



WEBTRANS WG

IETF 112

Virtual Meeting

Tuesday, November 9, 2021

Session I, Room 2

12:00 - 14:00 UTC

04:00 - 06:00 Pacific Time

Mailing list: webtransport@ietf.org

Jabber Room: [webtrans@jabber.ietf.org](jabber:webtrans@jabber.ietf.org)

MeetEcho: <https://www.conf.meetecho.com/conference/?group=webtrans>¹

IETF 112 Meeting Tips

<https://www.ietf.org/how/meetings/112>

<https://datatracker.ietf.org/meeting/agenda>

This session is being recorded

- **IETF 112 registration and a datatracker login required to attend**
- **No need to manually fill in blue sheets, it's automatic.**
- **Join the session Jabber room via IETF Datatracker Meeting agenda**
- **Please use headphones when speaking to avoid echo.**
- **Please state your full name before speaking.**

IETF 112 Meeting Tips

<https://www.ietf.org/how/meetings/112>

<https://datatracker.ietf.org/meeting/agenda>

This session is being recorded

- Enter the queue with  , leave with 
- When you are called on, you need to enable your audio to be heard.
- Audio is enabled by unmuting  and disabled by muting 
- Video can also be enabled, but it is separate from audio.
- Video is encouraged to help comprehension but not required.

Note Well



This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully.

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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:

- [BCP 9](#) (Internet Standards Process)
- [BCP 25](#) (Working Group processes)
- [BCP 25](#) (Anti-Harassment Procedures)
- [BCP 54](#) (Code of Conduct)
- [BCP 78](#) (Copyright)
- [BCP 79](#) (Patents, Participation)
- <https://www.ietf.org/privacy-policy/>(Privacy Policy)

Note really well

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About this meeting



- Agenda: <https://datatracker.ietf.org/doc/agenda-112-webtrans/>
- Notes: <https://notes.ietf.org/s/notes-ietf-112-webtrans>
- Jabber Room: [webtrans@jabber.ietf.org](jabber:webtrans@jabber.ietf.org)
- Secretariat: mtd@jabber.ietf.org
- WG Chairs: Bernard Aboba & David Schinazi
- Jabber Scribe: Alan Frindell
- Note Takers:

Other Meetings This Week



- Media over QUIC (moq) side meetings:
 - <https://trac.ietf.org/trac/ietf/meeting/wiki/112sidemeetings>
 - Tuesday (today), 18:15 UTC, 10:15 AM Pacific Time
 - Friday, 18:15 UTC, 10:15 AM Pacific Time

Agenda



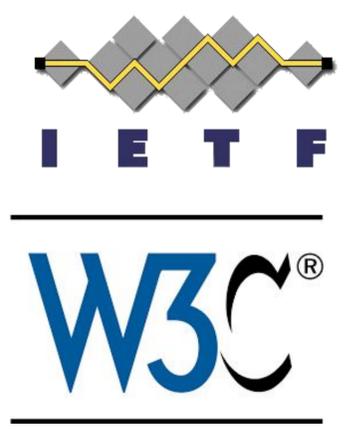
- Preliminaries, Chairs (10 minutes)
 - Note Well, Virtual Bluesheets
 - Jabber Scribe, Note Takers
 - Speaking Queue Manager (David Schinazi)
 - Agenda Bash
- W3C WebTransport Update, Jan-Ivar Bruaroey, (5 minutes)
- WebTransport over HTTP/3, Victor Vasiliev (40 minutes)
 - <https://tools.ietf.org/html/draft-ietf-webtrans-http3>
- WebTransport using HTTP/2, Eric Kinnear (40 minutes)
 - <https://tools.ietf.org/html/draft-ietf-webtrans-http2>
- Hums, Wrap up and Summary, Chairs & ADs (25 minutes)

