

Network Working Group
Request for Comments: 2928
Category: Informational

R. Hinden
Nokia
S. Deering
Cisco
R. Fink
LBNL
T. Hain
Microsoft
September 2000

Initial IPv6 Sub-TLA ID Assignments

Status of this Memo

This memo provides information for the Internet community. It does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Copyright Notice

Copyright (C) The Internet Society (2000). All Rights Reserved.

Abstract

This document defines initial assignments of IPv6 Sub-Top-Level Aggregation Identifiers (Sub-TLA ID) to the Address Registries. It is intended as technical input to the Internet Assigned Numbers Authority (IANA) from the Internet Engineering Task Force (IETF) Internet Protocol Next Generation (IPNG) and Next Generation Transition (NGTRANS) working groups, as an input to the process of developing guidelines for the allocation of IPv6 addresses.

This document was originally developed to provide advice to IANA in the fall of 1998 and is being published at this time for the historical record. The Internet Architecture Board (IAB) subsequently requested that the IANA delegate these assignments to the Address Registries. The IANA did this and the Address Registries are now using them to assign IPv6 addresses.

1. Introduction

This document was originally developed to provide advice to IANA in the fall of 1998 and is being published at this time for the historical record. The IAB subsequently requested that the IANA delegate these assignments to the Address Registries. The IANA did this and the Address Registries are now using them to assign IPv6 addresses.

This document defines initial assignments of IPv6 Sub-TLA Aggregation Identifiers (Sub-TLA ID) to the Address Registries. It is intended as technical input to the IANA from the IETF IP Next Generation (IPNG) and Next Generation Transition (NGTRANS) working groups, as an input to the process of developing guidelines for the allocation of IPv6 addresses.

The IAB and IESG have authorized the Internet Assigned Numbers Authority (IANA) as the appropriate entity to have the responsibility for the management of the IPv6 address space as defined in [ALLOC].

The proposed initial assignment described in the document is consistent with:

- RFC 2373, "IP Version 6 Addressing Architecture" [ARCH]
- RFC 2374 "An Aggregatable Global Unicast Address Format" [AGGR]
- RFC 2450 "Proposed TLA and NLA Assignment Rules" [TLA-RULES]

2. Background

[TLA-RULES] specifies that TLA assignments will be done in two stages. The first stage is to allocate a Sub-TLA ID. This document specifies the initial assignments of Sub-TLA ID's to the Registries.

As defined in [TLA-RULES] Section 5.1:

"Sub-TLA ID's are assigned out of TLA ID 0x0001 as follows. Note that use of the Reserved field to create the Sub-TLA field is specific to TLA ID 0x0001. It does not affect any other TLA.

| | | | |
|---------|---------|---------|---------|
| 3 | 13 | 13 | 19 |
| +-----+ | +-----+ | +-----+ | +-----+ |
| FP | TLA | Sub-TLA | NLA |
| | ID | | ID |
| +-----+ | +-----+ | +-----+ | +-----+ |

where:

FP = 001 = Format Prefix

This is the Format Prefix used to identify aggregatable global unicast addresses.

TLA ID = 0x0001 = Top-Level Aggregation Identifier

This is the TLA ID assigned by the IANA for Sub-TLA allocation.

Sub-TLA ID = Sub-TLA Aggregation Identifier

The Sub-TLA ID field is used by the registries for initial allocations to organizations meeting the requirements in Section 5.2 of this document. The IANA will assign small blocks (e.g., few hundred) of Sub-TLA ID's to registries. The registries will assign the Sub-TLA ID's to organizations meeting the requirements specified in Section 5.2. When the registries have assigned all of their Sub-TLA ID's they can request that the IANA give them another block. The blocks do not have to be contiguous. The IANA may also assign Sub-TLA ID's to organizations directly. This includes the temporary TLA assignment for testing and experimental usage for activities such as the 6bone or new approaches like exchanges.

NLA ID = Next-Level Aggregation Identifier

Next-Level Aggregation ID's are used by organizations assigned a TLA ID to create an addressing hierarchy and to identify sites. The organization can assign the top part of the NLA ID in a manner to create an addressing hierarchy appropriate to its network."

Note: In the above quote from [TLA-RULES] the references to "Section 5.2" refer to section 5.2 in [TLA-RULES].

