Traffic in Network 1.0.0.0/8

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Background

The address plan for IPv4 has a reservation for "Private Use" address space. This reservation, comprising of 3 distinct address blocks, namely 10.0.0.0/8, 172.16.0.0/12 and 192.168.0.0/16, is intended for use in private contexts where the devices that are addressed in this manner do not have any requirement to be visible to the public Internet. However, it has long been recognised that other addresses have also been used in private contexts, Some of these uses are entirely informal and local, while other uses have been a little more systematic. One recent study of this form noted that the address block of network 1, or 1.0.0.0/8, was "widely used as private address space in large organizations whose needs exceed those provided for by RFC 1918" [1].

1.0.0.0/8 has been assigned by IANA to APNIC on the 19th January 2010, for use for as public unicast space for further address allocations and assignments. Before APNIC commences allocations and assignments, APNIC has undertaken a study into 1.0.0.0/8. The particular question under investigation here is the extent to which addresses in network 1.0.0.0/8 are an "attractor" for unwanted traffic. In particular, is there a significant level of "leakage" of supposedly private use traffic directed to addresses in 1.0.0.0/8 that "leak" into the public Internet?

While network 1.0.0.0/8 was an unallocated and unadvertised network any such traffic directed to an address in this block that "leaked" into the public Internet would follow a "default" routing path to the point where there was a "default-free" routing element, where the traffic would be discarded. As soon as any such address in 1.0.0.0/8 was advertised as reachable into the public Internet, instead of being discarded as the boundary of the default-free zone (DFZ), the packets would be passed onto the destination rather than being discarded.

On the 27th January 2010 the RIPE NCC, in collaboration with APNIC, announced 4 prefixes in 1.0.0.0/8, namely 1.1.1.0/24, 1.2.3.0/24, 1.50.0.0/22 and 1.255.0.0/16. They noticed an immediate effect in terms of a jump in traffic to the announcement point that saturated the 10Mbps port (Figure 1) [2].

The announcements of 1.1.1.0/24 and 1.2.3.0/24 were dropped by the RIPE NCC on the 2nd February, and the announcements of 1.50.0.0/22 and 1.255.0.0/16 were dropped on the 9th March 2010.

The RIPE NCC performed some packet capture of the traffic being sent to these prefixes, and their results are described in [2].
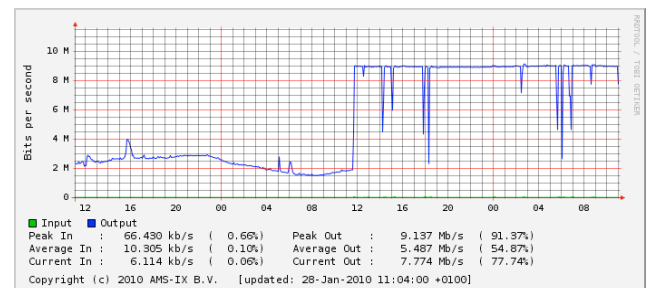

Figure 1 – Traffic load at the RIPE NCC announcement point of 1.0.0.0/8 more specifics [2].

APNIC Study

It appears that there is a significant amount of traffic that is being directed to addresses in network 1. This traffic is likely to be a combination of leakage of traffic from private use domains, potential "leakage" from mis-configured equipment and a certain amount of scanning activity. Following the work undertaken by the RIPE NCC, we commenced further investigation of the traffic in network 1 in February 2010.

The primary objective of this work was to quantify the extent to which networks in 1.0.0.0/8 attract "pollution" or "unwanted" traffic.

A related objective was to investigate the distribution of traffic directed to addresses in 1.0.0.0/8 to determine if there are particular addresses that are "hot spots" for attracting unwanted traffic, and quantify the additional traffic that such addresses attract.

It is also the intent to use this study to inform potential recipients of addresses in this address block of the anticipated profile of unwanted traffic that may be directed to such addresses.

In February 2010 we solicited assistance from potential collaborators to perform a comprehensive packet capture for the entirety of 1.0.0.0/8. Collaborative experiments have been undertaken with Merit and with YouTube as an outcome of this exercise, and this report summarizes the initial findings of these studies. We would like to acknowledge their assistance here, as their generous support and flexible responses to our requirements have been vital in assembling this report.

AS237 Announcement of 1.0.0.0/8

AS237 (Merit) announced network 1.0.0.0/8 from 22 February 2010 until 1 March 2010. A single system was used as the packet capture device and the configuration was entirely passive. The system did not respond to any packets that it received in 1.0.0.0/8. The system performed a full packet capture of all packets received.

The analysis reported here is based on the 6 day period from 0000 23 February 2010 UTC -6 through to 2400 28 February 2010 UTC -6.

Traffic Profile

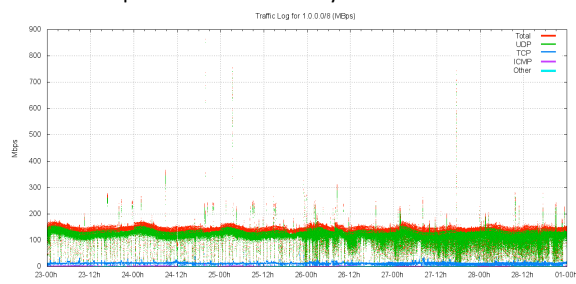Figure 2 shows the traffic received by the collection point for this 96 hour period on a second-by-second basis.

Figure 2 – Traffic received by AS237

The traffic logs show that the traffic sent to 1.0.0.0/8 is a relatively steady 160Mbps for the period. There is a slight element of a 24 hour diurnal cycle in the data, but it is not a pronounced cycle in terms of total received traffic levels.

There is a regular interval of reduced traffic in these logs, evidently corresponding to the file cycle interval for the packet capture system. Other incidents of short term reduced traffic incidents to be based around packet loss by the packet capture system.

