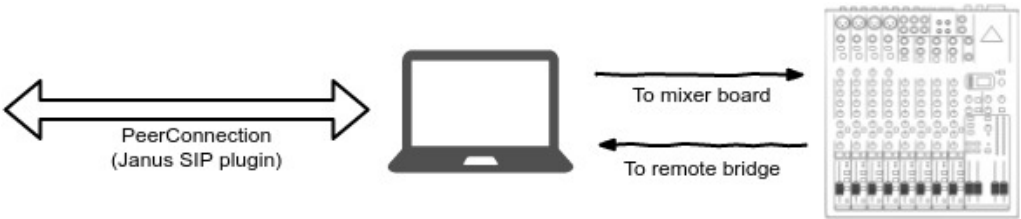
Virtual IETF meetings with WebRTC

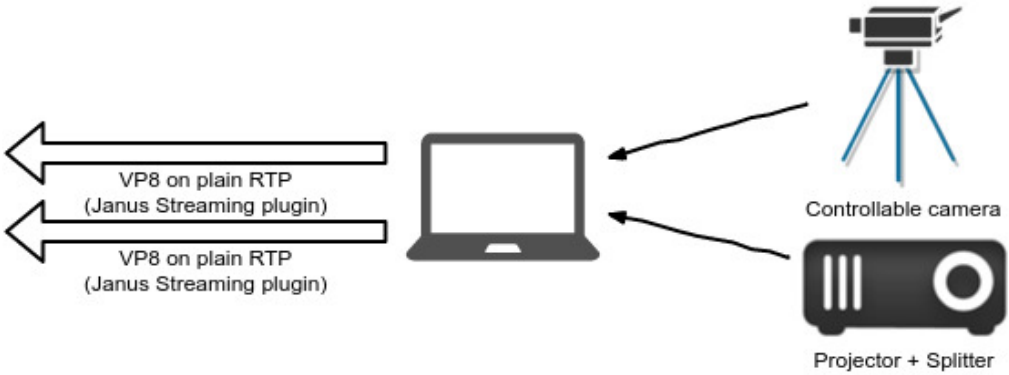
Lorenzo Miniero
lorenzo@meetecho.com

IETF 109 – MOPS WG
November 17th

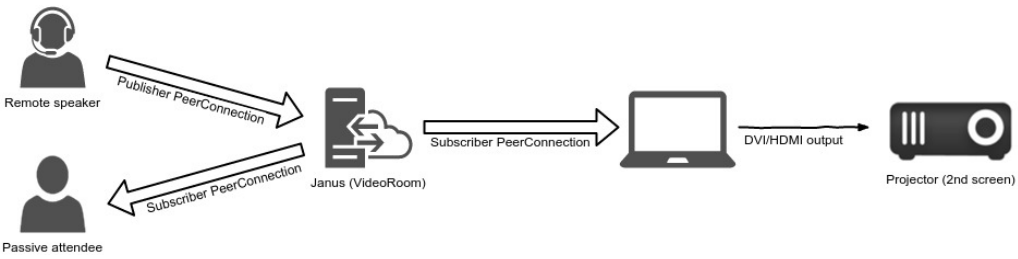
How we handled IETF meetings before



How we handled IETF meetings before



How we handled IETF meetings before



Serving IETF at scale with Janus

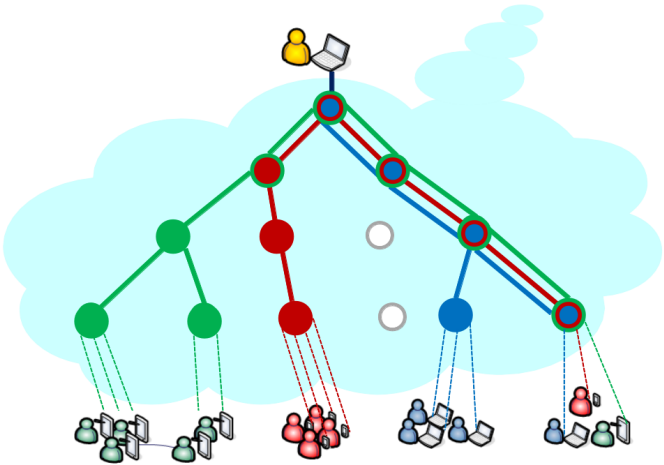
https://commcon.xyz/session/turning-live-events-to-virtual-with-janus

