draft-ietf-wish-whip-04

https://datatracker.ietf.org/doc/html/draft-ietf-wish-whip-04

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Changes from wish-whip-03 to wish-whip-04

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- Address feedback from WGLC
  - Rewrited abstract and introduction
  - Added examples SDP O/A
  - Clarification on support of only one of Tricle ICE or ICE restarts
  - Rewording about bundle support
  - Handling of multiple audio/video tracks
  - Rewording of SDP setup attribute
  - Clarification of the naming of the "ice-server" rel attribute
- Address feedback from IANA
  - Change of URN subspace for extensions urn:ietf:params:whip:{type}:{name}:{other}
  - Add IANA registration for urn:ietf:params:whip URN subspace

Won’t fix feedback

- 4. Protocol operation: some normative language missing
  https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/36
  - If something is inherited as a mandated WebRTC feature, there is no need to add a requirement using MUST with capital letters
- 4.3 Load Balancing : 307 too specific we should
  https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/39
  - 307 is the only redirection that ensures proper behaviour with http posts
- 4.5 Authorization: Support for Basic and/or be able to use new authentication mechanisms that may be standardized
  https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/42
  - Already agreed that Basic is not supported, any new authentication method would require WHIP spec update to be able to use it.
- Rename “WHIP clients”, “WHIP endpoints” terms
  https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/62
  - The terms are consistent with REST API usage

ICE and NAT support

https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/37

Is it legal for a server to support Trickle ICE but not ICE Restarts?
If that's the case, then the use of 405 is somewhat misleading, since the PATCH method is allowed, just not for ICE Restarts.

> Trickle ICE and ICE restart support is OPTIONAL for a WHIP resource. If ~~Trickle ICE or ICE restarts are not supported by the WHIP resource, it MUST return a 405 Method Not Allowed response for any HTTP PATCH request~~both Trickle ICE or ICE restarts are not supported by the WHIP resource, it MUST return a 405 Method Not Allowed response for any HTTP PATCH request. If the WHIP resource supports either Trickle ICE or ICE restarts, but not both, it MUST return a 501 Not Implemented for the HTTP PATCH requests that are not supported.

TURN/STUN

https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/40

"the WHIP endpoint MAY also include the ICE server configuration on the responses to an authenticated OPTIONS..." Two nits here:

(i) what if the WHIP resource does not require auth?

(ii) why is this optional? It would seem to me that it's perfectly trivial to implement.

> There are some WebRTC implementations that do not support updating the STUN/TURN server configuration after the local offer has been created as specified in {{!RFC8829}} section 4.1.18. In order to support these clients, the WHIP endpoint MAY also include the STUN/TURN server configuration on the responses to ~~an authenticated~~ OPTIONS request sent to the WHIP endpoint URL ~~sent~~ before the POST ~~requests~~request is sent.

> The generation of the TURN server credentials may require performing a request to an external provider, which can both add latency to the OPTION request processing and increase the processing required to handle that request. In order to prevent this, the WHIP Endpoint SHOULD NOT return the STUN/TURN server configuration if the OPTION request is a preflight request for CORS, that is, if The OPTION request does not contain an Access-Control-Request-Method with "POST" value and the the Access-Control-Request-Headers HTTP header does not contain the "Link" value.

It might be also possible to configure the STUN/TURN server URLs with long term credentials provided by either the broadcasting service or an external TURN provider on the WHIP client, overriding the values provided by the WHIP endpoint.

Authentication and authorization

> WHIP endpoints and resources MAY require the HTTP request to be authenticated using an HTTP Authorization header field with a Bearer token as specified in {{!RFC6750}} section 2.1. WHIP clients MUST implement this authentication and authorization mechanism and send the HTTP Authorization header field in all HTTP requests sent to either the WHIP endpoint or resource except the preflight OPTIONS requests for CORS.

“PASSIVE” Setup

https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/54

I think it is a BAD idea to go against the "MUST use setup:actpass" text in RFC 5763. Since you specify that the answerer MUST use setup:passive, there is no reason why the offer couldn't use setup:actpass, following the standard.