3. Initial Assignments

As specified in [TLA-RULES], Sub-TLA ID assignments are made in blocks. The initial Sub-TLA ID assignments to IP address registries are in blocks of 64 Sub-TLA IDs. These assignments are listed below.

| Binary Value | IPv6 Prefix Range | Assignment |
|------------------|---------------------------------|---------------------|
| ----- | ----- | ----- |
| 0000 000X XXXX X | 2001:0000::/29 - 2001:01F8::/29 | IANA |
| 0000 001X XXXX X | 2001:0200::/29 - 2001:03F8::/29 | APNIC |
| 0000 010X XXXX X | 2001:0400::/29 - 2001:05F8::/29 | ARIN |
| 0000 011X XXXX X | 2001:0600::/29 - 2001:07F8::/29 | RIPE NCC |
| 0000 100X XXXX X | 2001:0800::/29 - 2001:09F8::/29 | (future assignment) |
| 0000 101X XXXX X | 2001:0A00::/29 - 2001:0BF8::/29 | (future assignment) |
| 0000 110X XXXX X | 2001:0C00::/29 - 2001:0DF8::/29 | (future assignment) |
| 0000 111X XXXX X | 2001:0E00::/29 - 2001:0FF8::/29 | (future assignment) |
| 0001 000X XXXX X | 2001:1000::/29 - 2001:11F8::/29 | (future assignment) |
| . . . | | |
| . . . | | |
| . . . | | |
| 1111 111X XXXX X | 2001:FE00::/29 - 2001:FFF8::/29 | (future assignment) |

Where "X" indicates "0" or "1".

All other Sub-TLA ID values not listed above are reserved.

When a registry has assigned all of the Sub-TLA IDs in their block they can request that the IANA provide another block. The blocks assigned to a registry do not have to be contiguous.

The block of Sub-TLA IDs assigned to the IANA (i.e., 2001:0000::/29 - 2001:01F8::/29) is for assignment for testing and experimental usage to support activities such as the 6bone, and for new approaches like exchanges.

4. Acknowledgments

The authors would like to express their thanks to Joyce K. Reynolds, Thomas Narten, Kim Hubbard, Mirjam Kuehne, and Brian Carpenter for their help with this document.

5. Security Considerations

IPv6 addressing documents do not have any direct impact on Internet infrastructure security. Authentication of IPv6 packets is defined in [AUTH]. Authentication of the ownership of prefixes to avoid "prefix stealing" is a related security issue but is beyond the scope of this document.

6. References

- [AGGR] Hinden, R., Deering, S. and M. O'Dell, "An Aggregatable Global Unicast Address Format", RFC 2374, July 1998.
- [ALLOC] IAB and IESG, "IPv6 Address Allocation Management", RFC 1881, December 1995.
- [ARCH] Hinden, R., "IP Version 6 Addressing Architecture", RFC 2373, July 1998.
- [AUTH] Kent, S. and R. Atkinson, "IP Authentication Header", RFC 2402, November 1998.
- [IPV6] Deering, S. and R. Hinden, "Internet Protocol, Version 6 (IPv6) Specification", RFC 2460, December 1998.
- [RFC2026] Bradner, S., "The Internet Standards Process -- Revision 3", BCP 9, RFC 2026, October 1996.
- [TLA-RULES] Hinden, R., "Proposed TLA and NLA Assignment Rules", RFC 2450, December 1998.
- [TST-ALLOC] Hinden, R., Fink R. and J. Postel, "IPv6 Testing Address Allocation", RFC 2471, December 1998.

7. Authors' Addresses

Robert M. Hinden
Nokia
313 Fairchild Drive
Mountain View, CA 94043
USA

Phone: +1 650 625-2004
EMail: hinden@iprg.nokia.com

Stephen E. Deering
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA

Phone: +1 408 527-8213
EMail: deering@cisco.com

Robert L. Fink
Lawrence Berkeley National Lab
1 Cyclotron Rd.
Bldg 50A, Room 3111
Berkeley, CA 94720
USA

Phone: +1 510 486-5692
EMail: rlfink@lbl.gov

Tony Hain
Microsoft

Phone: +1 425 703-6619
EMail: tonyhain@microsoft.com

8. Full Copyright Statement

Copyright (C) The Internet Society (2000). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the Internet Society or other Internet organizations, except as needed for the purpose of developing Internet standards in which case the procedures for copyrights defined in the Internet Standards process must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by the Internet Society or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and THE INTERNET SOCIETY AND THE INTERNET ENGINEERING TASK FORCE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Acknowledgement

Funding for the RFC Editor function is currently provided by the Internet Society.