Janus

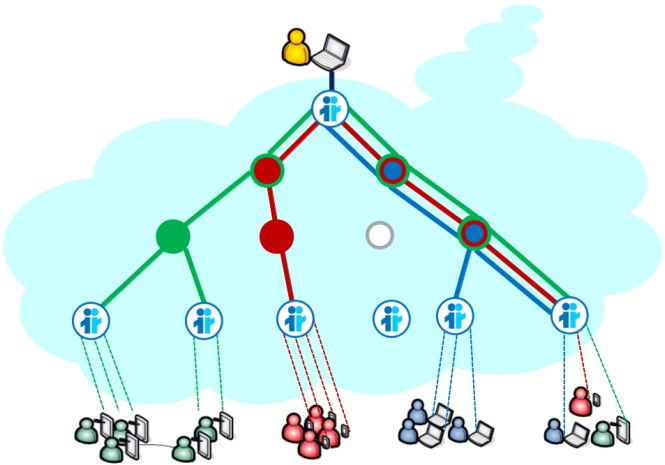
General purpose, open source WebRTC server

- https://github.com/meetecho/janus-gateway
- Demos and documentation: https://janus.conf.meetecho.com
- Community: https://groups.google.com/forum/#!forum/meetecho-janus

Large scale broadcasting overview (SOLEIL)



Large scale broadcasting overview (SOLEIL)



How to handle audio? The podcast example

- Not strictly speaking a Virtual event, but close enough
  - One or more people talking, and a (wide?) audience
  - During Covid, many podcasts done remotely (e.g., "Conan needs a friend")
- WebRTC a good fit for the conversation part
  - Easy to have a chat just using your browser
  - Broadcasting could be done with WebRTC too!
- May make sense to have the conversation mixed, though
  - If broadcasting with WebRTC, the more the speakers, the more the bandwidth
  - If NOT broadcasting with WebRTC, you need a mix to transcode anyway
  - More control on additional media (e.g., pre-recorded content)
- How to optimize mixing with the ability to bring people in in a scalable way?

How to handle audio? The podcast example

- Not strictly speaking a Virtual event, but close enough
  - One or more people talking, and a (wide?) audience
  - During Covid, many podcasts done remotely (e.g., "Conan needs a friend")
- WebRTC a good fit for the conversation part
  - Easy to have a chat just using your browser
  - Broadcasting could be done with WebRTC too!
- May make sense to have the conversation mixed, though
  - If broadcasting with WebRTC, the more the speakers, the more the bandwidth
  - If NOT broadcasting with WebRTC, you need a mix to transcode anyway
  - More control on additional media (e.g., pre-recorded content)
- How to optimize mixing with the ability to bring people in in a scalable way?

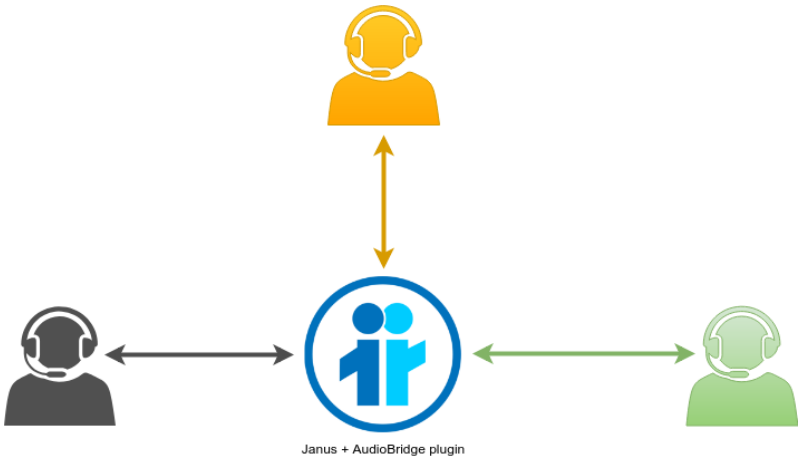
How to handle audio? The podcast example

- Not strictly speaking a Virtual event, but close enough
  - One or more people talking, and a (wide?) audience
  - During Covid, many podcasts done remotely (e.g., "Conan needs a friend")
- WebRTC a good fit for the conversation part
  - Easy to have a chat just using your browser
  - Broadcasting could be done with WebRTC too!
- May make sense to have the conversation mixed, though
  - If broadcasting with WebRTC, the more the speakers, the more the bandwidth
  - If NOT broadcasting with WebRTC, you need a mix to transcode anyway
  - More control on additional media (e.g., pre-recorded content)
- How to optimize mixing with the ability to bring people in in a scalable way?

