v6ops
Internet-Draft
Intended status: Standards Track
Expires: 23 April 2026

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20 October 2025

Reclassifying SIIT-DC-DTM (RFC7756) to Internet Standard
draft-palet-v6ops-siit-dc-dtm-std-01

Abstract

This document reclassifies Stateless IP/ICMP Translation for IPv6 Internet Data Center Environments (SIIT-DC): Dual Translation Mode ([RFC7756]) to Standards Track and subsquently to Internet Standard.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 23 April 2026.

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1. Introduction

This document proposes that Stateless IP/ICMP Translation for IPv6 Internet Data Center Environments (SIIT-DC): Dual Translation Mode ([RFC7756]) is advanced to Standards Track (if this intermediate step is required) and subsequently to Internet Standard, following RFC6410 ([RFC6410]).

(1) There are at least two independent interoperating implementations with widespread deployment and successful operational experience.

Stateless IP/ICMP Translation for IPv6 Internet Data Center Environments (SIIT-DC): Dual Translation Mode ([RFC7756]) has been widely implemented by at least a dozen of vendors and its being used in commercial deployments by hundreds of millions of devices.

(2) There are no errata against the specification that would cause a new implementation to fail to interoperate with deployed ones.

Stateless IP/ICMP Translation for IPv6 Internet Data Center Environments (SIIT-DC): Dual Translation Mode ([RFC7756]) has no errata filed.

(3) There are no unused features in the specification that greatly increase implementation complexity.

There are no unused features.

(4) If the technology required to implement the specification requires patented or otherwise controlled technology, then the set of implementations must demonstrate at least two independent, separate and successful uses of the licensing process.

None.

2. Implementation Status

Note to RFC Editor: If this document needs to be published, please remove this section before publication, as it is only intended for the IESG evaluation.

This section summarized the known status of existing and interoperable implementations of the protocol subject of this document, as well as closely related protocols. This is following ([RFC7942]) and intended to assist the relevant WGs, IESG and IETF as a whole, in the evaluation of the document for the document progress through the standardization process.

The description of the implementations does not imply any IETF endorsement and is solely based on public available information, which has not been formally confirmed by specific interoperatbility testing for this document publication; however, it is known to be confirmed by existing commercial working deployments worldwide and without knows interoperability issues.

Stateless IP/ICMP Translation for IPv6 Internet Data Center Environments (SIIT-DC): Dual Translation Mode ([RFC7756]) was originally published in February 2016.

([RFC7756]) is implemented together with other related protocols (just to name a few of the most relevant ones) such as:

* IPv6 Addressing of IPv4/IPv6 Translators ([RFC6052]).

* Explicit Address Mappings for Stateless IP/ICMP Translation ([RFC7757]).

* IP/ICMP Translation Algorithm ([RFC7915]).

Follows a list of known implementations by different products/ vendors, known to be mature and in production products/networks/ services worlwide:

* A10. Implemented in multiple products. https://www.a10networks.com/products/thunder-cgn/.

* Arista. Implemented in multiple products. https://www.arista.com/en/support/toi/eos-4-24-0f/14495-map-t-border-relay.

* Broadcom. Implemented in Brocade products. https://techdocs.broadcom.com/us/en/vmware-cis/nsx/nsxt-dc/3-1/administration-guide/network-address-translation/configure-an-nsx-nat64.html.

* Cisco. Implemented in multiple series of products. https://www.cisco.com/c/en/us/td/docs/routers/ios/config/17-x/ip-addressing/b-ip-addressing/m_iadnat-stateless-nat64.html.

* CLATD. Implemented in Linux. https://github.com/toreanderson/clatd.

* F5. Implemented in multiple products. https://techdocs.f5.com/kb/en-us/products/big-ip_ltm/manuals/product/cgn-implementations-11-6-0/2.html.

* Fortinet. Implemented in multiple products. https://docs.fortinet.com/document/fortigate/7.4.6/fortinet-carrier-grade-nat-field-reference-architecture-guide/891965/nat64.