There are short bursts of between 1 and 30 seconds of elevated traffic levels There are 20 or so incidents of burst traffic levels of between 200Mbps and 300Mbps. There is a 3 second isolated burst at 860Mbps and a 10 second burst at 750Mbps in this period.

The profile of traffic in each protocol is shown in the following collection of figures.
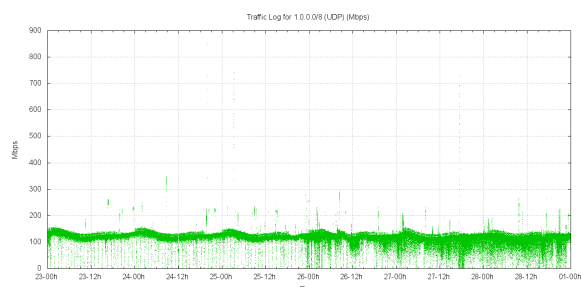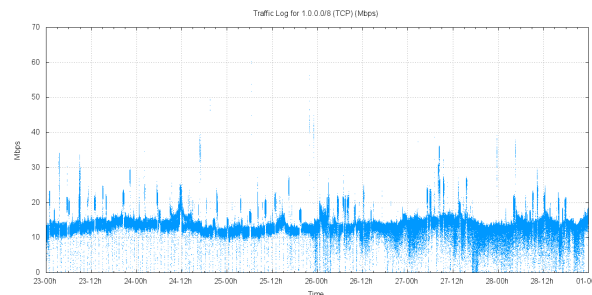

Figure 3 – UDP Traffic received by AS237

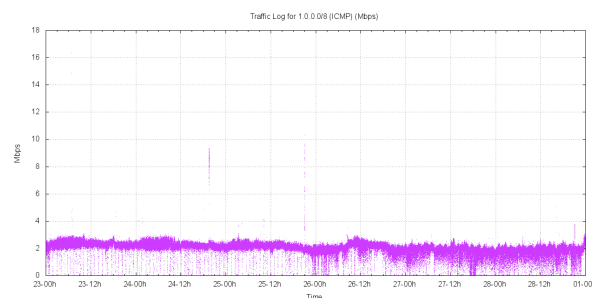*Figure 4 – TCP Traffic received by AS237*

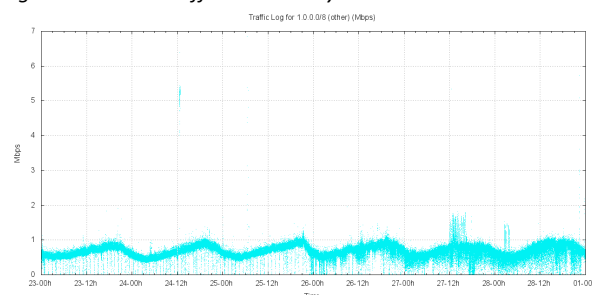*Figure 5 – ICMP Traffic received by AS237*

Figure 6 – Other Traffic received by AS237

Packet Profile

Figure 7 shows the received packet rate for the period. Of note is the pronounced diurnal pattern in the data, particularly in the UDP data. The peaks are not as pronounced, indicating that the peaks in traffic rate are due to a burst of larger UDP packets.

Figure 7 – Received Packet rate
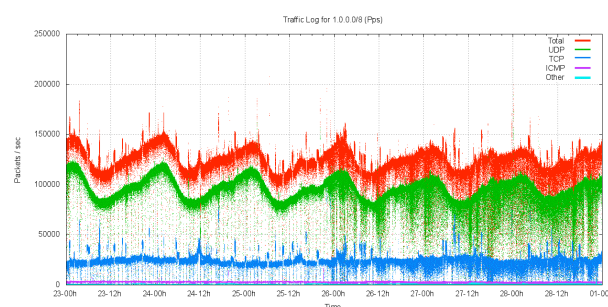
In terms of protocol distribution as measured by bytes of traffic the distribution according to protocol is shown in Table 1.

Protocol	Proportion of Traffic	Proportion of Packets
UDP	88.1%	76.9%
TCP	9.8%	19.8%
ICMP	1.6%	2.5%
Other	0.5%	0.7%

Table I – Distribution of traffic by Protocol

The distribution of packet sizes by protocol is shown in Figure 8. TCP packet sizes were consistently in the range 69-70 bytes, indicative of a TCP SYN packet header of 16 bytes of framing, 20 of IP, 20 of TCP, and 13-14 bytes of TCP options.
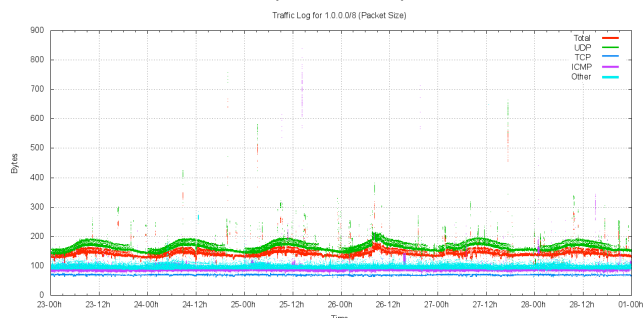

Figure 8 – Distribution of Packet Sizes by Protocol

Distribution of Traffic across Network 1 - /16s

The traffic in network 1 is not evenly distributed across all destinations. Figure 9 shows the distribution of traffic within 1/.8 divided up into address blocks of a /16 in size. Note that this is a log scale of traffic levels, and the levels reported here are an average for the entire collection period.
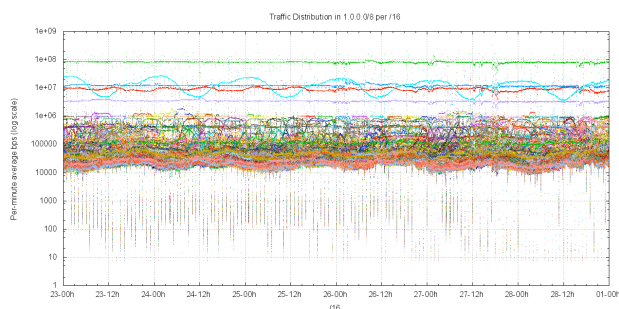