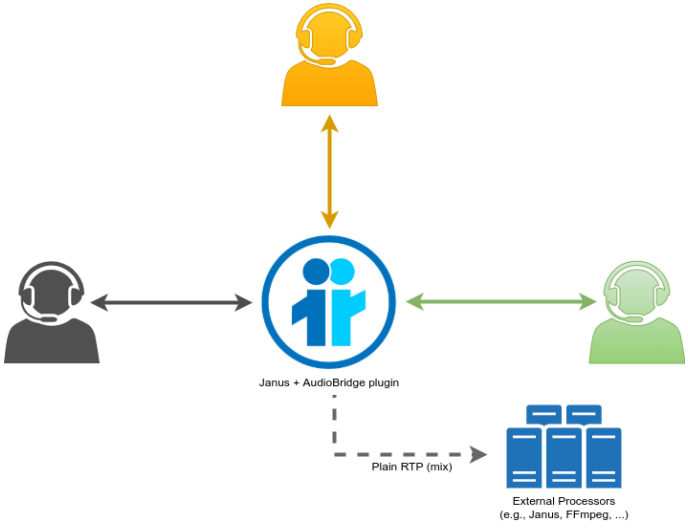
How to handle audio? The podcast example

- Not strictly speaking a Virtual event, but close enough
  - One or more people talking, and a (wide?) audience
  - During Covid, many podcasts done remotely (e.g., "Conan needs a friend")
- WebRTC a good fit for the conversation part
  - Easy to have a chat just using your browser
  - Broadcasting could be done with WebRTC too!
- May make sense to have the conversation mixed, though
  - If broadcasting with WebRTC, the more the speakers, the more the bandwidth
  - If NOT broadcasting with WebRTC, you need a mix to transcode anyway
  - More control on additional media (e.g., pre-recorded content)
- How to optimize mixing with the ability to bring people in in a scalable way?

