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Support for IPv6 in Session Description Protocol (SDP)

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Abstract

This document describes the use of Internet Protocol Version 6 (IPv6) addresses in conjunction with the Session Description Protocol (SDP). Specifically, this document clarifies existing text in SDP with regards to the syntax of IPv6 addresses.

1. Introduction

SDP is intended for describing multimedia sessions for the purposes of session announcement, session invitation, and other forms of multimedia session initiation. It is a text format description that provides many details of a multimedia session including: the originator of the session, a URL related to the session, the connection address for the session media(s), and optional attributes for the session media(s). Each of these pieces of information may involve one or more IPv6 addresses. The ABNF for IP addresses in SDP currently leaves the syntax for IPv6 addresses undefined. This document attempts to complete the ABNF to include IPv6 addresses.

Accordingly, the address type "IP6" indicating an IPv6 address, should be allowed in the connection field, "c=", of the SDP. The ABNF already reflects this, though the "Connection Data" text under section 6 of RFC 2328 currently only defines the "IP4" address type.

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 RFC 2119 [5].

3. Syntax

RFC 2373 [1] gives an ABNF for the text representation of IPv6 addresses in Appendix B. RFC 2732 [3] covers the text representation of IPv6 addresses when used within a URL. Using the ABNF described in these documents, the following updated ABNF for SDP is proposed.

```
uri =                 ; defined in RFC1630 and RFC2732

multicast-address =   IP4-multicast / IP6-multicast

IP4-multicast =       m1 3*( "." decimal-uchar )
                      "/" ttl [ "/" integer ]
                      ; IPv4 multicast addresses may be in the
                      ; range 224.0.0.0 to 239.255.255.255

m1 =                  ("22" ("4"/"5"/"6"/"7"/"8"/"9")) /
                      ("23" DIGIT ))

IP6-multicast =       hexpart
                      ; IPv6 address starting with FF

addr =                FQDN / unicast-address

FQDN =                4*(alpha-numeric/"-"/".")
                      ; fully qualified domain name as specified
                      ; in RFC1035
unicast-address =     IP4-address / IP6-address

IP4-address =         b1 3*("." decimal-uchar) / "0.0.0.0"

b1 =                  decimal-uchar
                      ; less than "224"; not "0" or "127"

; The following is from RFC2373 Appendix B. It is a direct copy.
IP6-address =         hexpart [ ":" IP4-address ]

hexpart =             hexseq / hexseq "::" [ hexseq ] /
                      "::" [ hexseq ]
```

```
hexseq  =           hex4 *( ":" hex4)

hex4    =           1*4HEXDIG
```

4. Example SDP description with IPv6 addresses

The following is an example SDP description using the above ABNF for IPv6 addresses. In particular, the origin and connection fields contain IPv6 addresses.

```
v=0
o=nasa1 971731711378798081 0 IN IP6 2201:056D::112E:144A:1E24
s=(Almost) live video feed from Mars-II satellite
p=+1 713 555 1234
c=IN IP6 FF1E:03AD::7F2E:172A:1E24
t=3338481189 3370017201
m=audio 6000 RTP/AVP 2
a=rtpmap:2 G726-32/8000
m=video 6024 RTP/AVP 107
a=rtpmap:107 H263-1998/90000
```

5. Note for implementors

An implementation may receive an SDP session description with an IPv6 address whose format [1] is internally that of an IPv4 mapped address. Note that such an address is actually the address of an IPv4-only node, and implementors are warned to interpret IPv4 mapped addresses as equivalent to IP4.

6. IANA Considerations

This document updates the definition of the IP6 addrtype parameter found in RFC 2327.

7. Security Considerations

No additional considerations above what is stated in section 7 of RFC 2327.

8. References

[1] Hinden, R. and S. Deering, "IP Version 6 Addressing Architecture", RFC 2373, July 1998.

[2] Handley, M. and V. Jacobson, "SDP: Session Description Protocol", RFC 2327, April 1998.

[3] Hinden, R., Carpenter, B. and L. Masinter, "Format for Literal IPv6 Addresses in URL's", RFC 2732, December 1999.

[4] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", RFC 2234, November 1997.

[5] Bradner, S., "Key words for Use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

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