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RADIUS Filter Rule Attribute

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Abstract

This document defines the NAS-Filter-Rule attribute within the Remote Authentication Dial In User Service (RADIUS), equivalent to the Diameter NAS-Filter-Rule AVP described in RFC 4005.

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1. Introduction

This document defines the NAS-Filter-Rule attribute within the Remote Authentication Dialin User Service (RADIUS) which has the same functionality as the Diameter NAS-Filter-Rule AVP (400) defined in [RFC4005] Section 6.6. This attribute may prove useful for provisioning of filter rules.

While [RFC2865] Section 5.11 defines the Filter-Id attribute (11), this requires that the NAS be pre-populated with the desired filters. However, in situations where the server operator does not know which filters have been pre-populated, it useful to specify filter rules explicitly.

1.1. Terminology

This document uses the following terms:

Network Access Server (NAS)
: A device that provides an access service for a user to a network.

RADIUS server
: A RADIUS authentication server is an entity that provides an authentication service to a NAS.

RADIUS proxy
: A RADIUS proxy acts as an authentication server to the NAS, and a RADIUS client to the RADIUS server.

1.2. 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 [RFC2119].

1.3. Attribute Interpretation

If a NAS conforming to this specification receives an Access-Accept packet containing a NAS-Filter-Rule attribute which it cannot apply, it MUST act as though it had received an Access-Reject. [RFC3576] requires that a NAS receiving a Change of Authorization Request (CoA-Request) reply with a CoA-NAK if the Request contains an unsupported attribute. It is recommended that an Error-Cause attribute with value set to "Unsupported Attribute" (401) be included in the CoA-NAK. As noted in [RFC3576], authorization changes are atomic so that this situation does not result in session termination and the pre-existing configuration remains unchanged. As a result, no accounting packets should be generated.

2. NAS-Filter-Rule Attribute

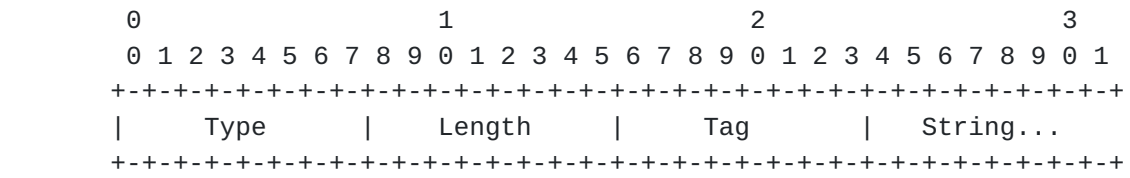
Description

This attribute indicates filter rules to be applied for this user. Zero or more NAS-Filter-Rule attributes MAY be sent in Access-Accept, CoA-Request, or Accounting-Request packets.

The NAS-Filter-Rule attribute is not intended to be used concurrently with any other filter rule attribute, including Filter-Id (11) and NAS-Traffic-Rule [Traffic] attributes, and SHOULD NOT appear in the same RADIUS packet. If a Filter-Id attribute is present, then implementations of this specification MUST silently discard NAS-Filter-Rule attributes, if present.

Where more than one NAS-Filter-Rule attribute with the same Tag field value is included in a RADIUS packet, the String field of the attributes are to be concatenated to form a single filter. As noted in [RFC2865] Section 2.3, "the forwarding server MUST NOT change the order of any attributes of the same type", so that RADIUS proxies will not reorder NAS-Filter-Rule attributes.

A summary of the NAS-Filter-Rule Attribute format is shown below. The fields are transmitted from left to right.



Type

TBD

Length

>=4

Tag

The Tag field is one octet, and is used to identify the filter rule that is represented. Each filter rule being represented MUST utilize a unique Tag field value. Where a single filter rule exceeds 253 octets in length, the filter rule may be encoded across multiple NAS-Filter-Rule attributes, each with the same Tag value.

String

The String field is one or more octets. It contains filter rules in the IPFilterRule syntax defined in [RFC3588] Section 4.3. [RFC3629] UTF-8 encoded 10646 characters are RECOMMENDED, but a robust implementation SHOULD support the field as undistinguished octets.

3. Table of Attributes

The following table provides a guide to which attributes may be found in which kinds of packets, and in what quantity.

