

## 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). This attribute is based on the Diameter NAS-Filter-Rule AVP described in [RFC 4005](#).

## Table of Contents

<a href="#">1.</a>	Introduction .....	<a href="#">3</a>
<a href="#">1.1</a>	Terminology .....	<a href="#">3</a>
<a href="#">1.2</a>	Requirements Language .....	<a href="#">3</a>
<a href="#">1.3</a>	Attribute Interpretation .....	<a href="#">3</a>
<a href="#">2.</a>	NAS-Filter-Rule Attribute .....	<a href="#">4</a>
<a href="#">3.</a>	Table of Attributes .....	<a href="#">5</a>
<a href="#">4.</a>	Diameter Considerations .....	<a href="#">5</a>
<a href="#">5.</a>	IANA Considerations .....	<a href="#">6</a>
<a href="#">6.</a>	Security Considerations .....	<a href="#">6</a>
<a href="#">7.</a>	References .....	<a href="#">6</a>
<a href="#">7.1</a>	Normative References .....	<a href="#">6</a>
<a href="#">7.2</a>	Informative References .....	<a href="#">7</a>
	ACKNOWLEDGMENTS .....	<a href="#">7</a>
	AUTHORS' ADDRESSES .....	<a href="#">8</a>
	Intellectual Property Statement.....	<a href="#">9</a>
	Disclaimer of Validity.....	<a href="#">9</a>
	Full Copyright Statement .....	<a href="#">9</a>



## **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 as a result of the CoA-







one rule. Filter rules may be continued across attribute boundaries, so implementations cannot assume that individual filter rules begin or end on attribute boundaries.

The set of NAS-Filter-Rule attributes SHOULD be created by concatenating the individual filter rules, separated by a NUL (0x00) octet. The resulting data should be split on 253 byte boundaries to obtain a set of NAS-Filter-Rule attributes. On reception, the individual filter rules are determined by concatenating the contents of all NAS-Filter-Rule attributes, and then splitting individual filter rules with the the NUL octet (0x00) as a delimiter.

### 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 [Note 1]

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.

[Note 1]: NAS-Filter-Rule is precluded from appearing in a packet if a Filter-Id or NAS-Traffic-Rule attribute is present.

### 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.

When translating Diameter NAS-Filter-Rule AVPs to RADIUS NAS-Filter-Rule attributes, the set of NAS-Filter-Rule attributes is created by concatenating the individual filter rules, separated by a NUL octet. The resulting data SHOULD then be split on 253 byte boundaries.

When translating RADIUS NAS-Filter-Rule attributes to Diameter NAS-Filter-Rule AVPs, the individual rules are determined by





concatenating the contents of all NAS-Filter-Rule attributes, and then splitting individual filter rules with the NUL octet as a delimiter. Each rule is then encoded as a single Diameter NAS-Filter-Rule AVP.

Note that a translated Diameter message can be larger than the maximum RADIUS packet size (4096). Where a Diameter/RADIUS gateway receives a Diameter message containing a NAS-Filter-Rule AVP that is too large to fit into a RADIUS packet, the Diameter/RADIUS gateway will respond to the originating Diameter peer with the DIAMETER\_INVALID\_AVP\_LENGTH error (5014), and with a Failed-AVP AVP containing the NAS-Filter-Rule AVP. Since repairing the error will probably require re-working the filter rules, the originating peer should treat the combination of a DIAMETER\_INVALID\_AVP\_LENGTH error and a Failed-AVP AVP containing a NAS-Filter-Rule AVP as a terminal error.

## 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 one update for the section "RADIUS Attribute Types" is requested. The RADIUS attribute for which a value is requested is:

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.
- [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, "RADIUS Attributes for Filtering and Redirection", Internet draft (work in progress), [draft-ietf-radext-filter-rules-01.txt](#), June 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/>