W3C WebTransport Update

W3C WebTransport WG progress since July 30th

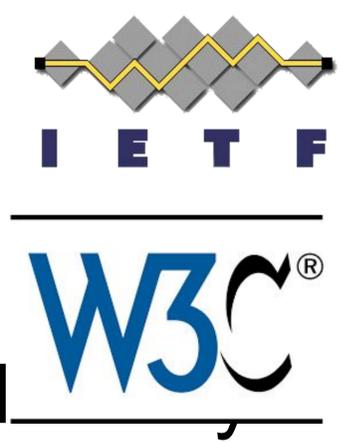
- **Status:** Published a [Working Draft](#) (i.e. no longer FPWD)
- Finished all *discussion* of issues in [minimum-viable-ship](#) milestone
 - (4 non-editorial issues remain ready-for-PR, 3 editorial, 1 WPT)
- **Decisions & PRs**
 - Shored up error handling in algorithms
 - New [WebTransportError](#) DOMException, with members:
 - [source](#) ("stream" or "session") and 8-bit [streamErrorCode](#) (=0)
 - `await upstream.abort(new WebTransportError({streamErrorCode: 123}));`
 - `wt.datagrams.maxDataGramSize` read-only UA integer
 - Sender-side now takes streams of [BufferSource](#) objects as input
 - Prioritized outgoing datagrams over outgoing streams
 - 32-bit close code: `const {closeCode, reason} = await wt.closed;`

W3C WebTransport Update (2)



- TPAC (annual) meeting held Oct 26th - slides available [here](#)
- Slides highlighting differences for those coming from a [WebSocket](#) and [WebRTC](#) background.
- Chrome update - shipping WT support in M97
 - Built on -02 version of the draft. Has support for 8-bit reset streamCode errors, and error messages for closing the connection.
 - No origin trial required. Available in window & workers, secure context only.
 - Not shipping write prioritization and stats. Also hash-based certificates instead of WebPKI, may make it or be in M98.
 - Implementation is fairly mature. Covered by [Web-Platform-Tests](#) (WPT), using an echo server based on aioquic.
- Multicast-for-the-web presentation by the W3C multicast CG with [demo](#). Request to add multicast datagrams as a use-case.

W3C WebTransport Update (3)



Issue identified around bi-directional server-based video conferencing & low video upload from client to server:

- Encoder and congestion control algorithms need to collaborate.
 - WebTransport Stats & API do not enable this today.
 - WebCodecs API “average bitrate target” results in overshoots (keyframe)/undershoots (delta frames).
- An application can send less than what the congestion window will allow (by utilizing delay and bandwidth estimates), but cannot send more than what the congestion window permits.
- *Additive* increase requires the application to slowly increase the sending rate to probe the network, however re-enabling dropped layers is a *multiplicative* increase.
- Without application filling the congestion window (e.g. probing), the sender can get stuck at an artificially low rate.
- Potential for conflicting congestion control loops:

<https://www.in.tum.de/fileadmin/w00bws/cm/papers/epiq21-rtp-over-quic.pdf>

WebTransport over HTTP/3 (40 minutes)

Presentation End: 13:00

Victor Vasiliev

<https://datatracker.ietf.org/doc/html/draft-ietf-webtrans-http3>

draft-02

- Changes:
 - Support for clean session close
 - Reset error code mapping
 - Version negotiation header
 - Other fixes
- Shipping in Chrome 97!

Version negotiation

Client offers

`Sec-WebTransport-Http3-Draft02: 1.`

Server replies

`Sec-WebTransport-Http3-Draft:
draft02.`

Issue discussion

<https://github.com/ietf-wg-webtrans/draft-ietf-webtrans-http3>

Issue #27: draining sessions

Should we add a GOAWAY capsule?

If so, what would it do?

Issue #22/36: pooling resources

How do we limit the resources allocated?

Issue #61: redirects

How should WebTransport clients handle 3xx responses?

(the conclusion during the last W3C discussion was to not support redirects)

Issue #63: request forgery

In WebSocket, we use masking to avoid confusion attacks on the intermediaries.

Do we need something similar in WebTransport?

Backup discussion slide

WebTransport using HTTP/2 (40 minutes)

