Diameter Maintenance and
Extensions (DIME)
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Diameter Priority Attribute Value Pairs
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Status of this Memo

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Abstract

This document defines various priority parameters for use with Diameter and the AAA framework. These parameters are defined in several different protocols that operate at either the network or application layer.

1. Introduction

This document defines a number of priority parameters that can be reused for conveying priority labeled information within the Diameter protocol [RFC3588]. It defines an initial priority profile containing a set of Diameter encoded Attribute Value Pairs (AVPs) described using a modified version of the Augmented Backus-Naur Form (ABNF), see [RFC3588]. The data types are also taken from [RFC3588].

Priority influences the distribution of resources. This influence may be probabilistic ranging between (but not including) 0% and 100%, or it may be binary (in the form of a guarantee to either receive or not receive the resource).

The influence attributed to prioritization may also affect QoS, but it is not to be confused as QoS. As an example, if packets of two or more flows are contending for the same shared resources, prioritization helps determine which packet receives the resource. However, this allocation of resource does not correlate directly to any specific delay or loss bounds that have been associated with the packet.

One can also argue that the lack of contention (or congested state) of the shared resource implies that packets of flow(s) are forwarded at the same rate (minus a constant processing overhead) they are received with no appreciable difference in QoS experienced by any packet.

A third example of how prioritization can be realized is articulated in Appendix A.3 (the priority by-pass model) of [draft.rsvp-priority-extension]. In this case, prioritized flows may grant access to resources that are never shared with non-prioritized flows.

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. Priority Parameter Encoding

3.1. Dual-Priority AVP

The Dual-Priority AVP is a grouped AVP consisting of two AVPs, the Preemption-Priority and the Defending-Priority AVP, which are derived from the corresponding priority fields in the Signaled Policy Element

[rfc3181] of RSVP [rfc2205]. The Defending-Priority is set when the reservation has been admitted. The Preemption-Priority of a newly requested reservation and is compared with the Defending Priority of a previously admitted flow. Actions taken upon this comparison is a function of local policy.

```
Dual-Priority  ::= < AVP Header: TBD >
                   { Preemption-Priority }
                   { Defending-Priority }
```

3.1.1. Preemption-Priority AVP

The Preemption-Priority AVP (AVP Code TBD) is of type Unsigned32. Higher values represent higher priority.

3.1.2. Defending-Priority AVP

The Defending-Priority AVP (AVP Code TBD) is of type Unsigned32. Higher values represent higher priority.

3.2. Admission-Priority AVP

The Admission-Priority AVP (AVP Code TBD) is of type Unsigned32.

The admission control priority of the flow used to increase the probability of session establishment to selected flows. Higher values represent higher priority. A given admission priority is encoded in this information element using the same value as when encoded in the admission priority parameter defined in Section 3.1 of [I-D.ietf-tsvwg-emergency-rsvp].

3.3. ALRP AVP

The Application-Level Resource Priority (ALRP) AVP is a grouped AVP consisting of two AVPs, the ALRP-Namespace and the ALRP-Priority AVP.

A description of the semantic of the parameter values can be found in [RFC4412] and in [I-D.ietf-tsvwg-emergency-rsvp]. The coding for parameter is as follows:

```
ALRP  ::= < AVP Header: TBD >
          { ALRP-Namespace }
          { ALRP-Priority }
```

3.3.1. ALRP-Namespace AVP

The ALRP-Namespace AVP (AVP Code TBD) is of type Unsigned32.

3.3.2. ALRP-Priority AVP

The ALRP-Priority AVP (AVP Code TBD) is of type Unsigned32. [RFC4412] defines a resource priority header and established the initial registry. That registry was later extended by [I-D.ietf-tsvwg-emergency-rsvp].

