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Diameter Congestion and Filter Attributes
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Abstract

This document defines ECN and filter related attributes that can be used for improved traffic identification, support of ECN and minimized filter administration within Diameter.

[RFC 5777](#) defines a Filter-Rule AVP that accommodates extensions for classification, conditions and actions. It does not support traffic identification for packets using Explicit Congestion Notification as defined in [RFC 3168](#) and does not provide specific actions when the flow(s) described by the Filter-Rule are congested.

A Filter-Rule can describe multiple flows but not the exact number of flows. Flow count and other associated data (e.g. packets) is not captured in Accounting applications, leaving administrators without useful information regarding the effectiveness or understanding of the filter definition.

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1. Introduction

Two Explicit Congestion Notification (ECN) [[RFC3168](#)] relate AVPs are specified in the document. The first AVP provides direct support for ECN [[RFC3168](#)] in the IP header and the second AVP provides the ability to define alternate traffic treatment when congestion is experienced.

This document also defines two AVPs, Flow-Count and Packet-Count, used for conveying flow information within the Diameter protocol [[RFC3588](#)]. These AVPs were found to be useful for a wide range of applications. The AVPs provide a way to convey information of the group of flows described by the Filter-Rule, IPFilterRule or other Diameter traffic filters.

The semantics and encoding of all AVPs can be found in [Section 3](#).

Such AVPs are, for example, needed by some ECN applications to determine the number of flows congested or used by administrators to determine the impact of filter definitions.

Additional parameters may be defined in future documents as the need arises. All parameters are defined as Diameter-encoded Attribute Value Pairs (AVPs), which are described using a modified version of the Augmented Backus-Naur Form (ABNF), see [[RFC3588](#)]. The data types are also taken from [[RFC3588](#)].

2. Terminology and Abbreviations

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](#) [[RFC2119](#)].

3. ECN-IP-Codepoint, Congestion-Treatment and Filter Attributes

3.1. ECN-IP-Codepoint AVP

The ECN-IP-Codepoint AVP (AVP Code TBD) is of type Enumerated and specifies the Explicit Congestion Notification codepoint values to match in the IP header.

Value	Binary	Keyword	References
0	00	Non-ECT (Not ECN-Capable Transport)	[RFC3168]
1	01	ECT(1) (ECN-Capable Transport)	[RFC3168]
2	10	ECT(0) (ECN-Capable Transport)	[RFC3168]
3	11	CE (Congestion Experienced)	[RFC3168]

AVP	Section	Code	Defined	Data	Type

+-----+			
ECN-IP-Codepoint	TBD 3.1	Enumerated	
Congestion-Treatment	TBD 3.2	Grouped	
Flow-Count	TBD 3.3	Unsigned64	
Packet-Count	TBD 3.4	Unsigned64	
+-----+			

5. Security Considerations

The document does not raise any new security concerns. This document describes an extension of [RFC5777](#) that introduces a new filter parameter applied to ECN as defined by [\[RFC3168\]](#). It also defines a new Grouped AVP that expresses what action to take should congestion be detected. The Grouped AVP reuses attributes defined in [RFC5777](#).

The security considerations of the Diameter protocol itself have been discussed in [RFC 3588](#) [\[RFC3588\]](#). Use of the AVPs defined in this document MUST take into consideration the security issues and requirements of the Diameter base protocol.

6. Acknowledgements

We would like to thank Avi Lior for his guidance and feedback during the development of this specification.

7. References

7.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC3168] Black, D., Floyd, S., and K. Ramakrishnan, "The Addition of Explicit Congestion Notification (ECN) to IP", [RFC 3168](#), September 2001.
- [RFC3588] Calhoun, P., Loughney, J., Guttman, E., Zorn, G., and J. Arkko, "Diameter Base Protocol", [RFC 3588](#), September 2003.
- [RFC5777] Korhonen, J., Tschofenig, H., Arumaithurai, M., Lior, A. and Jones, M. Ed., "Traffic Classification and Quality of Service (QoS) Attributes for Diameter", [RFC 5777](#), February 2010.

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