Figure 9 – Traffic levels per /16

Figure 10 provides an average of the traffic across the 6 day period. The figure shows both the average level of traffic and the peak 60 level of traffic for each /16. The RIPE NCC advertisements of 1.50.0.0/22 and 1.255.0.0/16 remained active through this period.
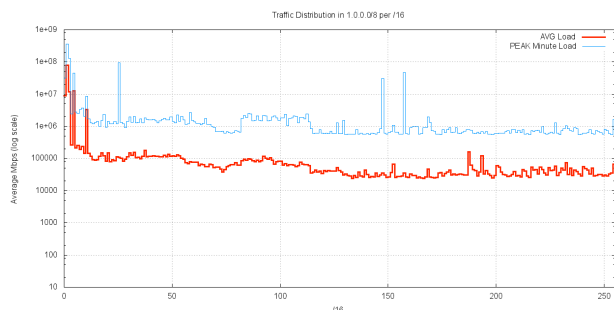

Figure 10 – Traffic levels per /16

A similar picture can be drawn of the incoming packet rate to the /16s in network 1. It appears from a comparison of the two data series that the elevated traffic levels in the low numbered address block are due to certain addresses receiving larger packets, as distinct from simply seeing elevated traffic volumes.
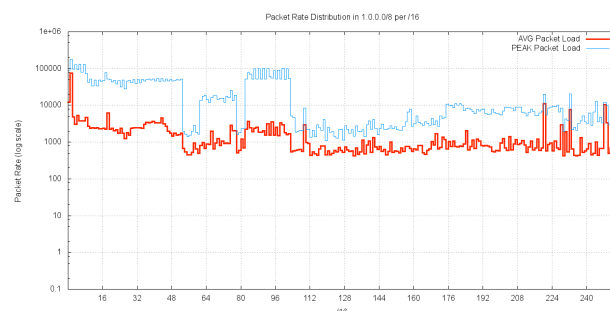

Figure 11 – Packet levels per /16

It appears that from this data there are significantly higher traffic levels sent to addresses in 1.0.0.0/16, 1.1.0.0/16, 1.2.0.0/16 .

Those /16s with an average traffic level of more than 150Kbps for the 6 day period are listed here in Table III.

/16 Address Prefix	Average Traffic	60 second peak
1.1.0.0/16	79,981 kbps	353,839 kbps
1.4.0.0/16	12,564 kbps	45,752 kbps
1.2.0.0/16	12,010 kbps	127,997 kbps
1.0.0.0/16	8,816 kbps	32,038 kbps
1.10.0.0/16	3,320 kbps	8,668 kbps
1.3.0.0/16	261 kbps	2,388 kbps
1.6.0.0/16	258 kbps	2,519 kbps
1.8.0.0/16	238 kbps	3,650 kbps
1.5.0.0/16	212 kbps	2,816 kbps
1.7.0.0/16	188 kbps	3,351 kbps
1.37.0.0/16	176 kbps	1,805 kbps
1.187.0.0/16	160 kbps	788 kbps
1.32.0.0/16	153 kbps	2012 kbps
1.20.0.0/16	151 kbps	1429 kbps

Table II – Distribution of traffic by /16s

A "Control Point" Measurement

Is this level of traffic being passed into network 1.0.0.0/8 "normal"? What's a "normal" expectation in terms of traffic?

To provide answer to this question we advertised a smaller prefix, namely 27.128.0.0/12, under similar conditions to the advertisement of 1.0.0.0/8. This prefix was drawn from the unallocated address pool managed by APNIC. This advertisement of this address block was undertaken in collaboration with YouTube, and 27.128.0.0/12 was advertised by AS36351 on the 19th of March 2010. The traffic levels attracted by this advertisement was collected by 4 passive collectors in a load-sharing configuration. The aggregate traffic levels, per /16 is shown for the 24 hour period. It is evident that there is a distinct correlation across the /16s of an average traffic level of 10Kbps. This is shown in Figure 13.
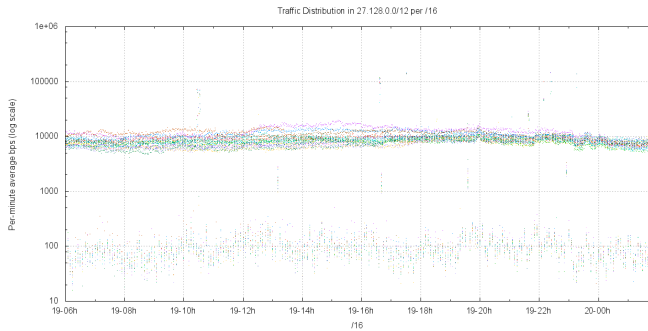
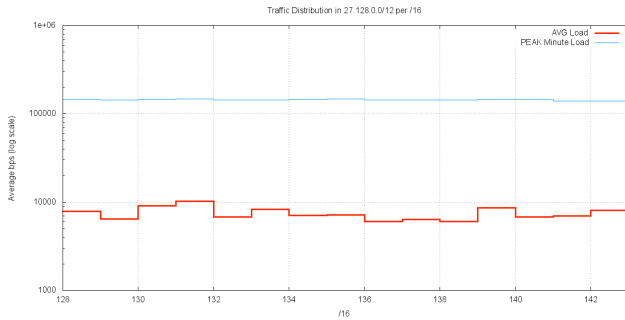Figure 12 – 27.128.0.0/12 traffic levels per /16