Presentation End: 13:40

Eric Kinnear

<https://datatracker.ietf.org/doc/html/draft-ietf-webtransport-http2>

Updates since IETF 111

-02 submitted

“Layered” design

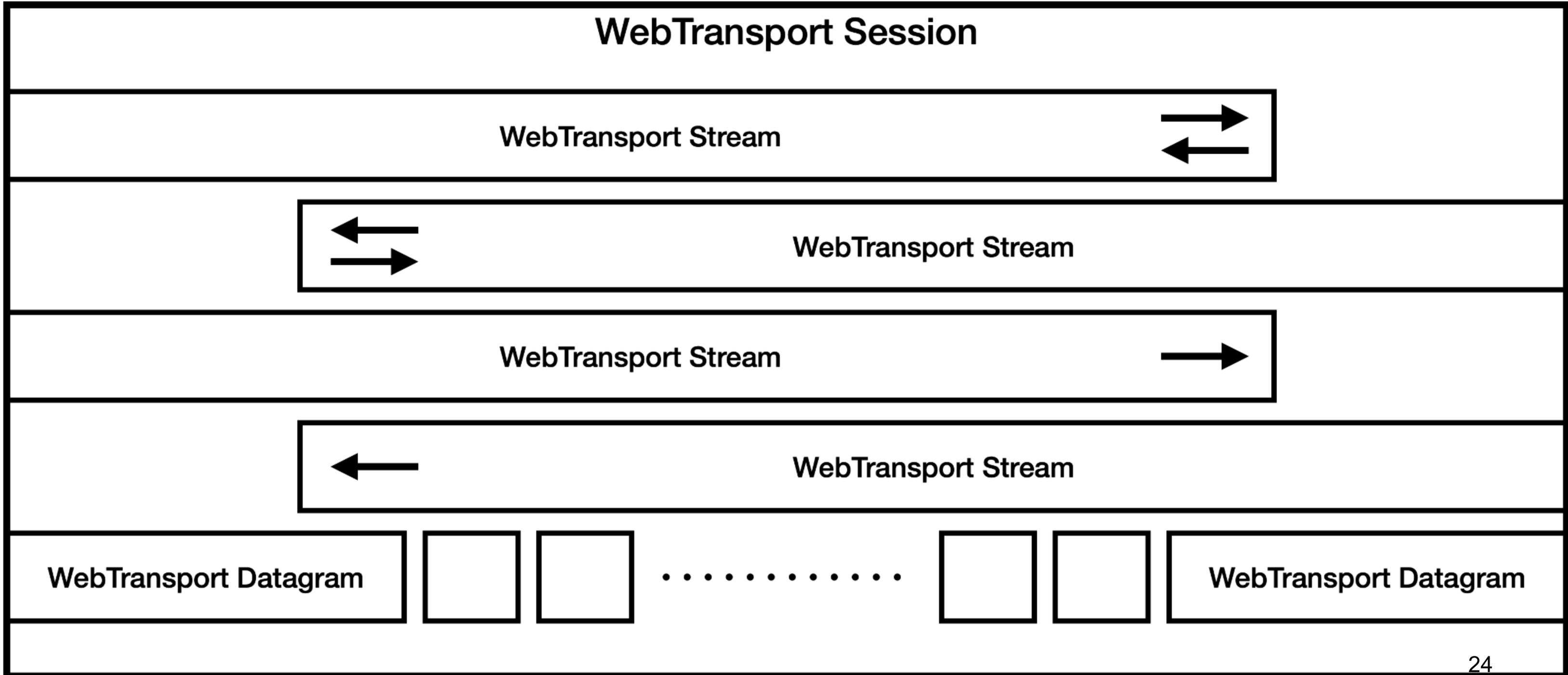
New WT frames on HTTP/2 CONNECT stream

Welcome Martin Thomson!

