Operations and Management Area Working Group	J.W. Weil
Internet-Draft	Time Warner Cable
Intended status: Informational	V.K. Kuarsingh
Expires: January 10, 2012	Rogers Communications
	C.D. Donley
	CableLabs
	C.D.L. LILJENSTOLPE
	Telstra Corp
	M.A. Azinger
	Frontier Communications
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IANA Reserved IPv4 Prefix for Shared Transition Space
draft-weil-shared-transition-space-request-02

Abstract

This document requests a reserved IANA IPv4 address allocation as
Shared Transition Space to support the deployment of IPv4 address
sharing technologies post IPv4 exhaustion.

Status of this Memo

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1. Introduction

Many operators are currently implementing their IPv6 transition plans. During the transition, continued support for heritage IPv4 only devices will be required. While most operators are well aware of the limitations of Carrier Grade NAT, particularly NAT444 [I-D.shirasaki-nat444] (see [I-D.donley-nat444-impacts]), it is the transition mechanism that has the least customer impact for many carriers.
To deploy Carrier Grade NAT, it becomes necessary for a provider to create an inside address pool that will not conflict with its customer address space. This document requests that IANA reserve a /10 of IPv4 addresses to use as Shared Transition Space. As IANA has exhausted its pool of addresses, one or more RIR(s) or legacy address holder(s) will need to supply IANA with such addresses (e.g. per ARIN Draft Policy 2011-5 *[ARIN]*).

2. Requirements Language

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 RFC 2119 *[RFC2119]*.

3. Motivation

The Internet community is rapidly consuming the remaining supply of unallocated IPv4 addresses. During the transition period to IPv6, it is imperative that Service Providers maintain IPv4 service for devices and networks that are currently incapable of upgrading to IPv6.
In order to provide IPv4 service to customers and/or devices once the IPv4 address space is exhausted, Service Providers must multiplex

several subscribers behind a single IPv4 address using one of several
techniques including NAT444 or Carrier Grade NAT. Providers need
sufficient non-[RFC1918] address space to deploy such technologies and
avoid overlap with customer use of private address space.
Many CPE router devices used to provide residential or small-medium
business services have been optimized for IPv4 operation, and typically
require replacement in order to fully support the transition to IPv6
(either natively or via one of many transition technologies). In
addition, various consumer devices including IP-enabled televisions,
gaming consoles, medical and family monitoring devices, etc. are IPv4-
only, and cannot be upgraded. While these will eventually be replaced
with dual-stack or IPv6 capable devices, this transition will take many
years. As these are typically consumer-owned devices, service providers
do not have control over the speed of their replacement cycle. However,
consumers have an expectation that they will continue to receive IPv4
service, and that such devices will continue to have IPv4 Internet
connectivity after the IPv4 pool is exhausted, even if the customer
contracts for new service with a new provider.
Until such customers replace their Home Gateways and all IPv4-only CPE
devices with IPv6-capable devices, Service Providers will be required
to continue to offer IPv4 services through the use of an IPv4 address
sharing technology such as NAT444 [I-D.shirasaki-nat444]. The
challenges associated with these deployments are identified in [I-
D.shirasaki-nat444-isp-shared-addr], [I-D.donley-nat444-impacts], and
[I-D.ietf-intarea-shared-addressing-issues].
Addressing solutions for dealing with the depletion of the IPv4 public
address space and the lack of available private addresses within large
providers are presented in [I-D.azinger-additional-private-ipv4-space-
issues] as well as [I-D.shirasaki-nat444-isp-shared-addr]. For
infrastructure providers whose customers are already using [RFC1918]
space, as described in [I-D.bdgks-arin-shared-transition-space] and
[ARIN], the preferred method for addressing the problems presented in
both documents is to direct IANA to reserve address space for Shared
Transition Space.

