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SETTINGS_ENABLE_WEBSOCKETS settings parameter for HTTP/2 and HTTP/3

Abstract

This document proposes a new HTTP settings parameter, `SETTINGS_ENABLE_WEBSOCKETS`. This parameter indicates whether the server supports bootstrapping WebSockets over the established connection.

Discussion Venues

This note is to be removed before publishing as an RFC.

Discussion of this document takes place on the HTTP Working Group mailing list (ietf-http-wg@w3.org), which is archived at <https://lists.w3.org/Archives/Public/ietf-http-wg/>.

Source for this draft and an issue tracker can be found at <https://github.com/momoka0122y/draft-settings-enable-websockets>.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Introduction

The mechanisms for running the WebSocket protocol [[RFC6455](#)] over a single stream of an HTTP/2 and HTTP/3 connection is defined in [[RFC8441](#)] and [[RFC9220](#)]. The extended CONNECT mechanism is used for bootstrapping WebSockets from HTTP/2 and HTTP/3. Support for the extended CONNECT mechanism is advertised using HTTP/2 and HTTP/3 settings parameter `SETTINGS_ENABLE_CONNECT_PROTOCOL`.

However, the support of extended CONNECT does not necessarily indicate support for WebSockets over that HTTP connection. Other protocols such as [[WEBTRANSPORT](#)] also use extended CONNECT and send `SETTINGS_ENABLE_CONNECT_PROTOCOL` settings parameters as well.

Suppose the server supports extended CONNECT but not bootstrapping WebSockets over that HTTP connection. In this case, the client sending a WebSocket handshake request will result in a response of 501 (Not Implemented) status code (Section 15.6.2 of [[HTTP](#)]), and the client would need to fall back to trying the WebSocket handshake over HTTP/1.

This is why a `SETTINGS_ENABLE_WEBSOCKETS` settings parameter is needed.

2. `SETTINGS_ENABLE_WEBSOCKETS` settings parameter for H2 and H3

This document adds a new `SETTINGS` parameter to those defined by [\[HTTP/3\]](#) Section 11.2.2 and [\[HTTP/2\]](#) Section 11.3.

The new parameter name is `SETTINGS_ENABLE_WEBSOCKETS`. The value of the parameter **MUST** be 0 or 1, with 0 being the default.

A sender **MUST NOT** send a `SETTINGS_ENABLE_WEBSOCKETS` parameter with the value of 0 after previously sending a value of 1.

If the server supports bootstrapping WebSockets over the HTTP connection, it **SHOULD** include the `SETTINGS_ENABLE_WEBSOCKETS` parameter in the `SETTINGS` frame with a value of 1. If the server does not support bootstrapping WebSockets over the HTTP connection it **SHOULD** send the parameter with a value of 0.

A client **MUST NOT** send this setting parameter. Receipt of this parameter by a server does not have any impact.

The `SETTINGS_ENABLE_WEBSOCKETS` parameter would allow the client to determine in advance whether the server supports WebSockets over the connection for HTTP/2 or HTTP/3. This allows the client to avoid sending unnecessary WebSocket handshake requests on HTTP connections that do not support WebSockets.

This mechanism will improve compatibility with other extended CONNECT-based protocols.

For compatibility with past implementations which do not use this parameter, clients **MAY** initiate a WebSocket request without the receipt of this parameter.

3. Security Considerations

This document introduces no new security considerations beyond those discussed in [\[RFC8441\]](#).

4. IANA Considerations

4.1. HTTP3

This document registers a new entry in the "HTTP/3 Settings" registry (Section 11.2.2 of [\[HTTP/3\]](#)).

Value: TBD

Setting Name: SETTINGS_ENABLE_WEBSOCKETS

Default: 0

Status: permanent

Specification: This document

Change Controller: IETF

Contact: HTTP Working Group (ietf-http-wg@w3.org)

4.2. HTTP2

This document registers a new entry in the "HTTP/2 Settings" registry (Section 11.1 of [[HTTP/2](#)]).

Code: TBD

Name: SETTINGS_ENABLE_ENABLE_WEBSOCKETS

Default: 0

Status: permanent

Specification: This document

Change Controller: IETF

Contact: HTTP Working Group (ietf-http-wg@w3.org)

5. References

5.1. Normative References

[[HTTP](#)] Fielding, R., Ed., Nottingham, M., Ed., and J. Reschke, Ed., "HTTP Semantics", RFC 9110, DOI 10.17487/RFC9110, April 2022, <<https://www.rfc-editor.org/rfc/rfc9110>>.

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[[HTTP/3](#)] Bishop, M., Ed., "Hypertext Transfer Protocol Version 3 (HTTP/3)", RFC 9114, DOI 10.17487/RFC9114, April 2022, <<https://www.rfc-editor.org/rfc/rfc9114>>.

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[RFC8441]

McManus, P., "Bootstrapping WebSockets with HTTP/2", RFC 8441, DOI 10.17487/RFC8441, September 2018, <<https://www.rfc-editor.org/rfc/rfc8441>>.

[RFC9220]

Hamilton, R., "Bootstrapping WebSockets with HTTP/3", RFC 9220, DOI 10.17487/RFC9220, June 2022, <<https://www.rfc-editor.org/rfc/rfc9220>>.

5.2. Informative References

[WEBTRANSPORT]

Vasiliev, V., "The WebTransport Protocol Framework", Work in Progress, Internet-Draft, draft-ietf-webtrans-overview-04, 11 July 2022, <<https://datatracker.ietf.org/doc/html/draft-ietf-webtrans-overview-04>>.

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