Access-Request	Access-Accept	Access-Reject	Access-Challenge	CoA-Req	Acct-Req	#	Attribute
0	0+	0	0	0+	0+	TBD	NAS-Filter-Rule

The following table defines the meaning of the above table entries.

0	This attribute MUST NOT be present in the packet.
0+	Zero or more instances of this attribute MAY be present in the packet.
0-1	Zero or one instance of this attribute MAY be present in the packet.

4. Diameter Considerations

[RFC4005] Section 6.6 defines the NAS-Filter-Rule AVP (400) with the same functionality as the RADIUS NAS-Filter-Rule attribute. In order to support interoperability, Diameter/RADIUS gateways will need to be configured to translate RADIUS attribute TBD to Diameter AVP 400 and vice-versa. Where a Diameter NAS-Filter-Rule AVP contains a filter rule larger than 253 octets, Diameter/RADIUS gateways translate the AVP to multiple RADIUS NAS-Filter-Rule attributes, each with the same Tag field value. Similarly, when multiple RADIUS NAS-Filter-Rule attributes are received with the same Tag field value, the String fields of the attributes are concatenated together and encoded as the value in a single Diameter NAS-Filter-Rule AVP. Note that since a Diameter AVP can be larger than the maximum RADIUS packet size (4096), translation from Diameter to RADIUS may not be possible in all cases.

5. IANA Considerations

This specification does not create any new registries.

This document uses the RADIUS [RFC2865] namespace, see <http://www.iana.org/assignments/radius-types>. Allocation of four

updates for the section "RADIUS Attribute Types" is requested. The RADIUS attributes for which values are requested are:

TBD - NAS-Filter-Rule

6. Security Considerations

This specification describes the use of RADIUS for purposes of authentication, authorization and accounting. Threats and security issues for this application are described in [RFC3579] and [RFC3580]; security issues encountered in roaming are described in [RFC2607].

This document specifies a new attribute that can be included in existing RADIUS packets, which are protected as described in [RFC3579] and [RFC3576]. See those documents for a more detailed description.

A NAS-Filter-Rule attribute sent by a RADIUS server may not be understood by the NAS which receives it. A legacy NAS not compliant with this specification may silently discard the NAS-Filter-Rule attribute while permitting the user to access the network. This can lead to users improperly receiving unfiltered access to the network. As a result, the NAS-Filter-Rule attribute SHOULD only be sent to a NAS that is known to support it.

7. References

7.1. Normative references

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", RFC 2119, March, 1997.

[RFC2865] Rigney, C., Rubens, A., Simpson, W. and S. Willens, "Remote Authentication Dial In User Service (RADIUS)", RFC 2865, June 2000.

[RFC3588] Calhoun, P., Loughney, J., Guttman, E., Zorn, G., and J. Arkko, "Diameter Base Protocol", RFC 3588, September 2003.

[RFC3629] Yergeau, F., "UTF-8, a transformation of ISO 10646", RFC 3629, November 2003.

[RFC4005] Calhoun, P., Zorn, G., Spence, D. and D. Mitton, "Diameter Network Access Server Application", RFC 4005, August 2005.

7.2. Informative references

[RFC2607] Aboba, B. and J. Vollbrecht, "Proxy Chaining and Policy Implementation in Roaming", RFC 2607, June 1999.

[RFC3576] Chiba, M., Dommety, G., Eklund, M., Mitton, D. and B. Aboba, "Dynamic Authorization Extensions to Remote Authentication Dial In User Service (RADIUS)", RFC 3576, July 2003.

[RFC3579] Aboba, B. and P. Calhoun, "RADIUS Support for Extensible Authentication Protocol (EAP)", RFC 3579, September 2003.

[RFC3580] Congdon, P., Aboba, B., Smith, A., Zorn, G., Roese, J., "IEEE 802.1X Remote Authentication Dial In User Service (RADIUS) Usage Guidelines", RFC3580, September 2003.

[Traffic] Congdon, P., Sanchez, M., Lior, A., Adrangi, F. and B. Aboba, "Filter Attributes", Internet draft (work in progress), draft-ietf-radext-filter-rules-00.txt, February 2006.

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Open issues

Open issues relating to this specification are tracked on the following web site:

http://www.drizzle.com/~aboba/RADEXT/