4. Shared Transition Space

This document proposes the assignment of a /10 as Shared Transition
Space. Shared Transition Space is IPv4 address space reserved for
Infrastructure provider use with the purpose of facilitating IPv6
transition and IPv4 coexistence deployment. The requested block SHOULD
NOT be utilized for any purpose other than as "inside" addresses in a
carrier NAT environment (e.g. between the CGN and customer CPE devices)
or for other IPv4 to IPv6 transition infrastructure. Network equipment
manufacturers MUST NOT use the assigned block in default or example
device configurations.
Because Shared Transition addresses have no meaning outside of the
Infrastructure Provider, routing information about shared transition
space networks MUST NOT be propagated on interdomain links, and packets

with shared transition source or destination addresses SHOULD NOT be forwarded across such links. Internet service providers SHOULD filter out routing information about shared transition space networks on ingress links.

5. Security Considerations

This memo does not define any protocol, and raises no security issues. Any addresses allocated as Shared Transition Space would not be routable on the Internet.

6. IANA Considerations

IANA is asked to reserve an IPv4 /10 for use as Shared Transition Space. This prefix is intended to be non-routable. As IANA has exhausted its pool of IPv4 address space, it may be necessary for one or more RIRs and/or legacy address holders to provide such addresses for IANA reservation (e.g. per ARIN Draft Policy 2011-5 [ARIN]).

7. References

[RFC1918]	Rekhter, Y., Moskowitz, R., Karrenberg, D., Groot, G. and E. Lear, "Address Allocation for Private Internets", BCP 5, RFC 1918, February 1996.
[RFC2119]	Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
[I-D.azinger-additional-private-ipv4-space-issues]	Azinger, M and L Vegoda, "Issues Associated with Designating Additional Private IPv4 Address Space", Internet-Draft draft-azinger-additional-private-ipv4-space-issues-05, January 2011.
[I-D.ietf-intarea-shared-addressing-issues]	Ford, M, Boucadair, M, Durand, A, Levis, P and P Roberts, "Issues with IP Address Sharing", Internet-Draft draft-ietf-intarea-shared-addressing-issues-02, October 2010.
[I-D.donley-nat444-impacts]	Donley, C, Howard, L, Kuarsingh, V, Chandrasekaran, A and V Ganti, "Assessing the Impact of NAT444 on Network Applications", Internet-Draft draft-donley-nat444-impacts-01, October 2010.
[I-D.shirasaki-nat444-isp-shared-addr]	Shirasaki, Y, Miyakawa, S, Nakagawa, A, Yamaguchi, J and H Ashida, "NAT444 addressing models", Internet-Draft draft-shirasaki-nat444-isp-shared-addr-04, July 2010.
[I-D.shirasaki-nat444]	Yamagata, I, Shirasaki, Y, Nakagawa, A, Yamaguchi, J and H Ashida, "NAT444", Internet-Draft draft-shirasaki-nat444-02, July 2010.

[I-D.bdgks-arin-shared-transition-space]	Barber, S, Delong, O, Grundemann, C, Kuarsingh, V and B Schliesser, "ARIN Draft Policy 2011-5: Shared Transition Space", Internet-Draft draft-bdgks-arin-shared-transition-space-00, July 2011.
[ARIN]	American Registry for Internet Numbers, "Shared Transition Space for IPv4 Address Extension", .

Appendix A. Acknowledgements

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Jean-Francois Tremblay

Leo Vegoda

Steven Wright

Ikuhei Yamagata

Authors' Addresses

Jason Weil Weil Time Warner Cable 13820 Sunrise Valley Drive Herndon, VA 20171 USA EMail: jason.weil@twcable.com

Victor Kuarsingh Kuarsingh Rogers Communications 8200 Dixie Road Brampton, ON L6T 0C1 Canada EMail: victor.kuarsingh@rci.rogers.com

Chris Donley Donley CableLabs 858 Coal Creek Circle Louisville, CO 80027 USA EMail: c.donley@cablelabs.com

Christopher Liljenstolpe LILJENSTOLPE Telstra Corp 7/242 Exhibition Street Melbourne, VIC 316 AU Phone: +61 3 8647 6389 EMail: cdl@asgaard.org

Marla Azinger Azinger Frontier Communications Vancouver, WA US Phone: +1.360.513.2293 EMail: marla.azinger@frontiercorp.com