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## **Bootstrapping WebSockets with HTTP/3**

### **Abstract**

The mechanism for running the WebSocket Protocol over a single stream of an HTTP/2 connection is equally applicable to HTTP/3, but needs to be separately registered. This document describes the mechanism for HTTP/3.

### **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](mailto:ietf-http-wg@w3.org)), which is archived at <http://lists.w3.org/Archives/Public/ietf-http-wg/>.

Source for this draft and an issue tracker can be found at <https://github.com/RyanTheOptimist/httpbis-h3-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

[[RFC8441](#)] defines an extension to HTTP/2 which is also useful in HTTP/3. This extension makes use of an HTTP/2 setting. [Appendix A.3](#) of [[HTTP3](#)] describes the required updates for HTTP/2 settings to be used with HTTP/3.

### 2. Conventions and Definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

### 3. Websockets Upgrade over HTTP/3

[[RFC8441](#)] defines a mechanism for running the WebSocket Protocol [[RFC6455](#)] over a single stream of an HTTP/2 connection. It defines an Extended CONNECT method which specifies a new ":protocol" pseudo header field and new semantics for the ":path" and ":authority" pseudo header fields. It also defines a new HTTP/2 SETTING sent by a server to allow the client to use Extended CONNECT.

The HTTP/3 stream closure is also analogous to the TCP connection closure of [[RFC6455](#)]. Orderly TCP-level closures are represented as a FIN bit on the stream ([Section 4.2](#) of [[HTTP3](#)]). RST exceptions are represented with an stream error ([Section 8](#) of [[HTTP3](#)]) of type H3\_REQUEST\_CANCELLED ([Section 8.1](#) of [[HTTP3](#)])

The semantics of the headers and SETTING are identical to those in HTTP/2 as defined [RFC8441]. Appendix A.3 of [HTTP3] requires that HTTP/3 settings be registered separately for HTTP/3. The SETTINGS\_ENABLE\_CONNECT\_PROTOCOL value is 0x08 (decimal 8), as in HTTP/2.

#### 4. Security Considerations

This document introduces no new security considerations beyond those discussed in [RFC8841].

#### 5. IANA Considerations

This document registers a new setting in the "HTTP/3 Settings" registry ([HTTP3]).

Setting Name	Value	Specification	Default
SETTINGS_ENABLE_CONNECT_PROTOCOL	0x08	This document	0

Table 1

#### 6. Normative References

- [HTTP3] Bishop, M., "Hypertext Transfer Protocol Version 3 (HTTP/3)", Work in Progress, Internet-Draft, draft-ietf-quic-http-34, 2 February 2021, <<https://datatracker.ietf.org/doc/html/draft-ietf-quic-http-34>>.
- [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/rfc/rfc2119>>.
- [RFC6455] Fette, I. and A. Melnikov, "The WebSocket Protocol", RFC 6455, DOI 10.17487/RFC6455, December 2011, <<https://www.rfc-editor.org/rfc/rfc6455>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/rfc/rfc8174>>.
- [RFC8441] McManus, P., "Bootstrapping WebSockets with HTTP/2", RFC 8441, DOI 10.17487/RFC8441, September 2018, <<https://www.rfc-editor.org/rfc/rfc8441>>.
- [RFC8841] Holmberg, C., Shpount, R., Loreto, S., and G. Camarillo, "Session Description Protocol (SDP) Offer/Answer Procedures for Stream Control Transmission Protocol (SCTP) over Datagram Transport Layer Security (DTLS) Transport", RFC 8841, DOI 10.17487/RFC8841, January 2021, <<https://www.rfc-editor.org/rfc/rfc8841>>.

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