> Unlike the behavior defined by {{!RFC5763}}, a WHIP client MAY use a setup attribute value of setup:active in the SDP offer, in which case the WHIP endpoint MUST use a setup attribute value of setup:passive in the SDP answer.

> When a WHIP client sends an SDP offer, it SHOULD insert an SDP "setup" attribute with an "actpass" attribute value, as defined in {{!RFC8842}}. However, if the WHIP client only implements the DTLS client role, it MAY use an SDP "setup" attribute with an "active" attribute value. If the WHIP endpoint does not support an SDP offer with an SDP "setup" attribute with an "active" attribute value, it SHOULD reject the request with a 422 Unprocessable Entity response.

> NOTE: {{!RFC8842}} defines that the offerer must insert an SDP "setup" attribute with an "actpass" attribute value. However, the WHIP client will always communicate with a media server that is expected to support the DTLS server role, in which case the client might choose to only implement support for the DTLS client role.

ICE servers are known too late to be useful

https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/66

```
offer = pc.createOffer();
[answer,iceServers] = POST(offer)
pc.setConfigutation({iceServers});
pc.setLocalDescription(offer);
pc.setRemoteDescription(answer);
```

> with this procedure the posted offer does not contain any local candidates, which might imply that client-side Trickle ICE is a requirement, at least in some environments. .

If server is on a public IP address or behind a port forwarding NAT. The candidates sent by the server are enough to establish the ICE connection. Gathering all the ICE candidates on the local offer are only required if the client does not support trickle and the server is behind of a NAT that requires hole punching.

> NOTE: Depending on the ICE Agent implementation, the WHIP client may need to call the setConfiguration method before calling the setLocalDespcription method with the local SDP offer in order to avoid having to perform an ICE restart for applying the updated STUN/TURN server configuration on the next ICE gathering phase.

(NOTE: this PR is missing from draft-07 but available on main branch of the github project)

Multiple streams/tracks handling

https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/68

WHIP is limited to two tracks (audio+video) belonging to a single stream. However, I'm now realising that there's nothing in the draft that says this is the case.

> While this version of the specification only supports a single audio and video track, in order to ensure forward compatibility, if the number of audio and or video tracks or number streams is not supported by the WHIP Endpoint, it MUST reject the HTTP POST request with a 406 Not Acceptable error code.

> Furthermore, the WHIP Endpoint SHOULD NOT reject individual "m=" sections as per {{!RFC8829}} section 5.3.1 in case there is any error processing the "m=" section, but reject the HTTP POST request with a 406 Not Acceptable error code to prevent having partially successful WHIP sessions.

Register "whip" in the IETF URN Sub-namespace

https://github.com/wish-wg/webrtc-http-ingest-protocol/issues/69

Section 4.7 of this document directs readers to make registrations that begin with "urn:ietf:params:whip:", but the IANA Considerations section doesn't ask that "whip" be registered in the IETF URN Sub-namespace for Registered Protocol Parameter Identifiers registry at https://www.iana.org/assignments/params/params.xhtml

PR in :
https://github.com/wish-wg/webrtc-http-ingest-protocol/commit/45639114a24f8739c5c35f0f0ff31c795104e2ae?short_path=6ca9ae6#diff-6ca9ae63875a605dbaf6d8e45c08b5945951d62135ae0661065b7fe9ebb04d84

```
 The Namespace Specific String (NSS) of all URNs that use the "whip" Namespace ID shall have the following
structure: urn:ietf:params:whip:{type}:{name}:{other}
 The keywords have the following meaning:
  - type: The entity type. This specification only defines the "ext" type.
  - name: A required US-ASCII string that conforms to the URN syntax requirements (see {{!RFC2141}}) and
defines a major namespace of a WHIP protocol extension. The value MAY also be an industry name or
organization name.
  - other: Any US-ASCII string that conforms to the URN syntax requirements (see {{!RFC2141}}) and defines
the sub-namespace (which MAY be further broken down in namespaces delimited by
        colons) as needed to uniquely identify an WHIP protocol extension.
```

(Need to fix syntax format)

Next steps

- Update draft based on any feedback received during this meeting.
- Publish new draft with pending fixes and new ones.
- WGLC again?