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RADIUS Delegated-IPv6-Prefix Attribute
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Abstract

This document defines a RADIUS (Remote Authentication Dial In User Service) attribute that carries an IPv6 prefix that is to be delegated to the user. This attribute is usable within either RADIUS or Diameter.

1. Introduction

The Delegated-IPv6-Prefix is a RADIUS attribute [1] that carries an IPv6 prefix to be delegated to the user. For example, the prefix in a Delegated-IPv6-Prefix attribute can be delegated to another node through DHCP Prefix Delegation [2].

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].

3. Attribute format

The format of the Delegated-IPv6-Prefix is:

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Type      |    Length     |  Reserved     | Prefix-Length |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                             Prefix
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                             Prefix
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                             Prefix
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                             Prefix                            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Type

TBD for Delegated-IPv6-Prefix

Length

At least 4 and no larger than 20

Reserved

Always set to zero

Prefix-Length

The length of the prefix, in bits. At least 0 and no larger than 128

Note that the prefix field is only required to be long enough to hold the prefix bits and can be shorter than 16 bytes. Any bits in the prefix field that are not part of the prefix MUST be zero.

The definition of the Delegated-IPv6-Prefix Attribute is based on the Framed-IPv6-Prefix attribute.

The Delegated-IPv6-Prefix MAY appear in an Access-Accept packet, and can appear multiple times. It MAY appear in an Access-Request packet as a hint by the NAS to the server that it would prefer these prefix(es), but the server is not required to honor the hint.

The Delegated-IPv6-Prefix attribute MAY appear in an Accounting-Request packet.

The Delegated-IPv6-Prefix MUST NOT appear in any other RADIUS packets.

The following table describes which messages the Delegated-IPv6-Prefix attribute can appear in and in what quantity.

Request	Accept	Accounting Request	#	Attribute
0+	0+	0+	TBD	Delegated-IPv6-Prefix

In this table 0+ means that zero or more instances of this attribute MAY be present in packet. This attribute MUST NOT appear in any packet not listed in the table.

4. Diameter Considerations

A definition is needed for an identical attribute with the same Type value for Diameter [4]. The attribute should be available as part of the NASREQ application [5], as well as the Diameter EAP application [6].

5. IANA Considerations

IANA is requested to assign a Type value, TBD, for this attribute from the RADIUS Types registry.

6. Security Considerations

Known security vulnerabilities of the RADIUS protocol are discussed in RFC 2607 [7], RFC 2865 [1] and RFC 2869 [8]. Use of IPsec [9] for providing security when RADIUS is carried in IPv6 is discussed in RFC 3162 [10].

7. Change Log

The following changes were made in revision -01 of this document:

- o Added additional details to Abstract; defined that this attribute can be used in both RADIUS and Diameter. (Issue 188)
- o Moved and clarified text describing which packets this attribute can appear in adjacent to table in section 3. (Issue 188)
- o Fixed RFC 2119 boilerplate in section 2. (Issue 185)
- o Fixed table in section 3 to clarify which packets this attribute cannot appear in. (Issue 188)
- o Added section 4, Diameter Considerations. (Issue 188)
- o Made some references in section 6, Security Considerations, Informative rather than Normative. (Issue 188)
- o Updated reference to RFC 2401 [9] to RFC 4301. (Issue 188)
- o Changed "IP SEC" to "IPsec" in section 6. (Issues 185 and 188)

8. References

8.1. Normative References

[1] Rigney, C., Willens, S., Rubens, A., and W. Simpson, "Remote Authentication Dial In User Service (RADIUS)", RFC 2865, June 2000.

[2] Troan, O. and R. Droms, "IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6", RFC 3633, December 2003.

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

8.2. Non-normative References

[4] Calhoun, P., Loughney, J., Guttman, E., Zorn, G., and J. Arkko, "Diameter Base Protocol", RFC 3588, September 2003.

[5] Calhoun, P., Zorn, G., Spence, D., and D. Mitton, "Diameter Network Access Server Application", RFC 4005, August 2005.

[6] Eronen, P., Hiller, T., and G. Zorn, "Diameter Extensible Authentication Protocol (EAP) Application", RFC 4072, August 2005.

[7] Aboba, B. and J. Vollbrecht, "Proxy Chaining and Policy Implementation in Roaming", RFC 2607, June 1999.

[8] Rigney, C., Willats, W., and P. Calhoun, "RADIUS Extensions", RFC 2869, June 2000.

[9] Kent, S. and K. Seo, "Security Architecture for the Internet Protocol", RFC 4301, December 2005.

[10] Aboba, B., Zorn, G., and D. Mitton, "RADIUS and IPv6", RFC 3162, August 2001.

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