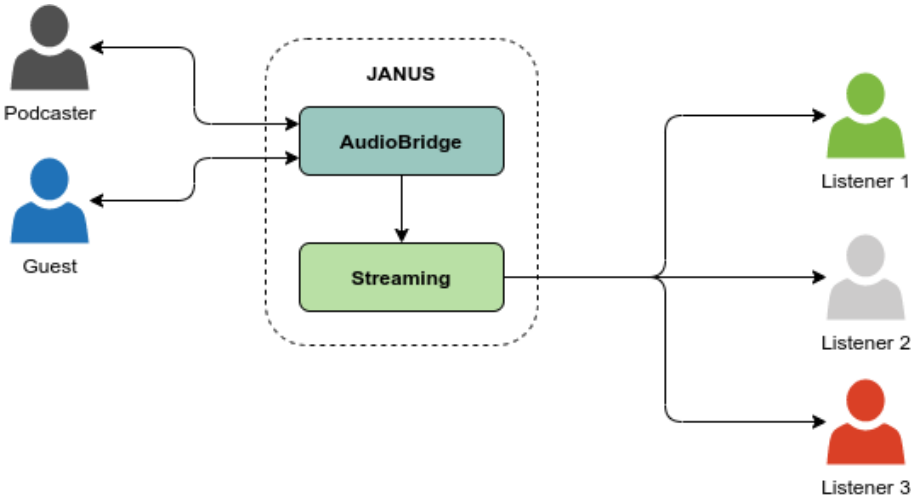
AudioBridge + RTP forwarding



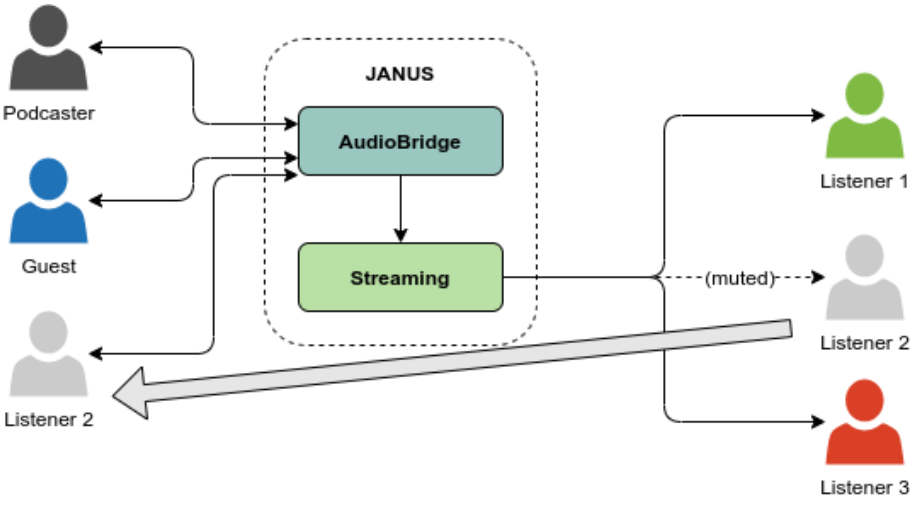
AudioBridge + RTP forwarding



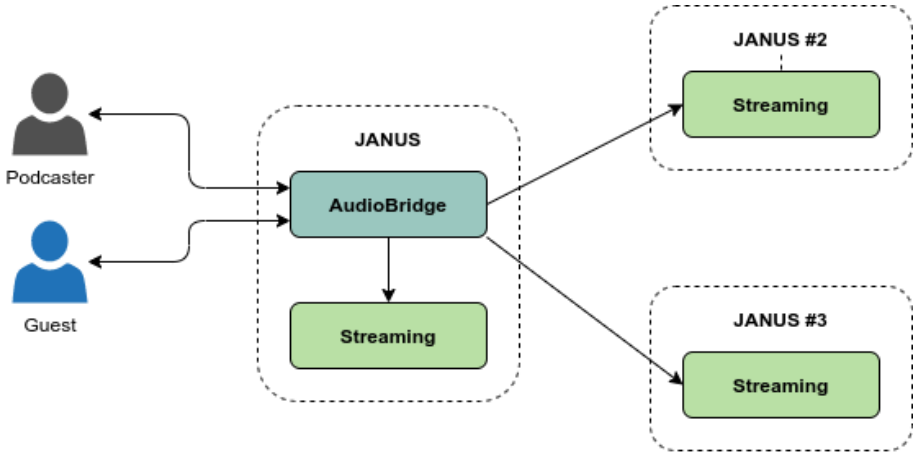
AudioBridge + RTP forwarding + Streaming



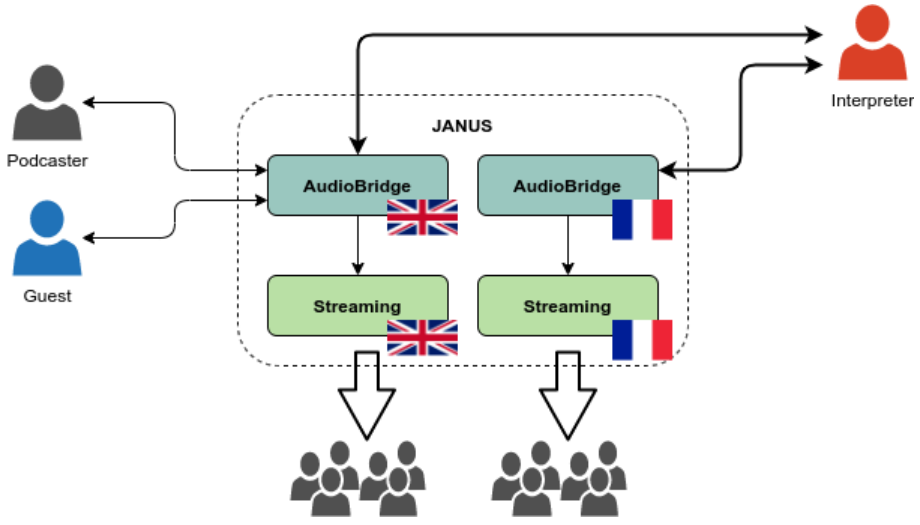
AudioBridge + RTP forwarding + Streaming