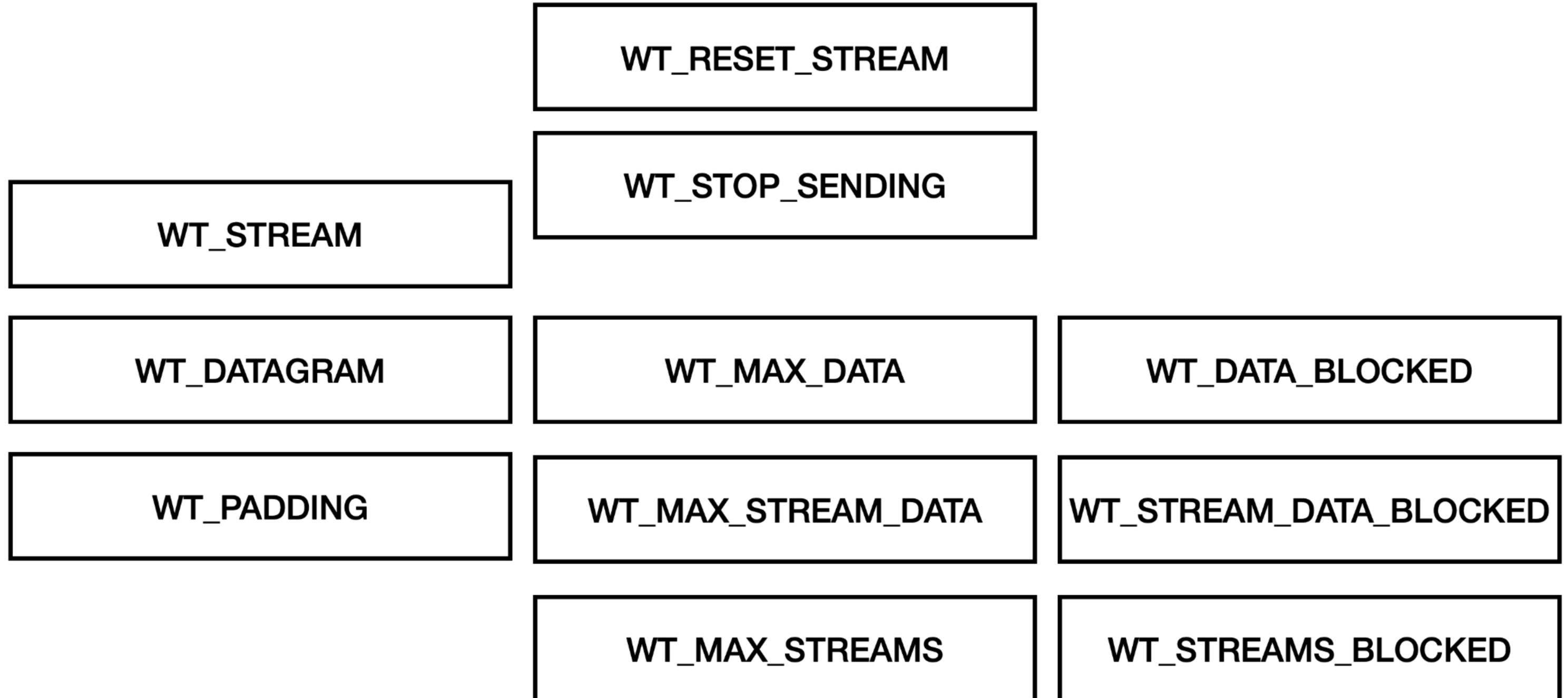
Layered



Layered



WebTransport Frames



Frame Formats #29

Mirroring QUIC as closely as possible

However, some fields are not necessary

```
WT_RESET_STREAM Frame {  
  Type (i) = 0x04,  
  Length (i),  
  Stream ID (i),  
  Application Protocol Error Code (i),  
  Final Size (i),  
}
```

Frame Formats #29

Length field

```
WT_RESET_STREAM Frame {  
  Type (i) = 0x04,  
  Length (i),  
  Stream ID (i),  
  Application Protocol Error Code (i),  
  Final Size (i),  
}
```

Capsules #25

Sending DATAGRAMS over HTTP(/2) is being defined in MASQUE

With CAPSULEs:

- Body of CONNECT stream will be a sequence of CAPSULEs (conveyed in DATA frames)
- Each CAPSULE carries one WebTransport Frame
- DATAGRAM CAPSULE carries... WT_DATAGRAM?

What about Streams?

The CAPSULE over message body semantic is used as a fallback when the underlying transport doesn't support a construct natively

- HTTP/3 with H3 DATAGRAM extension does not use DATAGRAM capsule, uses the native feature instead

