

Addressing the Pacific region: IPv4 and IPv6 statistics

Twenty-one Pacific economies have portable IPv4 blocks from APNIC. The remaining economy, Tokelau, uses IPv4 addresses assigned to it by Intelsat.

Fourteen Pacific economies have IPv6 blocks from APNIC. Eight Pacific economies have yet to request IPv6: American Samoa, Kiribati, Northern Mariana Islands, Norfolk Island, Nauru, Tokelau, Tuvalu and Wallis and Futuna.

While there is a wide range of years in which Pacific region economies first received a portable block of IPv4 addresses from APNIC, there is a noticeable trend for the majority of Pacific economies to have received their first IPv6 addresses within the last two years. In particular:

- Ten IPv6 blocks were delegated to Pacific economies following the PITA 13th AGM in 2009, where APNIC staff worked with network representatives to help them complete the IPv6 application forms.
- Twelve IPv6 blocks were delegated to Pacific economies following the new “Kickstart IPv6” policy implemented in February 2010. This new IPv6 policy enabled APNIC Members with existing IPv4 addresses to easily request their first IPv6 block using a “one-click” form.

| Total IP addresses delegated to Pacific economies by APNIC¹ | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Economy ² | IPv4 (/32s) ³ | IPv6 (/64s) ⁴ | Year of first IPv4 block | Year of first IPv6 block |
| American Samoa | 4,096 | 0 | 2003 | - |
| Cook Islands | 8,192 | 4,294,967,296 | 2000 | 2009 |
| Federated States of Micronesia | 6,144 | 4,294,967,296 | 2006 | 2009 |
| Fiji | 114,432 | 12,885,098,496 | 1990 | 2007 |
| French Polynesia | 39,424 | 4,294,967,296 | 1992 | 2010 |
| Guam | 164,352 | 8,589,934,592 | 1993 | 2010 |
| Kiribati | 3,072 | 0 | 2002 | - |
| Marshall Islands | 2,048 | 4,294,967,296 | 2007 | 2010 |
| Nauru | 8,192 | 0 | 1998 | - |
| New Caledonia | 88,064 | 8,589,934,592 | 1999 | 2009 |
| Niue | 1,024 | 65,536 | 2005 | 2010 |
| Norfolk Island | 1,536 | 0 | 1995 | - |
| Northern Mariana Islands | 12,288 | 0 | 2002 | - |
| Palau | 4,096 | 4,294,967,296 | 2002 | 2008 |
| Papua New Guinea | 39,680 | 12,884,901,888 | 1992 | 2002 |
| Samoa | 15,616 | 8,590,000,128 | 1998 | 2009 |
| Solomon Islands | 8,704 | 4,294,967,296 | 1995 | 2009 |
| Tokelau | 0 | 0 | - | - |
| Tonga | 6,400 | 4,294,967,296 | 1995 | 2009 |
| Tuvalu | 8,192 | 0 | 1999 | - |
| Vanuatu | 7,424 | 4,294,967,296 | 2001 | 2009 |
| Wallis and Futuna | 2,048 | 0 | 2007 | - |

1. Statistics from the tables in this fact sheet are based on data available at <http://resources.potaroo.net/iso3166>. The data is correct as of 19 April 2010. This first table shows the economy to which IP addresses were originally delegated by APNIC. An implication of this preservation of original delegation information means some economies appear to have no IP addresses when they in fact do. Tokelau, for instance, shows no direct IPv4 address delegation; however, Tokelau has address space assigned to its ISPs from an APNIC-delegated address range allocated to Intelsat.
2. Australia and New Zealand, although sometimes included in the definition of economies belonging to the Pacific, have not been included in these statistics.
3. In IPv4, an end user is usually automatically assigned a single IP address (a “/32”).
4. In IPv6, a single “/64” is the average sized block used to address a single IPv6 end site.