AudioBridge + RTP forwarding + Streaming



AudioBridge + RTP forwarding + Streaming



Adding video: the “webinar” scenario

IETF

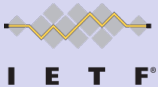
- Mostly a one-to-many scenario
  - A single presenter (maybe more than one video, e.g., screensharing)
  - Multiple passive viewers
- Can sometimes be “conversational” like a podcast, though
  - e.g., Q&A session, interview, or panel discussion
- As before, WebRTC definitely a good fit for publishing
  - Browsers support screensharing natively
  - Broadcasting could be done with WebRTC too! (but more streams, now)
- Video(s) may or may not be mixed
  - In both cases, still needs to be distributed to all participants

Adding video: the “webinar” scenario

IETF

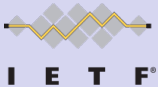
- Mostly a one-to-many scenario
  - A single presenter (maybe more than one video, e.g., screensharing)
  - Multiple passive viewers
- Can sometimes be “conversational” like a podcast, though
  - e.g., Q&A session, interview, or panel discussion
- As before, WebRTC definitely a good fit for publishing
  - Browsers support screensharing natively
  - Broadcasting could be done with WebRTC too! (but more streams, now)
- Video(s) may or may not be mixed
  - In both cases, still needs to be distributed to all participants

Adding video: the “webinar” scenario



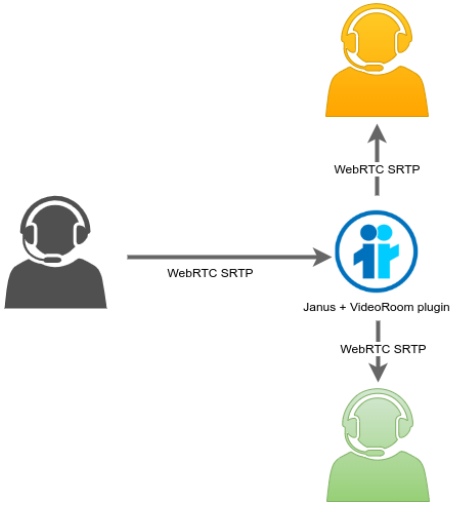
- Mostly a one-to-many scenario
  - A single presenter (maybe more than one video, e.g., screensharing)
  - Multiple passive viewers
- Can sometimes be “conversational” like a podcast, though
  - e.g., Q&A session, interview, or panel discussion
- As before, WebRTC definitely a good fit for publishing
  - Browsers support screensharing natively
  - Broadcasting could be done with WebRTC too! (but more streams, now)
- Video(s) may or may not be mixed
  - In both cases, still needs to be distributed to all participants

Adding video: the “webinar” scenario

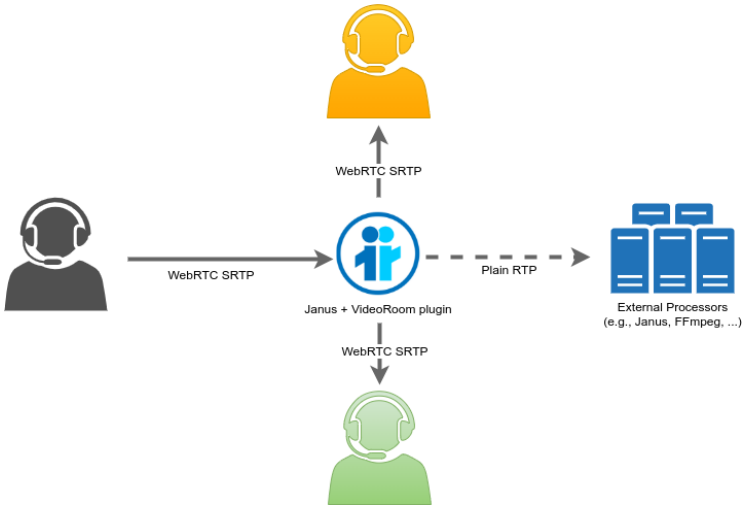


- Mostly a one-to-many scenario
  - A single presenter (maybe more than one video, e.g., screensharing)
  - Multiple passive viewers
- Can sometimes be “conversational” like a podcast, though
  - e.g., Q&A session, interview, or panel discussion
- As before, WebRTC definitely a good fit for publishing
  - Browsers support screensharing natively
  - Broadcasting could be done with WebRTC too! (but more streams, now)
- Video(s) may or may not be mixed
  - In both cases, still needs to be distributed to all participants