3.4. SIP-RPH AVP

The SIP-RPH AVP is a grouped AVP consisting of two AVPs, the SIP-Namespace and the SIP-Value AVP, which are derived from the corresponding optional header fields in [rfc4412]. The SIP-Namespace identifies a particular set of priorities. The SIP-Value identifies a specific priority associated with the SIP-Namespace.

```
SIP-RPH ::= <AVP Header: TBD>                { SIP-Namespace }
                { SIP-Value }
```

3.4.1. SIP-Namespace AVP

The SIP-Namespace AVP (AVP Code TBD) is of type UTF8String.

3.4.2 SIP-Value AVP

The SIP-Value AVP (AVP Code TBD) is of type UTF8String.

4. IANA Considerations

4.1. AVP Codes

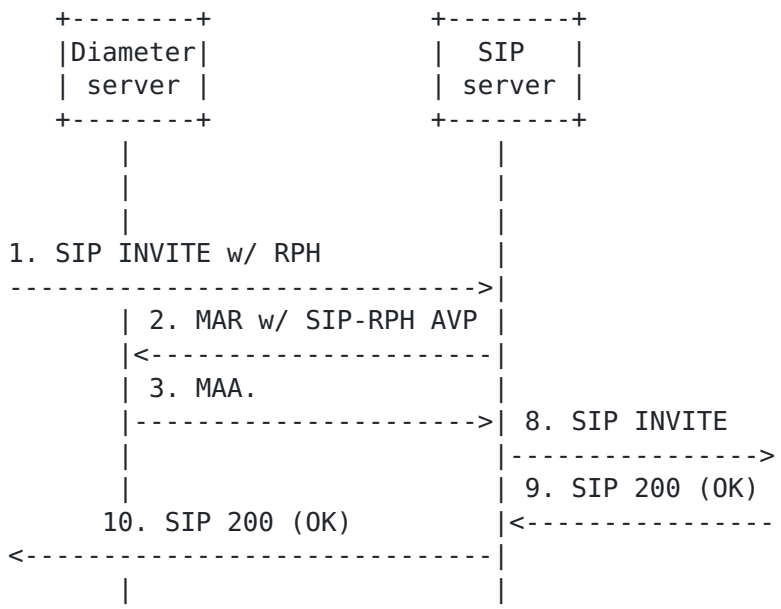
IANA is requested to allocate AVP codes for the following AVPs that are defined in this document.

AVP Name	AVP Code	Section Defined	Data Type
Dual-Priority	TBD	3.1	Grouped
Preemption-Priority	TBD	3.1.1	Unsigned32
Defending-Priority	TBD	3.1.2	Unsigned32
Admission-Priority	TBD	3.2	Unsigned32
ALRP	TBD	3.3	Grouped
ALRP-Namespace	TBD	3.3.1	Unsigned32
ALRP-Priority	TBD	3.3.2	Unsigned32
SIP-RPH	TBD	3.4	Grouped
SIP-Namespace	TBD	3.4.1	UTF8String
SIP-Value	TBD	3.4.2	UTF8String

4.2. QoS Profile

IANA is requested to allocate a new value from the registry defined in [I-D.ietf-dime-qos-parameters] for the QoS profile defined in this document.

5. Examples



6. Security Considerations

TBD

7. Acknowledgements

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8. References

8.1. Normative References

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[I-D.ietf-tsvwg-emergency-rsvp] Faucheur, F., Polk, J., and K. Carlberg, "Resource ReSerVation Protocol (RSVP) Extensions for Emergency Services", draft-ietf-tsvwg-emergency-rsvp-12 (work in progress), May 2009.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC3181] Herzog, S., "Signaled Preemption Priority Policy Element", RFC 3181, October 2001.

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

[RFC4124] Le Faucheur, F., "Protocol Extensions for Support of Diffserv-aware MPLS Traffic Engineering", RFC 4124, June 2005.

[RFC4412] Schulzrinne, H. and J. Polk, "Communications Resource Priority for the Session Initiation Protocol (SIP)", RFC 4412, February 2006.

8.2. Informative References

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[RFC3564] Le Faucheur, F. and W. Lai, "Requirements for Support of Differentiated Services-aware MPLS Traffic Engineering", RFC 3564, July 2003.

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