Figure 13 – 27.128.0.0/12 average traffic levels per /16

Distribution of Traffic by /24s

A similar analysis can be performed at the granularity of /24s. Figure 14 shows the profile of traffic to each /24 in the address block 1.1.0.0/16
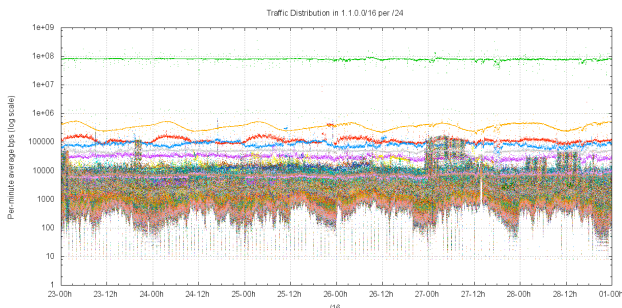

Figure 14 – Traffic levels per /24 in 1.1.0.0/16

One /24 within this address block dominates all others, namely 1.1.1.0/24. The traffic profile for this particular /24 is shown in Figure 15. There is a steady load of between 80 to 100Mbps of traffic directed to this prefix,. With the predominate volume being directed to the single address 1.1.1.1.
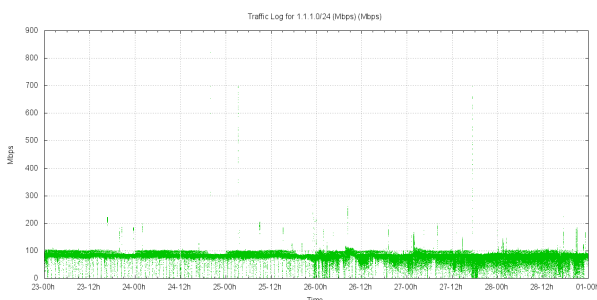

Figure 15 – Traffic levels for 1.1.1.0/24

In order to provide an overview of the traffic sent into each of the /24s in 1.0.0.0/8, Figure 16 shows the distribution of traffic levels by number of /24s. divided into "bins" of 50bps increments. Together with a cumulative count.
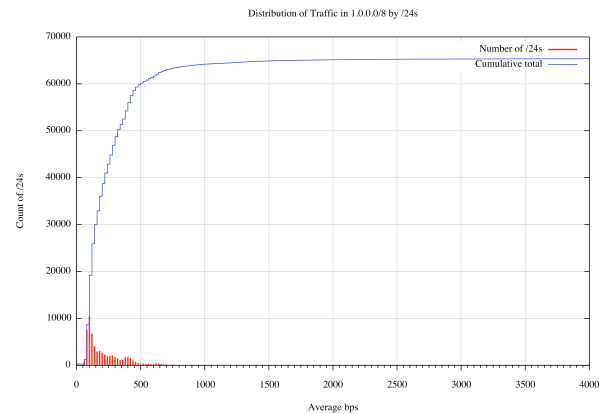
Figure 16 – Distribution of traffic in 1.0.0.0/8 per /24

The distribution has some similarity to an exponential decay function (which would be the case if the log of the distribution was linear). Figure 17 shows the same data presented using a log scale for the count of /24's in each average traffic level bin.
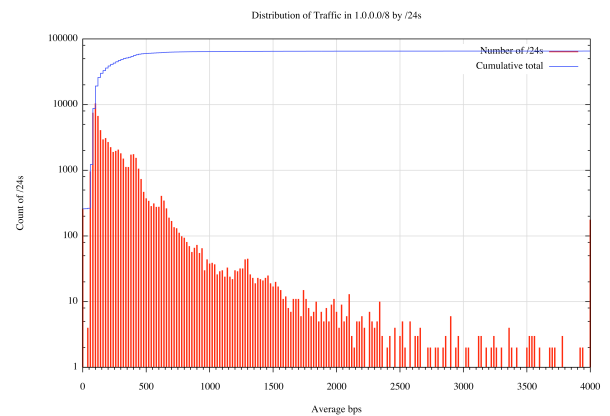
Figure 17 – Distribution of traffic in 1.0.0.0/8 per /24 (log scale)

In this distribution 98% of the /24s, or 64,252 /24s received an average traffic load less than 132 bytes per second (or an average of 1 packets per second). The following table shows the distribution of /24s by average packet rates, using an average packet size of 132 bytes (as measured in the packet capture for 1.0.0.0/8).

Average Pkt per sec.	Average bps	Number of /24s	Cumulative Total	% of total
<= 1	<= 1056bps	64252	64252	98.0%
1 .. 2	<= 2112bps	916	65168	99.4%
2 .. 3	<= 3168bps	195	65303	99.6%
>= 3	> 3168bps	233	65536	100%

Table III – Distribution of traffic by /24s

Control Point Comparison

A similar exercise has been undertaken for traffic in 27.128.0.0/12. The distribution of traffic per /24 is shown in Figures 18 and 19.
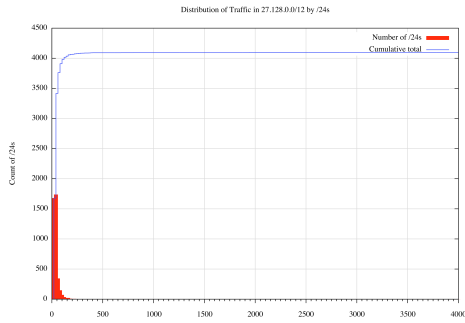
Figure 18 – Distribution of traffic in 27.128.0.0/12 per /24
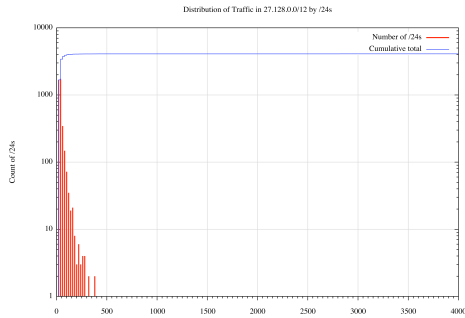
Figure 19 – Distribution of traffic in 27.128.0.0/24 per /24 (log scale)

Average Pkt per sec.	Average bps	Number of /24s	Cumulative Total	% of total
<= 1	<= 776bps	4092	4092	99.9%
1 .. 2	<= 1552bps	1	4093	99.9%
2 .. 3	<= 2328bps	1	4094	99.9%
3 .. 4	<= 3104bps	1	4095	99.9%
>= 3	> 3104bps	1	4096	100%