* Huawei. Implemented in multiple series of products. https://support.huawei.com/enterprise/en/doc/EDOC1100279002/a8672300/appendix-gx-interface.

* Jool. Implmemented since 2014. https://nicmx.github.io/Jool/en/index.html.

* Juniper. Implemented in multiple series of products. https://www.juniper.net/documentation/us/en/software/junos/nat/topics/topic-map/security-persistent-nat-and-nat64.html.

* Nokia. Implemented in multiple products as part of the NAT64 support. https://documentation.nokia.com/acg/23-7-2/books/classic-cli-part-iii/c128-nat-stateless-dh.html.

* OpenWRT. https://github.com/openwrt.

* Palo Alto. Implemented in muliple products. https://docs.paloaltonetworks.com/ngfw/networking/nat64.

* Tayga. https://github.com/openthread/tayga.

* VPP. https://wiki.fd.io/view/VPP/Configure_an_LW46_(MAP-E)_Terminator#SIIT-DC.

Note that even an effort has been done to compile an extensive list (including a relevant URL), there may be many more implementations not publicly known, so this list doesn’t pretent to be exclusive, just an indication of a sufficient number of implementations, as required for the evaluation of the current implementation status.

3. References

3.1. Normative References

[RFC6410] Housley, R., Crocker, D., and E. Burger, "Reducing the Standards Track to Two Maturity Levels", BCP 9, RFC 6410, DOI 10.17487/RFC6410, October 2011, <https://www.rfc-editor.org/info/rfc6410>.

[RFC7756] Anderson, T. and S. Steffann, "Stateless IP/ICMP Translation for IPv6 Internet Data Center Environments (SIIT-DC): Dual Translation Mode", RFC 7756, DOI 10.17487/RFC7756, February 2016, <https://www.rfc-editor.org/info/rfc7756>.

3.2. Informative References

[RFC6052] Bao, C., Huitema, C., Bagnulo, M., Boucadair, M., and X. Li, "IPv6 Addressing of IPv4/IPv6 Translators", RFC 6052, DOI 10.17487/RFC6052, October 2010, <https://www.rfc-editor.org/info/rfc6052>.

[RFC6147] Bagnulo, M., Sullivan, A., Matthews, P., and I. van Beijnum, "DNS64: DNS Extensions for Network Address Translation from IPv6 Clients to IPv4 Servers", RFC 6147, DOI 10.17487/RFC6147, April 2011, <https://www.rfc-editor.org/info/rfc6147>.

[RFC6877] Mawatari, M., Kawashima, M., and C. Byrne, "464XLAT: Combination of Stateful and Stateless Translation", RFC 6877, DOI 10.17487/RFC6877, April 2013, <https://www.rfc-editor.org/info/rfc6877>.

[RFC7599] Li, X., Bao, C., Dec, W., Ed., Troan, O., Matsushima, S., and T. Murakami, "Mapping of Address and Port using Translation (MAP-T)", RFC 7599, DOI 10.17487/RFC7599, July 2015, <https://www.rfc-editor.org/info/rfc7599>.

[RFC7755] Anderson, T., "SIIT-DC: Stateless IP/ICMP Translation for IPv6 Data Center Environments", RFC 7755, DOI 10.17487/RFC7755, February 2016, <https://www.rfc-editor.org/info/rfc7755>.

[RFC7757] Anderson, T. and A. Leiva Popper, "Explicit Address Mappings for Stateless IP/ICMP Translation", RFC 7757, DOI 10.17487/RFC7757, February 2016, <https://www.rfc-editor.org/info/rfc7757>.

[RFC7915] Bao, C., Li, X., Baker, F., Anderson, T., and F. Gont, "IP/ICMP Translation Algorithm", RFC 7915, DOI 10.17487/RFC7915, June 2016, <https://www.rfc-editor.org/info/rfc7915>.

[RFC7942] Sheffer, Y. and A. Farrel, "Improving Awareness of Running Code: The Implementation Status Section", BCP 205, RFC 7942, DOI 10.17487/RFC7942, July 2016, <https://www.rfc-editor.org/info/rfc7942>.

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