Time to Remove Filters for Previously Unallocated IPv4 /8s
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Abstract

It has been common for network administrators to filter IP traffic from
and BGP prefixes of unallocated IPv4 address space. Now that there are
no longer any unallocated IPv4 /8s, this practise is more complicated,
fragile and expensive. Network administrators are advised to remove
filters based on the registration status of the address space.
This document explains why any remaining packet and BGP prefix filters
for unallocated IPv4 /8s should now be removed on border routers and
documents those IPv4 unicast prefixes that should not be routed across
the public Internet.

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1. Introduction

It has been common for network administrators to filter IP traffic from
and BGP prefixes of unallocated IPv4 address space. Now that there are
no longer any unallocated IPv4 /8s, this practise is more complicated,
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filters based on the registration status of the address space.
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documents those IPv4 unicast prefixes that should not be routed across
the public Internet.

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in BCP 14, RFC 2119
[RFC2119].
Martians [RFC1208] is a humorous term applied to packets that turn up
unexpectedly on the wrong network because of bogus routing entries. It
is also used as a name for a packet which has an altogether bogus (non-
registered or ill-formed) Internet address. Bogons [RFC3871] are

packets sourced from addresses that have not yet been allocated by IANA
or the Regional Internet Registries (RIRs), or addresses reserved for
private or special use by RFCs [RFC5735].Bogons are referred to as
"Dark IP" in some circles. .

3. **Traffic Filtering Options**

3.1. **No Longer Filtering Based on Address Registration Status**

Network administrators who implemented filters for unallocated IPv4 /8s
did so in the knowledge that those /8s were not a legitimate source of
traffic on the Internet and that there was a small number of bogon
filters to implement. Now that there are no longer any unallocated
unicast IPv4 /8s, there will be legitimate Internet traffic coming from
all unicast /8s that are not reserved for special purposes in an RFC.
Removing packet and prefix filters based on the registration status of
the IPv4 address is a simple approach that will avoid blocking
legitimate Internet traffic. Network operators SHOULD remove both
ingress and egress packet filters as well as BGP prefix filters for
previously unallocated IPv4 /8s.

3.2. **Continuing to Filter Traffic from Unallocated IPv4 Space**

Some network administrators might want to continue filtering
unallocated IPv4 addresses managed by the RIRs. This requires
significantly more granular ingress filters and the highly dynamic
nature of the RIRs' address pools means that filters need to be updated
on a daily basis to avoid blocking legitimate incoming traffic.

4. **Prefixes That Should Not be Routed Across the Internet**

Network operators who only wish to filter traffic originating from
addresses that should never be routed across the Internet, Martians,
can deploy a set of packet and prefix filters designed to block traffic
from address blocks reserved for special purposes. These are:

    *- 0.0.0.0/8 (Local identification) [RFC1122];

    *- 10.0.0.0/8 (Private use) [RFC1918];

    *- 127.0.0.0/8 (Loopback) [RFC1122];

    *- 169.254.0.0/16 (Link local) [RFC3927];

    *- 172.16.0.0/12 (Private use) [RFC1918];

    *- 192.0.2.0/24 (TEST-NET-1) [RFC5737];

    *- 192.168.0.0/16 (Private use) [RFC1918];

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   *- 198.18.0.0/15 (Benchmark testing) [RFC2544];

   *- 198.51.100.0/24 (TEST-NET-2) [RFC5737];

   *- 203.0.113.0/24 (TEST-NET-3) [RFC5737];

   *- 224.0.0.0/4 (Multicast) [RFC5771]; and

   *- 240.0.0.0/4 (Future use) [RFC1112].
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A full set of special use IPv4 addresses can be found in [RFC5735]. It includes prefixes that are intended for Internet use.

5. Security Considerations

The cessation of filters based on unallocated IPv4 /8 allocations is an evolutionary step towards reasonable security filters. While these filters are no longer necessary, and in fact harmful, this does not obviate the need to continue other security solutions. These other solutions are as necessary today as they ever were.

6. IANA Considerations

This document makes no request of IANA.

7. References

7.1. Normative References

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[RFC1122]	Braden, R., "Requirements for Internet Hosts - Communication Layers", STD 3, RFC 1122, October 1989.
[RFC1918]	Rekhter, Y., Moskowitz, R., Karrenberg, D., Groot, G. and E. Lear, "Address Allocation for Private Internets", BCP 5, RFC 1918, February 1996.
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[RFC3927]	Cheshire, S., Aboba, B. and E. Guttman, "Dynamic Configuration of IPv4 Link-Local Addresses", RFC 3927, May 2005.
[RFC5735]	Cotton, M. and L. Vegoda, "Special Use IPv4 Addresses", BCP 153, RFC 5735, January 2010.
[RFC5771]	Cotton, M., Vegoda, L. and D. Meyer, "IANA Guidelines for IPv4 Multicast Address Assignments", BCP 51, RFC 5771, March 2010.

7.2. Informative References

| [RFC1208] | |

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[RFC2544]	Bradner, S. and J. McQuaid, "Benchmarking Methodology for Network Interconnect Devices", RFC 2544, March 1999.
[RFC3871]	Jones, G., "Operational Security Requirements for Large Internet Service Provider (ISP) IP Network Infrastructure", RFC 3871, September 2004.
[RFC5737]	Arkko, J., Cotton, M. and L. Vegoda, "IPv4 Address Blocks Reserved for Documentation", RFC 5737, January 2010.

Appendix A. Acknowledgments

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