

Network Working Group  
Internet-Draft  
Intended status: Standards Track  
Expires: January 3, 2019

A. Keranen  
Ericsson  
July 2, 2018

## Too Many Requests Response Code for the Constrained Application Protocol [draft-ietf-core-too-many-reqs-02](#)

### Abstract

A Constrained Application Protocol (CoAP) server can experience temporary overload because one or more clients are sending requests to the server at a higher rate than the server is capable or willing to handle. This document defines a new CoAP Response Code for a server to indicate that a client should reduce the rate of requests.

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## [1.](#) Introduction

The Constrained Application Protocol (CoAP) [[RFC7252](#)] Response Codes are used by a CoAP server to indicate the result of the attempt to understand and satisfy a request sent by a client.

CoAP Response Codes are similar to the HTTP [[RFC7230](#)] Status Codes and many codes are shared with similar semantics by both CoAP and HTTP. HTTP has the code "429" registered for "Too Many Requests" [[RFC6585](#)]. This document registers a CoAP Response Code "4.29" for similar purpose and also defines use of the Max-Age option to indicate a back-off period after which a client can try the request again.

While a server may not be able to response to a one kind of request, it may be able to respond to a different request, even from the same client. Therefore the back-off period applies only to similar requests. For the purpose of this response code, a request is similar if it has the same method, Request-URI, and payload. Also if a client is sending a sequence of requests that are part of the same series (e.g., a set of measurements to be processed by the server) they can be considered similar even if request payloads or URIs may be different. Because request similarity is context-dependent, it is up to the application logic to decide how similar requests should be suppressed.

The 4.29 code is similar to the 5.03 "Service Unavailable" [[RFC7252](#)] code in a way that the 5.03 code can also be used by a server to signal an overload situation. However the 4.29 code indicates that the too frequent requests from the requesting client are the reason for the overload.



## 2. Terminology

The key words 'MUST', 'MUST NOT', 'REQUIRED', 'SHALL', 'SHALL NOT', 'SHOULD', 'SHOULD NOT', 'RECOMMENDED', 'MAY', and 'OPTIONAL' in this specification are to be interpreted as described in [\[RFC2119\]](#).

Readers should also be familiar with the terms and concepts discussed in [\[RFC7252\]](#).

## 3. CoAP Server Behavior

If a CoAP server is unable to serve a client that is sending CoAP request messages more often than the server is capable or willing to handle, the server SHOULD respond to the request(s) with the Response Code 4.29, "Too Many Requests". The Max-Age option is used to indicate the number of seconds after which the server assumes it is OK for the client to retry the request.

An action result payload (see [Section 5.5.1 in \[RFC7252\]](#)) can be sent by the server to give more guidance to the client, e.g., about the details of the overload situation.

## 4. CoAP Client Behavior

If a client receives the 4.29 Response Code from a CoAP server to a request, it SHOULD NOT send a similar request to the server before the time indicated in the Max-Age option has passed.

A client MUST NOT rely on a server being able to send the 4.29 Response Code in an overload situation because an overloaded server may not be able to reply to all requests at all.

## 5. Security Considerations

Replying to CoAP requests with a Response Code consumes resources from a server. For a server under attack it may be more appropriate to simply drop requests without responding.

If a CoAP reply with the Too Many Requests Response Code is not authenticated and integrity protected, an attacker can attempt to spoof a reply and make the client wait for an extended period of time before trying again.

## 6. IANA Considerations

IANA is requested to register the following Response Code in the "CoRE Parameters Registry", "CoAP Response Codes" sub-registry:

- o Response Code: 4.29
- o Description: Too Many Requests
- o Reference: [[This document]]

## 7. Acknowledgements

This Response Code definition was originally part of the "Publish-Subscribe Broker for CoAP" document [[I-D.ietf-core-coap-pubsub](#)]. Author would like to thank Abhijan Bhattacharyya, Carsten Bormann, Gyorgy Rethy, Klaus Hartke, and Sandor Katona for their contributions and reviews.

## 8. References

### 8.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/[RFC2119](#), March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC7252] Shelby, Z., Hartke, K., and C. Bormann, "The Constrained Application Protocol (CoAP)", [RFC 7252](#), DOI 10.17487/[RFC7252](#), June 2014, <<https://www.rfc-editor.org/info/rfc7252>>.

### 8.2. Informative References

- [I-D.ietf-core-coap-pubsub] Koster, M., Keranen, A., and J. Jimenez, "Publish-Subscribe Broker for the Constrained Application Protocol (CoAP)", [draft-ietf-core-coap-pubsub-04](#) (work in progress), March 2018.
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- [RFC7230] Fielding, R., Ed. and J. Reschke, Ed., "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing", [RFC 7230](#), DOI 10.17487/RFC7230, June 2014, <<https://www.rfc-editor.org/info/rfc7230>>.

Author's Address

Ari Keranen  
Ericsson

Email: [ari.keranen@ericsson.com](mailto:ari.keranen@ericsson.com)