63.07%	15.89%
<u>LK</u>	Sri Lanka, Southern Asia, Asia	52.14%	25.10%	27.04%
<u>NP</u>	Nepal, Southern Asia, Asia	32.71%	28.60%	4.11%
<u>BT</u>	Bhutan, Southern Asia, Asia	18.35%	6.72%	11.63%
<u>PK</u>	Pakistan, Southern Asia, Asia	3.44%	0.03%	3.41%
<u>BD</u>	Bangladesh, Southern Asia, Asia	1.87%	0.03%	1.84%
<u>MV</u>	Maldives, Southern Asia, Asia	0.08%	3.51%	-3.43%
<u>AF</u>	Afghanistan, Southern Asia, Asia	0.06%	0.11%	-0.05%

<https://stats.labs.apnic.net/ipv6/XT?o=cXDw30x1r1>

Statistics IPv6 – South Asia

- India – 78.69% preferred – 2808 ASNs
 - Big Drop looks to be Idea/Vodafone
 - 7 Networks over 50% - Mostly Mobile Networks



<https://stats.labs.apnic.net/ipv6/XT?o=cXDw30x1r1>

Statistics IPv6 – South Asia

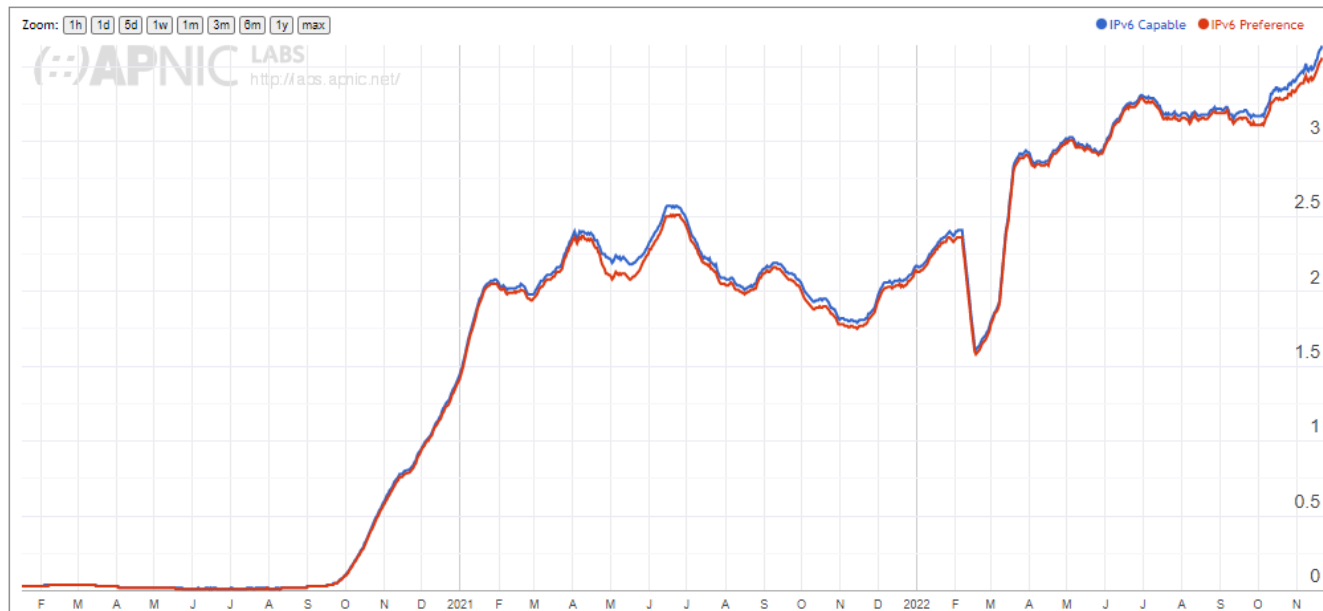
- Maldives
 - Only economy to go backwards
 - 1 Network was driving IPv6, then dropped it (AS55944)



<https://stats.labs.apnic.net/ipv6/AS55944?a=55944&c=MV&x=0&s=0&p=1&w=10&s=1>

Statistics IPv6 – South Asia

- Pakistan
 - IPv6 Mandates – Have they worked?



