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Existing HTTP/2 Extensions in HTTP/3

Abstract

The ALTSVC and ORIGIN frames for HTTP/2 are equally applicable to HTTP/3, but need to be separately registered. This document describes the ALTSVC and ORIGIN frames for HTTP/3.

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Table of Contents

- [1. Introduction](#)
- [2. Basic Mapping Conventions](#)
- [3. The ALTSVC HTTP/3 Frame](#)
- [4. The ORIGIN HTTP/3 Frame](#)
- [5. Security Considerations](#)
- [6. IANA Considerations](#)
- [7. References](#)
 - [7.1. Normative References](#)
 - [7.2. Informative References](#)
- [Appendix A. Acknowledgements](#)
- [Author's Address](#)

1. Introduction

Existing RFCs define extensions to HTTP/2 which remain useful in HTTP/3. Appendix A.2.3 of [\[HTTP3\]](#) describes the required updates for HTTP/2 frames to be used with HTTP/3.

[\[ALTSVC\]](#) defines HTTP Alternative Services, which allow an origin's resources to be authoritatively available at a separate network location, possibly accessed with a different protocol configuration. It defines two mechanisms for transporting such information, an HTTP response header and an HTTP/2 frame type.

[\[ORIGIN\]](#) defines the HTTP/2 ORIGIN frame, which indicates what origins are available on a given connection. It defines a single HTTP/2 frame type.

2. Basic Mapping Conventions

Where HTTP/2 reserves Stream 0 for frames related to the state of the connection, HTTP/3 defines a pair of unidirectional streams called "control streams" for this purpose. Where the existing RFCs indicate that a stream should be sent on Stream 0, this should be interpreted to mean the HTTP/3 control stream.

3. The ALTSVC HTTP/3 Frame

The ALTSVC HTTP/3 frame advertises the availability of an alternative service to an HTTP/3 client.

An ALTSVC frame from a server to a client on the server's control stream indicates that the conveyed alternative service is associated with the origin contained in the Origin field of the frame.

An ALTSVC frame from a server to a client on a stream other than the control stream indicates that the conveyed alternative service is associated with the origin of that stream.

The layout and semantics of the frame payload are identical to those of the HTTP/2 frame defined in [ALTSVC]. The ALTSVC frame type is 0xa (decimal 10), as in HTTP/2.

4. The ORIGIN HTTP/3 Frame

The ORIGIN HTTP/3 frame allows a server to indicate what origin(s) ([RFC6454]) the server would like the client to consider as members of the Origin Set (Section 2.3 of [ORIGIN]) for the connection within which it occurs.

The ORIGIN frame is sent from servers to clients on the server's control stream.

The layout and semantics of the frame payload are identical to those of the HTTP/2 frame defined in [ORIGIN]. The ORIGIN frame type is 0xc (decimal 12), as in HTTP/2.

5. Security Considerations

This document introduces no new security considerations beyond those discussed in [ALTSVC] and [HTTP3].

6. IANA Considerations

This document registers two frame types in the "HTTP/3 Frame Type" registry ([HTTP3]).

Frame Type	Value	Specification
ALTSVC	0xa	Section 3
ORIGIN	0xc	Section 4

Table 1: Registered HTTP/3 Frame Types

7. References

7.1. Normative References

- [ALTSVC] Nottingham, M., McManus, P., and J. Reschke, "HTTP Alternative Services", RFC 7838, DOI 10.17487/RFC7838, April 2016, <<https://www.rfc-editor.org/info/rfc7838>>.
- [HTTP3] Bishop, M., "Hypertext Transfer Protocol Version 3 (HTTP/3)", Work in Progress, Internet-Draft, draft-ietf-quic-http-27, 21 February 2020, <<http://www.ietf.org/internet-drafts/draft-ietf-quic-http-27.txt>>.
- [ORIGIN] Nottingham, M. and E. Nygren, "The ORIGIN HTTP/2 Frame", RFC 8336, DOI 10.17487/RFC8336, March 2018, <<https://www.rfc-editor.org/info/rfc8336>>.

7.2. Informative References

[RFC6454]

Barth, A., "The Web Origin Concept", RFC 6454, DOI 10.17487/RFC6454, December 2011, <<https://www.rfc-editor.org/info/rfc6454>>.

[RFC7540]

Belshe, M., Peon, R., and M. Thomson, Ed., "Hypertext Transfer Protocol Version 2 (HTTP/2)", RFC 7540, DOI 10.17487/RFC7540, May 2015, <<https://www.rfc-editor.org/info/rfc7540>>.

Appendix A. Acknowledgements

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