HTTP/2 has native streams

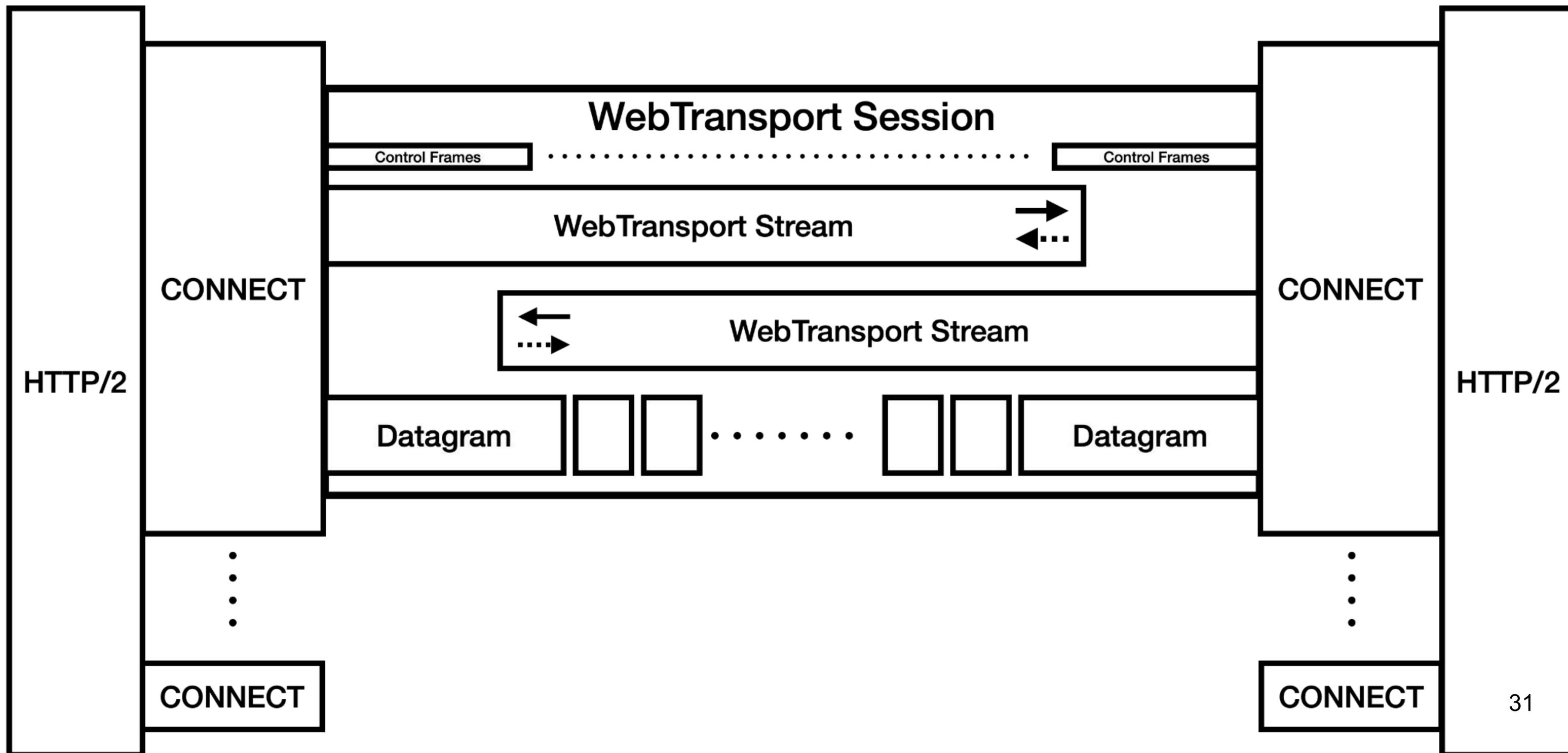
Should WebTransport streams use native HTTP/2 streams?