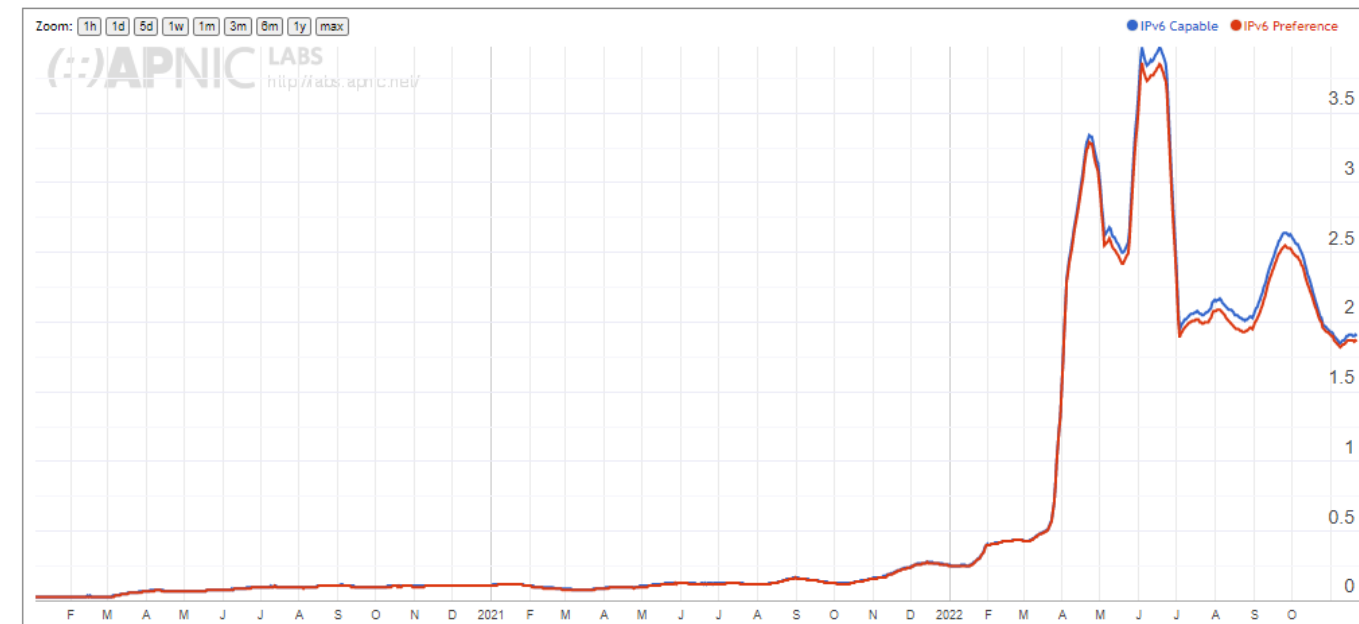
Statistics IPv6 – South Asia

- Pakistan
 - IPv6 Mandates – Have they worked? - 245 ASN
 - Only 3 Networks appear to be doing anything – the rest < 2%

ASN	AS Name	IPv6 Preferred
AS135407	TES-PL-AS-AP Trans World Enterprise Services Private Limited	66.24%
AS9541	CYBERNET-AP Cyber Internet Services Pvt Ltd.	33.26%
AS23674	NAYATEL-PK Nayatel Pvt Ltd	11.86%
AS55340	TELECARD-AS-AP Telecard Limited	1.92%
AS132165	CONNECT-AS-AP Connect Communications	1.42%
AS24435	SUPERNET-PAKISTAN-AS-AP Supernet Limited Transit Autonomous System Number	1.06%
AS9387	SHARPTTEL-AS-AP SHARP TELECOM PRIVATE LIMITED	0.65%
AS136525	WANCOMPVTLTD-AS-AP Wancom Pvt Ltd.	0.63%
AS139218	JVCN-AS-AP Jhelum Vision Cable Network	0.62%
AS136030	REDTONE-AS-AP Redtone Telecommunications Pakistan Private Limited	0.54%

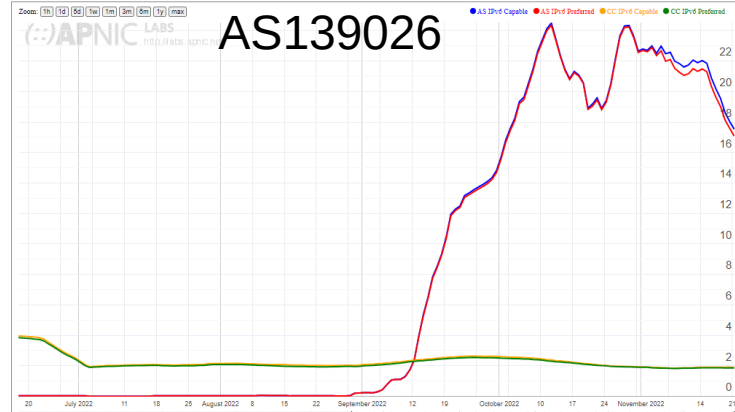
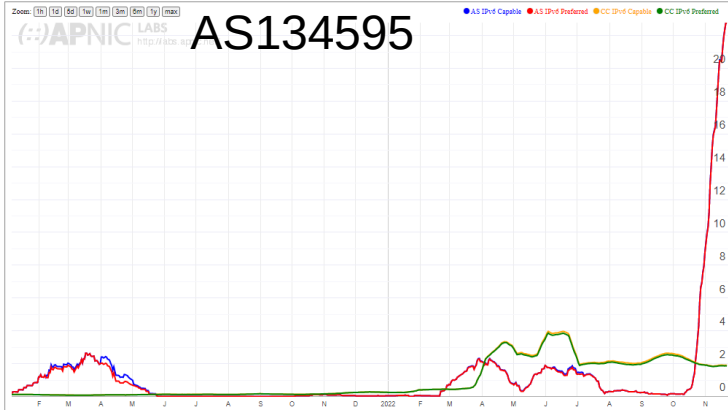
Statistics IPv6 – South Asia