Table IV – Distribution of traffic by /24s in 27.128.0.0/12

In this case 4087 /24s (or 99.8% of the /24s) received less than 258 bits per second, or the equivalent of 1 packet every 3 seconds (the average packet size for the 27.128.0.0/12 packet capture was 97 bytes)

Correlation of the Data

The experiment of passive listening of incoming packets addressed to network 1.0.0.0/8 was repeated for a further 4 hours on the 21st March 2010. This was undertaken by YouTube, and the prefix was originated by AS36351, with incoming traffic collected using four systems and a load balancing front end. The profile of traffic gathered in this interval is shown in Figure 20. (The data anomaly at 22:40 was the result of the restarting of the packet collection system on one of the four data collection systems.)
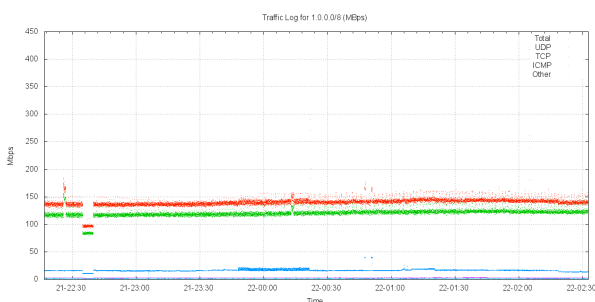
Figure 20 1.0.0.0/8 traffic to AS36351

The profile of traffic for this 6 hour period is comparable to the profile of the original AS237 announcement. The traffic level is some 150Mbps. With the predominate volume comprising of UDP packets. The measurement of traffic in the busiest /24, 1.1.1.0/24, is similar to the profile gathered in AS237, shown in Figure 21.
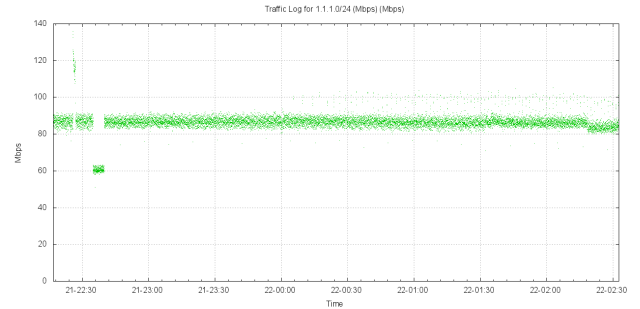
Figure 21 - 1.1.1.0/24 traffic to AS36351

The profile of traffic distribution per /16 is shown in Figure 22. Compared to Figure 9, there is a comparable traffic pattern, with 5 /16's showing incoming traffic levels higher than 1Mbps, and all other /16s showing traffic levels of less than 100Kbps (Figure 23).
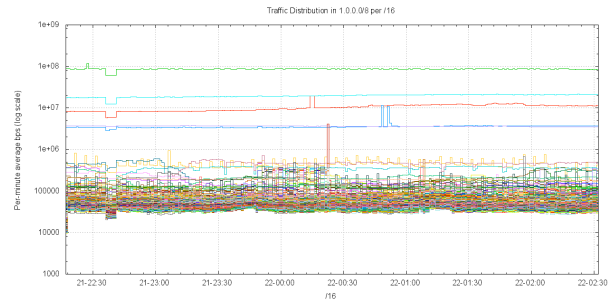
Figure 22 – Traffic levels per /16 – AS35361
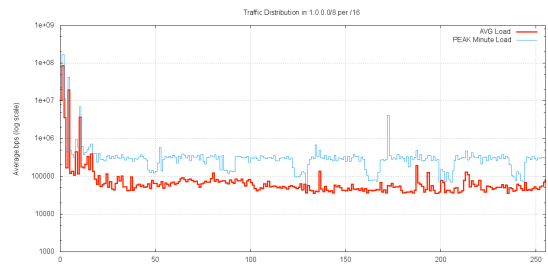
Figure 23 – Traffic levels per /16 – AS35361

Those /16s with average traffic of more than 150Kbps for the period are listed in Table IV.

/16 Address Prefix	Average Traffic (AS35361)	Average Traffic (AS237)
1.1.0.0/16	86,757 kbps	79,981 kbps
1.4.0.0/16	19,714 kbps	12,564 kbps
1.0.0.0/16	10,241 kbps	8,816 kbps
1.10.0.0/16	3,656 kbps	3,320 kbps
1.2.0.0/16	3,611 kbps	12,010 kbps
1.8.0.0/16	452 kbps	238 kbps
1.16.0.0/16	390 kbps	115 kbps
1.14.0.0/16	337 kbps	87 kbps
1.13.0.0/16	206 kbps	92 kbps
1.187.0.0/16	192 kbps	160 kbps
1.11.0.0/16	178 kbps	145 kbps
1.12.0.0/16	169 kbps	117 kbps
1.3.0.0/16	168 kbps	261 kbps
1.15.0.0/16	151 kbps	92 kbps

Table IV – Distribution of traffic by /16s - /16s with > 150kbps measured by AS36351

A comparison of the /16s with average traffic levels of more than 150kbps as measured in the extended AS237 experiment with average traffic level measured in the shorter AS35361 experiment is shown in Table V. The set of the 5 highest /16s (1.0.0.0/16, 1.1.0.0/16,1.2.0.0/16. 1.4.0.0/16 and 1.10.0.0/16) are common to both data sets. Of the remainder, 1.3.0.0/16 and 1.187.0.0/16 are common.