On a per capita basis, the average number of IPv4 addresses for the region (0.057) is lower than the global average (0.443), meaning the Pacific region is about one tenth of the global average. However, viewed per Internet user, the number of IPv4 addresses is more varied, ranging from 0 addresses (Tokelau) to 27.49 IPv4 addresses (Nauru). (As noted: Tokelau has IPv4 addresses assigned to it by Intelsat not directly from APNIC). The average global number of IPv4 addresses per Internet user is 1.67.

Considering the majority of Pacific economies only received their first IPv6 addresses within the past year, the number of IPv6 /64s per capita and per Internet user are already impressive. The average per capita number of /64s for the whole region is 9,036, or just over one tenth the global average of 88,342. This means the discrepancy between IPv6 global per capita average and the Pacific per capita average is already slightly less than the IPv4 per capita averages described above, despite the later uptake of IPv6 in the Pacific region.

On a per Internet user basis, the Pacific economies range from 0 (for the economies with no IPv6 blocks to date) to close to two million /64s per Internet user (Marshall Islands). The global average of IPv6 addresses per Internet user is 333,185 /64s.

It is interesting that the average number of IPv6 /64s per capita for the Least Developed Countries (LDCs) in the Pacific region (14,589 /64s) is 1.6 times the average for the Pacific economies as a whole. Looking at the figures for IPv4, the average number of addresses per capita for Pacific region LDCs (0.037) is three tenths lower than the average for the Pacific economies as a whole (0.057).

APNIC policies, created and refined by the Asia Pacific community, provide for as many IP addresses as required for network operation. Given the average of less than one IPv4 address per Internet user in just under half of the Pacific's economies, many would be eligible to receive more IPv4 addresses from APNIC. The same is true of the eight economies that do not yet have IPv6 addresses.

APNIC encourages any PITA attendees interested in requesting addresses from APNIC to consult with APNIC staff on site at the PITA 14th AGM and conference.

| Per capita & Internet user statistics for APNIC delegated IP addresses | | | | |
|---|-------------------------------|--------------------------------------|-------------------------------|--------------------------------------|
| Economy | IPv4 (/32s) per capita | IPv4 (/32s) per Internet user | IPv6 (/64s) per capita | IPv6 (/64s) per Internet user |
| American Samoa | 0.062 | User stats unavailable | 0 | User stats unavailable |
| Cook Islands | 0.709 | 1.681 | 371,589.120 | 882,638.848 |
| Federated States of Micronesia | 0.057 | 0.385 | 40,042.496 | 268,828.672 |
| Fiji | 0.120 | 1.100 | 13,500.416 | 123,797.504 |
| French Polynesia | 0.136 | 0.433 | 14,811.136 | 47,120.384 |
| Guam | 0.923 | 1.934 | 48,258.060 | 101,058.054 |
| Kiribati* | 0.027 | 1.488 | 0 | 0 |
| Marshall Islands | 0.031 | 0.919 | 65,470.464 | 1,926,889.472 |
| Nauru | 0.576 | 27.49 | 0 | 0 |
| New Caledonia | 0.384 | 1.026 | 37,421.056 | 100,073.472 |
| Niue | 0.732 | 1.170 | 46.878 | 74.898 |
| Norfolk Island | 0.717 | 2.621 | 0 | 0 |
| Northern Mariana Islands | 0.702 | 0.136 | 0 | 0 |
| Palau | 0.755 | 0.196 | 205,848.576 | 791,674.880 |
| Papua New Guinea | 0.006 | 0.322 | 2,097.152 | 104,660.992 |
| Samoa* | 0.070 | 1.714 | 38,600.704 | 942,276.608 |
| Solomon Islands* | 0.014 | 0.844 | 7,077.888 | 416,284.672 |
| Tokelau | 0 | 0 | 0 | 0 |
| Tonga | 0.052 | 0.758 | 35,127.296 | 508,887.040 |
| Tuvalu* | 0.654 | 1.938 | 0 | 0 |
| Vanuatu* | 0.034 | 0.431 | 19,464.192 | 249,233.408 |
| Wallis and Futuna | 0.134 | 1.714 | 0 | 0 |

* *Least Developed Country*