- Today, no

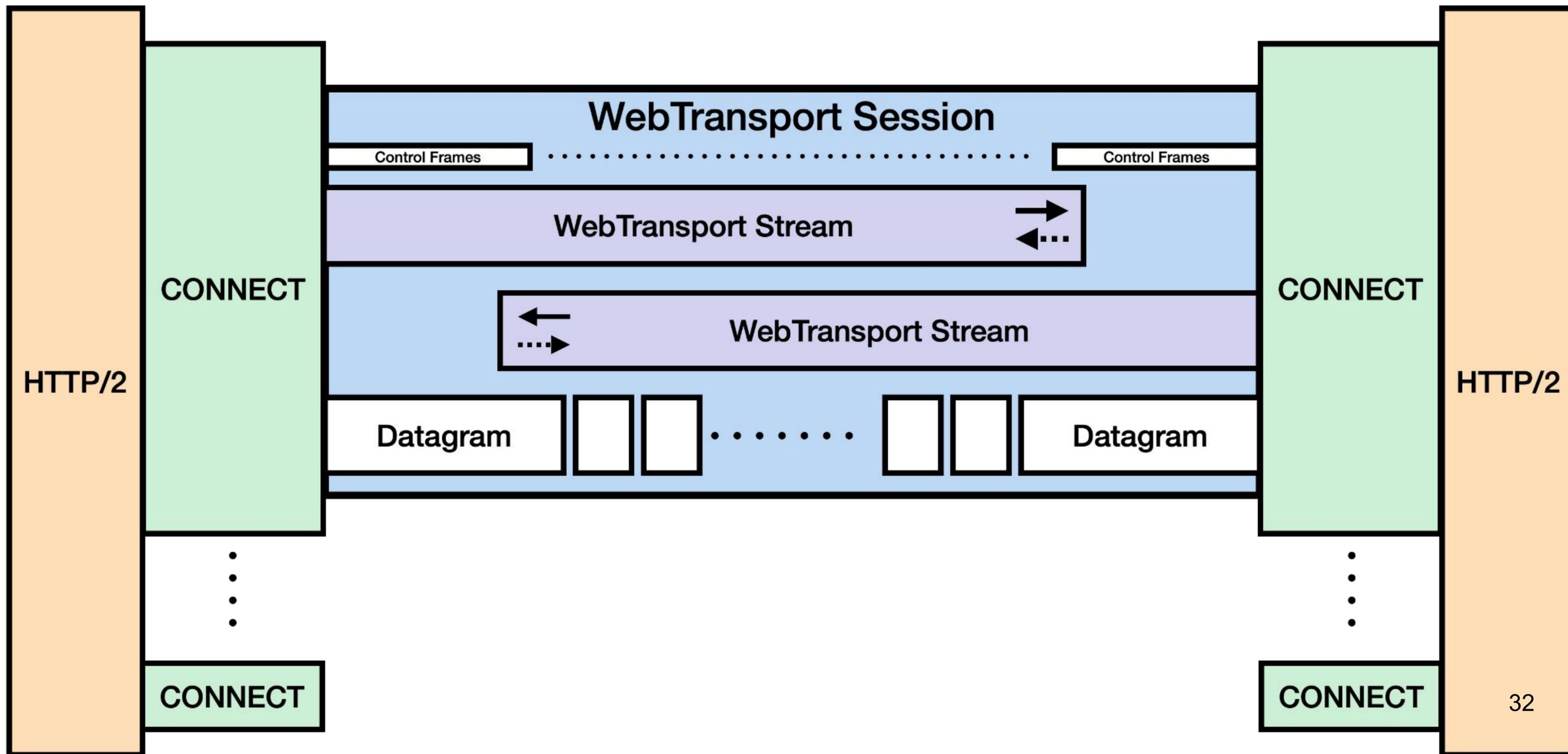
Flow Control #27

- HTTP/2 Connection
- HTTP/2 Stream
 - All data allowed on the CONNECT stream, including control WT frames
- WT_MAX_DATA
 - All stream data on the CONNECT stream (WebTransport Session)
- WT_MAX_STREAM_DATA

Flow Control #27



Flow Control #27



Error Handling #44

Generally, yes.

Error Handling #44

Generally, yes.

Reuse HTTP/2? GOAWAY

WT over HTTP/3 shares error space with HTTP/3, maps code

```
CLOSE_WEBTRANSPORT_SESSION Capsule {  
    Type (i) = CLOSE_WEBTRANSPORT_SESSION,  
    Length (i),  
    Application Error Code (32),  
    Application Error Message (..8192),  
}
```

Discuss



WebTransport using HTTP Semantics

WebTransport

- We've now defined a mechanism by which any HTTP Extended CONNECT request can carry WebTransport Frames
- Where available, we can use native features
 - For example, datagrams
 - Also streams, sometimes
- Should all mappings of WebTransport do the same thing?
 - HTTP/3

HTTP/3

- In practice, this is not much different from what we have now
- If you're going through an intermediary, they don't need to speak WebTransport
- "Pooling" is no longer an issue
- Do we negotiate which? Do we need to support both?

Discuss



Hums, Wrap-up, and Summary

Session End: 14:00

Bernard Aboba

David Schinazi

Thank you

Special thanks to:

The Secretariat, WG Participants & ADs