/16 Address Prefix	Average Traffic (AS237)	Average Traffic (AS35361)
1.1.0.0/16	79,981 kbps	86,757 kbps
1.4.0.0/16	12,564 kbps	19,714 kbps
1.2.0.0/16	12,010 kbps	3,611 kbps
1.0.0.0/16	8,816 kbps	10,241 kbps
1.10.0.0/16	3,320 kbps	3,656 kbps
1.3.0.0/16	261 kbps	168 kbps
1.6.0.0/16	258 kbps	143 kbps
1.8.0.0/16	238 kbps	453 kbps
1.5.0.0/16	212 kbps	118 kbps
1.7.0.0/16	188 kbps	106 kbps
1.37.0.0/16	176 kbps	96 kbps
1.187.0.0/16	160 kbps	192 kbps
1.32.0.0/16	153 kbps	100 kbps
1.20.0.0/16	151 kbps	105 kbps

Table V – Distribution of traffic by /16s – comparison of AS237 and AS36351 /16s

A comparison of the two data sets is shown in Figure 24.

Figure 24 – Traffic levels per /16 – Comparison of AS237 with AS35361

The data from this second data collection experiment correlates well with the extended data set gathered from AS237. There is a good correlation between the two data sets for the overall majority of the traffic. Of t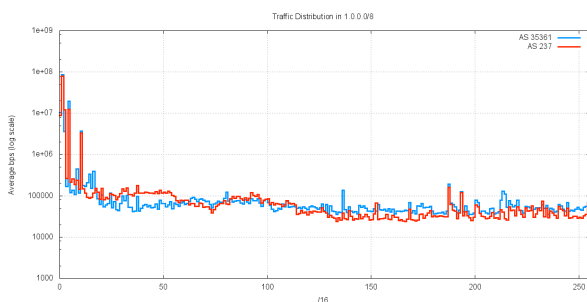he 150Mbps of the incoming traffic directed to 1.0.0.0/8, 122bps, or some 80% of the traffic is directed to addresses in 5 of these /16s, namely 1.0.0.0/16, , 1.1.0.0/16,1.2.0.0/16. 1.4.0.0/16 and 1.10.0.0/16. There is not as close correlation with traffic levels in the other /16s. This could be due to the short time period of the AS35361 experiment (4 hours) compared with the 6 day AS237 data collection experiment, with the consequent limitation that the AS35361 data was not exposed to a complete 24 hour traffic cycle.

Traffic Directed to 1.0.0.0/8

Network 1.0.0.0/8 currently attracts an average of some 140Mbps - 160Mbps of incoming traffic, as a continuous sustained traffic level.

Traffic appears to be a combination of scans that pass across part or the entirety of the addresses in this block and streams of UDP traffic addresses to particular individual addresses in the block.

The traffic in 1.0.0..0/8 is not evenly distributed. The majority of the traffic is directed at 1.1.1.1, and the covering /24, 1.1.1.0/24 receives some 90 – 100Mbps of traffic as a continuous load, with isolated peaks of 1 second intervals in excess of 800Mbps.

Using a control point of 27.128.0.0/12 to establish a "normal" background traffic level, it appears that 90% of the /24s in 1.0.0.0/8 receive less than 1 average packet per second of incoming traffic (the 90% percentile value of the traffic distribution per /24 is at the level of 1 average sized packet every 3 seconds).

No /24 in 1.0.0.0/8 has an average traffic level that is less than the average /24 load observed in 27.128.0.0/12,

Using a benchmark threshold level of 1 average-sized packet per second, or 1.056 Kbps, 98.8% of all /24s in 1.0.0.0/8 receive less than this threshold, and 1,344 /24s that receive a higher rate.

There are 428 /24s that receive more than 2.112kbps of incoming traffic, or more than 2 average-sized packets per second.

There are 233 /24s that receive more than 3,168kbps of incoming traffic, or more than 3 average-sized packets per second. These /24s are located within 14 /16s within 1.0.0.0/8. This list of /24s that received in excess of 3 average-sized packets per second, and their enclosing /16s, are provided in Appendix I of this report.

Recommendations:

1. It is recommended that the following /24s be withheld from general allocation by APNIC, on the basis that each of these /24s individual attract more than 1 Mbps of unsolicited traffic:

1.0.0.0/24	8Mbps
1.1.1.0/24	79 Mbps
1.2.3.0/24	11 Mbps
1.4.0.0/24	12 Mbps
1.10.10.0/24	3 Mbps

    These /24s should be marked as allocated to APNIC R&D to allow further experimentation in the long term nature of unsolicited background traffic to be conducted by APNIC in collaboration with interested researchers and the operational community.

    If further investigation reveals that the traffic to any of these /24s abates to a normal background level in the future, or if there is a viable form of mediation that makes any of these network prefixes useable in a general fashion on the public Internet, then these addresses would be returned to the APNIC unallocated address pool at that time.

2. It is recommended that the following /16s be temporarily marked as reserved and withheld from general allocation by APNIC:

    1.0.0.0/16
    1.1.0.0/16
    1.2.0.0/16
    1.3.0.0/16
    1.4.0.0/16
    1.5.0.0/16
    1.6.0.0/16
    1.7.0.0/16

1.8.0.0/16
1.10.0.0/16
1.20.0.0/16
1.32.0.0/16
1.37.0.0/16
1.187.0.0/16

These /16s should be marked as allocated to APNIC R&D to allow further short term experimentation in the distribution of unsolicited background traffic to these addresses to be conducted by APNIC in collaboration with interested researchers and the operational community. The experimentation would be conducted in the period April – October 2010, and a followup report on recommended longer term reservations from this set of addresses be provided at the end of this period.

