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IPv6 RA Option for SIP Proxy Server
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Abstract

This document specifies a new optional extension to IPv6 Router Advertisement messages to advertise SIP Proxy Server (e.g., P-CSCF) addresses to IPv6 hosts.

The provisioning of the SIP Proxy Server address is crucial for the delivery of SIP-based services. Means to ensure reliable delivery of this information to connecting SIP User Agents is a must.

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](#)].

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1. Introduction

1.1. Needs

Access to SIP-based service offerings (e.g., telephony) relies on the provisioning of the IP address or FQDN of the outbound SIP Proxy Server [[RFC3261](#)]. Two means have been defined in the past to provision such information:

1. DHCPv6 SIP options [[RFC3319](#)].
2. Dedicated 3GPP PCO to convey the address of the P-CSCF [[CORE](#)].

Nevertheless, these means are not sufficient because of the following reasons:

1. PCO-IE is not mandatory in 3G networks (e.g., PCO information may not be supported by terminals);
2. DHCPv6 is not required in all 3GPP releases. Moreover, the support of DHCPv6 client is not mandatory in the IETF IPv6 node requirements.
3. PCO-IE is not available in non-3GPP networks. This is very critical when the UE (User Equipment) performs a network attachment in a non-3GPP network because the user won't have access to SIP-based services if no alternative means are supported.

As a conclusion, auto-configuration [[RFC4861](#)] is required so that a SIP UA (User Agent) can learn one or multiple SIP Proxy Servers.

1.2. Scope

This document defines a new ND option called SIP Proxy Server option that contains the domain name of SIP Proxy Server(s). This option follows the procedures defined in [[RFC4861](#)]. The IPv6 host embedding a SIP UA can learn a list of SIP Proxy Servers using this option.

This option can be sent along with other options, such as DNS information [[RFC6106](#)], in the same RA message.

The router sending the SIP Proxy Server in RA must be configured with the Proxy Server information.

2. SIP Proxy Server Option

The SIP Proxy Server Option contains a domain name representing the SIP outbound Proxy Server (e.g., SBE, P-CSCF). Figure 1 shows the format of the SIP Proxy Server Option.

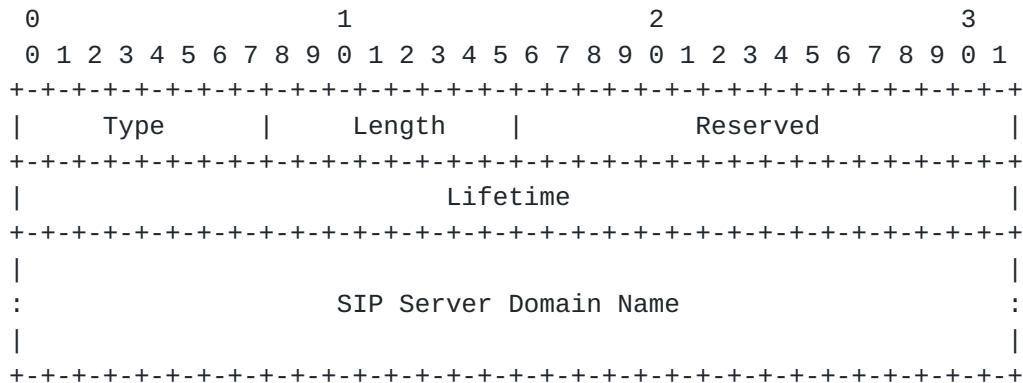


Figure 1

Where

- o Type: To be assigned (RA SIP Proxy Server Option).
- o Length is a 8-bit unsigned integer. The length of the option is in unit of 8 octets.
- o Reserved is for future use.
- o Lifetime is a 16-bit unsigned integer. Same as in [\[RFC6106\]](#).
- o SIP Server Domain Name: The domain names of the SIP outbound proxy servers for the client to use. The domain names are encoded as specified [Section 3.1 of \[RFC1035\]](#). The domain names MUST NOT be encoded in a compressed form, as described in [Section 4.1.4 of \[RFC1035\]](#).

Upon receipt of an RA SIP Proxy Server option, the IPv6 host MUST verify that the option length does not exceed 255 octets [\[RFC1035\]](#). The IPv6 host MUST verify the FQDN is properly encoded as detailed in [Section 3.1 of \[RFC1035\]](#).

Once the FQDN conveyed in a SIP Proxy Server RA option is validated, the included name is passed to the name resolution library (e.g., [Section 6.1.1 of \[RFC1123\]](#) or [\[RFC6055\]](#)) to retrieve the corresponding IP address.

3. IANA Considerations

This document requests IANA to assign a new option code for:

SIP Proxy Server

4. Security Considerations

The security considerations discussed in [[RFC4861](#)] and [[RFC3261](#)] must be taken into account.

This option can be used to inject a fake proxy server which will discover the security credentials used by legitimate user to connect to their SIP services. This threat is similar to what is discussed in [[RFC6106](#)].

5. References

5.1. Normative References

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5.2. Informative References

- [CORE] 3GPP 24.008, "3GPP 24.008 -- Mobile radio interface Layer 3 specification; Core network protocols; Stage 3", December 2008.
- [RFC1123] Braden, R., "Requirements for Internet Hosts - Application and Support", STD 3, [RFC 1123](#), October 1989.
- [RFC3319] Schulzrinne, H. and B. Volz, "Dynamic Host Configuration Protocol (DHCPv6) Options for Session Initiation Protocol

(SIP) Servers", [RFC 3319](#), July 2003.

[RFC6055] Thaler, D., Klensin, J., and S. Cheshire, "IAB Thoughts on Encodings for Internationalized Domain Names", [RFC 6055](#), February 2011.

[RFC6106] Jeong, J., Park, S., Beloeil, L., and S. Madanapalli, "IPv6 Router Advertisement Options for DNS Configuration", [RFC 6106](#), November 2010.

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