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Support for IPv6 in SDP

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Abstract

This document describes the use of IPv6 addresses [[1](#)] in conjunction with the Session Description Protocol (SDP) [[2](#)]. 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 Internet-Draft 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 RFC2328](#) 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](#).

3. Syntax

[RFC2373](#) [1] gives an ABNF for the text representation of IPv6 addresses in [Appendix B](#). [RFC2732](#) [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 [ ":" IP4-multicast ]
                "/" ttl [ "/" integer ]
                ; IPv6 address starting with FF00

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 "." decimal-uchar "." decimal-uchar "." b4
              | "0.0.0.0"

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

b4 = decimal-uchar
      ; not "0"

IP6-address = *( HEXDIGIT | "." | ":" )
              ; As defined in the IPv6 addressing architecture
```

4. Additional IPv6 Issues in SDP

4.1 IPv6 Addresses with Embedded IPv4 Addresses

[RFC2373](#) defines two ways in which an IPv4 address may be encoded in an IPv6 address. In both forms, the lower 32 bits of the IPv6 address contain the IPv4 address. The first form is an "IPv4 compatible IPv6 address" and it has the format:

80 bits	16	32 bits
0000.....0000	0000	IPv4 address

The second form of address is used to represent the addresses of IPv4-only nodes (those that *do not* support IPv6) as IPv6 addresses. This type of address is termed an "IPv4-mapped IPv6 address" and has the format:

80 bits	16	32 bits
0000.....0000	FFFF	IPv4 address

The difference in format is significant and MAY be treated differently in SDP implementations.

5. Example SDP description with IPv6 addresses

The following is an example SDP description using the above ABNF for IPv6 addresses. In particular, the origin, URI, and connection fields contain IPv6 addresses. The URI contains an IPv4 compatible IPv6 address.

```
v=0
o=nasa1 971731711378798081 0 IN IP6 2201:056D::112E:144A:1E24
s=(Almost) live video feed from Mars-II sattelite
u=http://[::FFFF:10.2.12.126]/marsII
p=+1 713 555 1234
c=IN IP6 FF00:03AD::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
```

6. Backward compatibility

An implementation that does not understand or wish to accept the IPv6 extensions to the SDP grammar MUST reject the SDP.

7. IANA Considerations

This document updates the definition of the IP6 addrtype parameter

found in [RFC2327](#).

8. Security Considerations

No additional considerations above what is stated in [section 7 of RFC2327](#).

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9. References

- [1] R. Hinden and S. Deering, "IP Version 6 Addressing Architecture", [RFC2373](#), IETF.
- [2] M. Handley and V. Jacobson, "Session Description Protocol", [RFC2327](#), IETF.
- [3] R. Hinden, et. al., "Format for Literal IPv6 Addresses in URL's", [RFC2732](#), IETF.
- [4] D. Crocker and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", [RFC2234](#), IETF.
- [5] S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels", [RFC2119](#), IETF.

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