Acknowledgements

References

[1]   Leo Vegoda, "Awkward /8 Assignments", Internet Protocol Journal, September 2007. (http://www.cisco.com/web/about/ac123/ac147/archived_issues/ipj_10-3/103_awkward.html)

[2]   "Pollution in 1/8", RIPE Labs Report, RIPE NCC, 3 February 2010. (http://labs.ripe.net/content/pollution-18)

Appendix I

Top 233 /24s – Ordered by Address

The following is a "map" of the /24s in 1.0.0.0/8 with the nominated high traffic points of more than 3 packets per second per /24 highlighted.
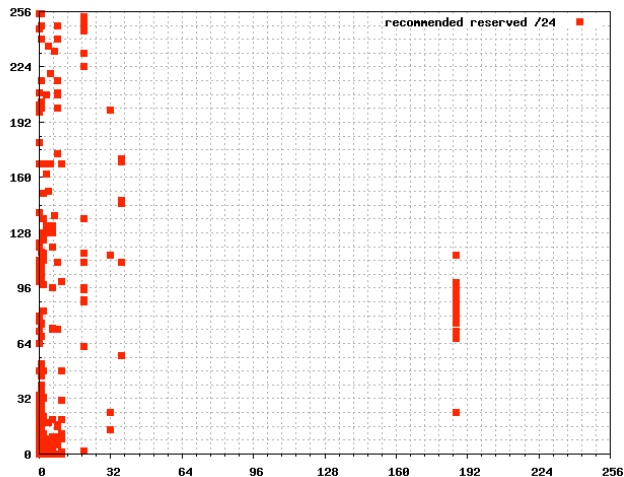
A. /16 set

The following table is a list of those /16s that contain individual 24/s that were measured to receive more than 3 average-sized packets per second by AS237 in the data collection experiment.

Prefix	Number of top 233 /24s
1.0.0.0/16	55
1.1.0.0/16	61
1.2.0.0/16	26
1.3.0.0/16	9
1.4.0.0/16	6
1.5.0.0/16	4
1.6.0.0/16	11
1.7.0.0/16	3
1.8.0.0/16	15
1.10.0.0/16	10
1.20.0.0/16	15
1.32.0.0/16	4
1.37.0.0/16	8
1.187.0.0/16	23

B. /24 set

The following table is a list of those /24s that were measured to receive more than 3 average-sized packets per second by AS237 in the data collection experiment.

Prefix	Average Traffic (bps)	60 sec peak
1.0.0.0/24	7959512	30793640
1.0.1.0/24	159505	420566
1.0.2.0/24	34824	214225
1.0.3.0/24	17643	374593
1.0.4.0/24	12430	190475
1.0.5.0/24	6516	898759
1.0.6.0/24	8194	373786
1.0.7.0/24	3185	172033
1.0.8.0/24	6055	648577

1.0.9.0/24	6156	226944
1.0.10.0/24	4633	180427
1.0.11.0/24	3237	180763
1.0.12.0/24	57473	275283
1.0.13.0/24	5180	159358
1.0.14.0/24	3615	485313
1.0.15.0/24	2343	165304
1.0.16.0/24	10944	452088
1.0.17.0/24	4597	164925
1.0.18.0/24	5033	170763
1.0.19.0/24	3537	261801
1.0.20.0/24	3924	162125
1.0.21.0/24	4462	427252
1.0.22.0/24	3435	126082
1.0.26.0/24	2191	154114
1.0.27.0/24	2126	159118
1.0.28.0/24	2115	172034
1.0.29.0/24	2525	162113
1.0.32.0/24	7373	171201
1.0.33.0/24	15029	180697
1.0.34.0/24	3136	1768411
1.0.48.0/24	5469	148196
1.0.64.0/24	3391	169451
1.0.71.0/24	2695	147893
1.0.77.0/24	16448	151247
1.0.80.0/24	4636	142609
1.0.100.0/24	5527	148739
1.0.101.0/24	2311	298463
1.0.102.0/24	2629	303325
1.0.103.0/24	4003	158359
1.0.104.0/24	7901	354763
1.0.105.0/24	2347	480367
1.0.109.0/24	5085	894925
1.0.111.0/24	5815	151774
1.0.112.0/24	5637	131894
1.0.120.0/24	10672	158208
1.0.122.0/24	3484	1634724
1.0.140.0/24	8479	162908
1.0.168.0/24	117271	22580755
1.0.180.0/24	3243	235439
1.0.198.0/24	2944	141017
1.0.200.0/24	5273	171000
1.0.202.0/24	3681	205986
1.0.209.0/24	3727	185249
1.0.246.0/24	2102	747374
1.0.255.0/24	2766	135992
1.1.0.0/24	120783	9098102
1.1.1.0/24	78832834	352562306
1.1.2.0/24	85029	670612
1.1.3.0/24	31599	562744
1.1.4.0/24	10396	596409
1.1.5.0/24	12756	589747
1.1.6.0/24	13469	545734
1.1.7.0/24	9560	583659
1.1.8.0/24	4706	573991
1.1.9.0/24	7045	559531
1.1.10.0/24	8388	599605
1.1.11.0/24	8980	574480
1.1.12.0/24	4725	554444
1.1.13.0/24	4958	597113
1.1.14.0/24	9017	583296
1.1.15.0/24	7404	553721
1.1.16.0/24	4553	596475
1.1.17.0/24	3507	564784
1.1.18.0/24	2632	554981
1.1.19.0/24	3678	586516
1.1.20.0/24	4544	574334
1.1.21.0/24	3233	558522
1.1.22.0/24	2502	581032
1.1.23.0/24	2344	557621
1.1.24.0/24	3735	546714
1.1.25.0/24	3640	584111
1.1.26.0/24	2517	569454
1.1.27.0/24	2724	540230
1.1.28.0/24	2434	590654
1.1.29.0/24	2358	575424
1.1.30.0/24	3532	536407

