

dime
Internet-Draft
Updates: [rfc3588](#)
(if approved)
Intended status: Standards Track
Expires: January 14, 2010

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July 13, 2009

Updated IANA Considerations for Diameter Command Code Allocations
draft-ietf-dime-diameter-cmd-iana-01.txt

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Internet-Draft Diameter Command Code Allocation Policy

July 2009

Abstract

The Diameter Base specification, described in [RFC 3588](#), provides a number of ways to extend Diameter, with new Diameter commands, i.e. messages used by Diameter applications, and applications as the most extensive enhancements. [RFC 3588](#) illustrates the conditions that lead to the need to define a new Diameter application or a new command code. Depending on the scope of the Diameter extension IETF actions are necessary. Although defining new Diameter applications does not require IETF consensus, defining new Diameter commands requires IETF consensus per [RFC 3588](#). This has lead to questionable design decisions by other Standards Development Organizations which chose to define new applications on existing commands rather than asking for assignment of new command codes for the pure purpose of avoiding bringing their specifications to the IETF. In some cases interoperability problems were caused as an effect of the poor design caused by overloading existing commands.

This document aligns the extensibility rules of Diameter application with the Diameter commands offering ways to delegate work on Diameter to other SDOs to extend Diameter in a way that does not lead to poor design choices.

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1. Introduction

The Diameter Base specification, described in [RFC 3588](#) [[RFC3588](#)], provides a number of ways to extend Diameter, with new Diameter commands, i.e. messages used by Diameter applications, and applications as the most extensive enhancements. [RFC3588](#) illustrates the conditions, which require the definition of a new Diameter application or a new command. Depending on the scope of the Diameter extension IETF actions are necessary. Although defining new Diameter applications does not require IETF consensus, defining new Diameter commands requires IETF consensus per [RFC 3588](#). This has lead to questionable design decisions by other Standards Development Organizations which chose to define new applications on existing commands rather than asking for assignment of new command codes for the pure purpose of avoiding bringing their specifications to the IETF. In some cases interoperability problems were caused as an effect of the poor design caused by overloading existing commands.

This document aligns the extensibility rules for Diameter command codes with those defined for Diameter application identifiers and offers a consistent way to delegate work on Diameter to other SDOs to extend Diameter in a way that does not lead to poor design choices.

This is achieved by splitting the command code space into ranges and providing different allocation policies to them: the first range is reserved for RADIUS backward compatibility, allocation of a command code in the second number range requires IETF review, the third range is utilized by vendor-specific command codes, and finally the last range is for experimental commands. [Section 4](#) provides more details

about the command code number ranges and the different allocation policies are described in [[RFC5226](#)].

A revision of [RFC 3588](#) is currently in development in the IETF DIME WG [[I-D.ietf-dime-rfc3588bis](#)] and when approved will obsolete [RFC 3588](#) as well as this document. This document has as a goal providing in advance the change in the command codes allocation policy, so that interoperability problems as the ones described above are avoided as soon as possible.

[2.](#) Conventions used in this document

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](#)].

[3.](#) Security Considerations

This document modifies the IANA allocation of Diameter Command Codes in relationship to [RFC 3588](#). This process change itself does not raise security concerns, but the command codes space is split into a standards commands space and a vendor-specific command codes space, the later being allocated on a First Come, First Served basis by IANA at the request of vendors or other standards organizations. Whenever work gets delegated to organizations outside the IETF there is always the chance that fewer security reviews are conducted and hence the quality of the resulting protocol document is weaker compared to the rather extensive reviews performed in the IETF. The members of the DIME working group are aware of the tradeoff between better specification quality and the desire to offload work (e.g., to reduce the workload in the IETF) to other organizations. Other

organizations are therefore made responsible for the quality of the specifications they produce.

4. IANA Considerations

This section describes changes to the IANA consideration sections outlined in [RFC 3588](#) regarding the allocation of Command Codes by IANA.

The Command Code namespace is used to identify Diameter commands. The values 0-255 (0x00-0xff) are reserved for RADIUS backward

compatibility, and are defined as "RADIUS Packet Type Codes" in [RADTYPE]. Values 256 - 8,388,607 (0x100 to 0x7ffffff) are for permanent, standard commands, allocated by IETF Review [RFC5226]. [RFC3588] defines the Command Codes 257, 258, 271, 274-275, 280 and 282. See [Section 3.1 in \[RFC3588\]](#) for the assignment of the namespace in this specification.

The values 8,388,608 - 16,777,213 (0x800000 - 0xfffffd) are reserved for vendor-specific command codes, to be allocated on a First Come, First Served basis by IANA [RFC5226]. The request to IANA for a Vendor-Specific Command Code SHOULD include a reference to a publicly available specification which documents the command in sufficient detail to aid in interoperability between independent implementations. If the specification cannot be made publicly available, the request for a vendor-specific command code MUST include the contact information of persons and/or entities responsible for authoring and maintaining the command.

The values 16,777,214 and 16,777,215 (hexadecimal values 0xfffffe - 0xfffff) are reserved for experimental commands. As these codes are only for experimental and testing purposes, no guarantee is made for interoperability between Diameter peers using experimental commands, as outlined in [RFC3692].

The content of this document is the result of the work in the IETF Diameter Maintenance and Extensions (dime) working group. We would therefore like to thank all the working group members who were involved in that discussion. While it appears to be a fairly small change in the allocation policy the effect on implementations is rather dramatic.

We would like to thank Mark Jones for his review comments.

[6.](#) References

[6.1.](#) Normative References

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- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 5226](#), May 2008.

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