- Bangladesh – 1.87% preferred – 1189 ASN
 - A Few Networks are starting to deploy



<https://stats.labs.apnic.net/ipv6/BD>

Statistics IPv6 – Bangladesh



<https://stats.labs.apnic.net/ipv6/BD>

Challenges

IPv6 Challenges

- End user acceptance
 - Residential and Mobile
 - Business and Enterprise
- Networks not ready
 - Older equipment
 - Software (Billing/LOB)
 - Additional Licencing cost(especially Mobile)
- People
 - Staff are not adequately trained
 - Current Tertiary/Industry training rarely addresses IPv6(Pun Intended)
 - Misconception on use
 - Lack of ability to adequately address plan
 - Management not willing make changes

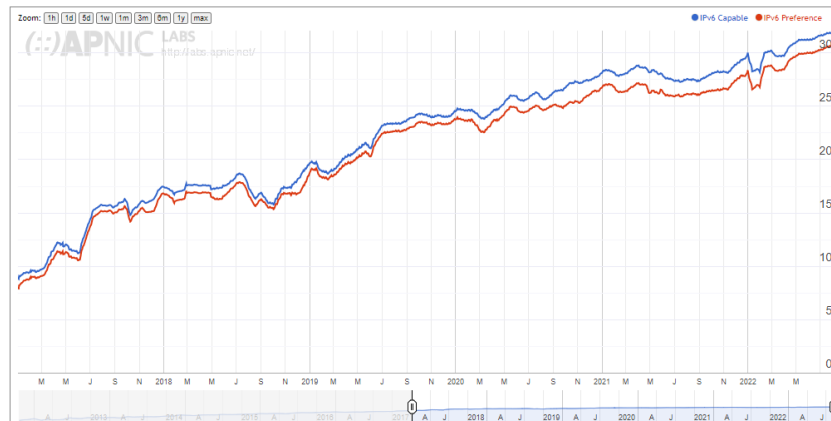
Why Deploy IPv6?

IPv6 Deployment

	CC	Country	IPv6 Capable	IPv6 Preferred
→	IN	India, Southern Asia, Asia	79.61%	79.21%
	BL	Saint Barthelemy, Caribbean, Americas	79.90%	77.33%
	BE	Belgium, Western Europe, Europe	66.73%	66.09%
→	MY	Malaysia, South-Eastern Asia, Asia	61.58%	60.52%
	SA	Saudi Arabia, Western Asia, Asia	61.53%	60.20%
	DE	Germany, Western Europe, Europe	60.16%	59.50%
	FR	France, Western Europe, Europe	55.02%	54.55%
	UY	Uruguay, South America, Americas	54.56%	54.39%
	MS	Montserrat, Caribbean, Americas	55.23%	53.64%
→	LK	Sri Lanka, Southern Asia, Asia	53.27%	52.75%
	GR	Greece, Southern Europe, Europe	52.74%	52.54%
	US	United States of America, Northern America, Americas	53.28%	51.51%
	FI	Finland, Northern Europe, Europe	51.88%	51.06%
→	VN	Vietnam, South-Eastern Asia, Asia	51.67%	51.06%
	IL	Israel, Western Asia, Asia	52.45%	49.86%
	LU	Luxembourg, Western Europe, Europe	48.80%	48.57%
→	TW	Taiwan, Eastern Asia, Asia	49.68%	47.80%
→	JP	Japan, Eastern Asia, Asia	48.59%	47.26%
	AE	United Arab Emirates, Western Asia, Asia	47.25%	46.15%
	MX	Mexico, Central America, Americas	47.52%	46.10%

IPv6 Deployment

- Cost
 - IPv4 Address space ~US\$40-50 Per IP
 - US\$12,800 /24
 - Hardware
 - CGNAT is not free
- The world is changing
 - 3 x increase/5 years
 - Hyperscalers are catching up
 - CDN Providers are ready for your IPv6 Packets



IPv6 Deployment

- Stop saying “I’ll do it tomorrow”
 - We have been saying that for 25 years
- Networks are not going to get simpler
- Need practical help?
 - Training: <https://academy.apnic.net/>
 - TA: <https://academy.apnic.net/en/technical-assistance>

QUESTIONS?