1.1.31.0/24	3558	582415		1.6.6.0/24	2152	244681
1.1.32.0/24	3030	567461		1.6.10.0/24	3186	165099
1.1.33.0/24	2351	539596		1.6.20.0/24	3087	143336
1.1.34.0/24	2438	603967		1.6.72.0/24	2391	143028
1.1.35.0/24	2587	553598		1.6.73.0/24	2914	142926
1.1.36.0/24	2262	527724		1.6.96.0/24	2379	157117
1.1.37.0/24	2213	578144		1.6.120.0/24	2590	152557
1.1.38.0/24	2213	560986		1.6.128.0/24	17590	181695
1.1.39.0/24	2336	519404		1.6.132.0/24	33040	197103
1.1.40.0/24	3370	148925		1.7.7.0/24	2215	156630
1.1.45.0/24	2612	117745		1.7.138.0/24	3844	144160
1.1.50.0/24	5655	143945		1.7.233.0/24	2350	115411
1.1.51.0/24	6906	147628		1.8.0.0/24	2626	145917
1.1.52.0/24	3509	145474		1.8.5.0/24	5148	320587
1.1.68.0/24	2160	131466		1.8.8.0/24	2911	151477
1.1.75.0/24	2738	136206		1.8.10.0/24	5767	3519905
1.1.76.0/24	2181	154138		1.8.16.0/24	2958	160845
1.1.100.0/24	5101	152362		1.8.17.0/24	3159	148981
1.1.103.0/24	2261	131801		1.8.72.0/24	2326	147611
1.1.105.0/24	2235	150779		1.8.111.0/24	3782	120813
1.1.109.0/24	3263	147716		1.8.174.0/24	11622	162856
1.1.111.0/24	9210	313597		1.8.200.0/24	2238	144957
1.1.117.0/24	2179	125110		1.8.208.0/24	2971	152312
1.1.168.0/24	356562	1107111		1.8.209.0/24	9702	165508
1.1.200.0/24	2546	158425		1.8.216.0/24	2264	115426
1.1.204.0/24	7272	169251		1.8.240.0/24	8403	163517
1.1.216.0/24	3303	158647		1.8.248.0/24	2212	167179
1.1.240.0/24	2964	159096		1.10.0.0/24	35230	153940
1.1.248.0/24	7661	166728		1.10.1.0/24	3571	104355
1.1.255.0/24	48651	155239		1.10.9.0/24	2080	117709
1.2.0.0/24	10273	3263570		1.10.10.0/24	3159794	8363883
1.2.1.0/24	41537	2249164		1.10.12.0/24	2177	118491
1.2.10.0/24	8644	165230		1.10.20.0/24	20015	114025
1.2.11.0/24	9465	155537		1.10.31.0/24	2111	94267
1.2.12.0/24	8275	170965		1.10.48.0/24	4448	82598
1.2.18.0/24	3016	135746		1.10.100.0/24	2813	117117
1.2.112.0/24	2643	119581		1.10.168.0/24	3629	116966
1.2.116.0/24	13604	198635		1.20.2.0/24	4713	102045
1.2.124.0/24	6330	162887		1.20.62.0/24	3369	122804
1.2.128.0/24	12203	163961		1.20.88.0/24	3610	115915
1.2.136.0/24	8545	274162		1.20.89.0/24	12015	103412
1.2.151.0/24	16104	166778		1.20.95.0/24	2549	115851
1.2.168.0/24	67586	216010		1.20.96.0/24	2092	91168
1.2.2.0/24	98721	79326373		1.20.111.0/24	3681	118642
1.2.3.0/24	11459653	127672108		1.20.116.0/24	5031	125157
1.2.4.0/24	3818	152166		1.20.136.0/24	2874	94297
1.2.5.0/24	9532	16547049		1.20.224.0/24	2719	121269
1.2.6.0/24	2906	164761		1.20.232.0/24	10721	92586
1.2.7.0/24	3795	145722		1.20.245.0/24	2914	118070
1.2.9.0/24	7946	170887		1.20.249.0/24	4078	111186
1.2.22.0/24	5364	3472987		1.20.252.0/24	3925	121176
1.2.32.0/24	17474	30895875		1.20.253.0/24	3130	90445
1.2.33.0/24	13549	5183502		1.32.14.0/24	29224	143180
1.2.48.0/24	8938	161556		1.32.24.0/24	2119	94382
1.2.83.0/24	3797	160937		1.32.115.0/24	10355	108377
1.2.98.0/24	4134	183416		1.32.199.0/24	2439	104627
1.3.0.0/24	4974	169831		1.37.57.0/24	3057	200713
1.3.1.0/24	3148	542170		1.37.111.0/24	11001	210557
1.3.2.0/24	5773	161620		1.37.145.0/24	9638	207806
1.3.128.0/24	25664	185192		1.37.146.0/24	9698	208173
1.3.132.0/24	23466	221177		1.37.147.0/24	9910	156961
1.3.162.0/24	3578	108956		1.37.169.0/24	6528	182831
1.3.208.0/24	2096	143516		1.37.170.0/24	6600	199049
1.3.3.0/24	8896	128346		1.37.171.0/24	6622	201542
1.3.4.0/24	2215	155129		1.187.24.0/24	3029	16436
1.4.0.0/24	12361333	44947836		1.187.67.0/24	2326	24411
1.4.9.0/24	2098	140587		1.187.68.0/24	2264	24690
1.4.18.0/24	2278	161131		1.187.71.0/24	2482	19459
1.4.128.0/24	6199	135013		1.187.76.0/24	2093	24270
1.4.152.0/24	2143	139536		1.187.77.0/24	2104	14787
1.4.236.0/24	2674	147857		1.187.78.0/24	2525	34762
1.5.0.0/24	5028	400762		1.187.79.0/24	3940	28064
1.5.6.0/24	2863	160729		1.187.80.0/24	2271	23835
1.5.168.0/24	2755	144376		1.187.81.0/24	2673	17888
1.5.220.0/24	6069	160391		1.187.82.0/24	3123	21884
1.6.0.0/24	4027	174595		1.187.83.0/24	2594	22262
1.6.2.0/24	2311	118391		1.187.85.0/24	3423	22807

1.187.86.0/24	4098	21996
1.187.87.0/24	2348	23281
1.187.88.0/24	2377	18824
1.187.89.0/24	3170	23314
1.187.92.0/24	2375	35861
1.187.93.0/24	2115	22442
1.187.94.0/24	2447	13476
1.187.98.0/24	2340	18558
1.187.99.0/24	2185	25124
1.187.115.0/24	4246	85770