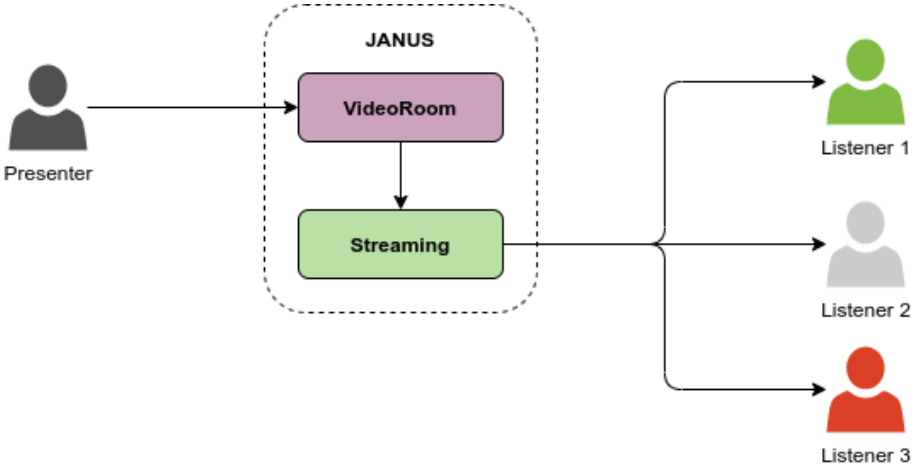
VideoRoom + RTP Forwarding



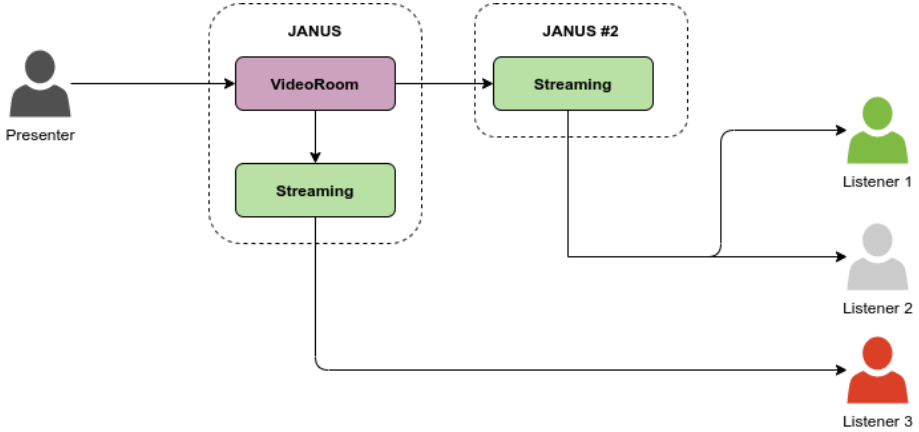
VideoRoom + RTP Forwarding



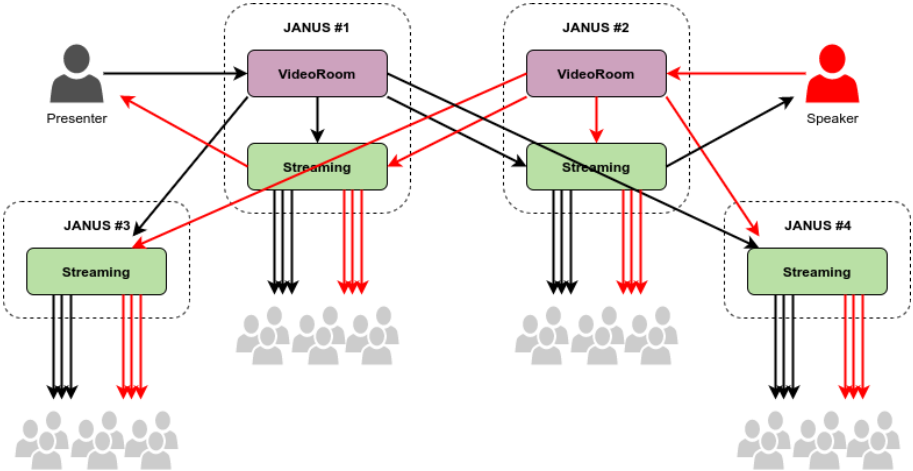
VideoRoom + RTP forwarding + Streaming



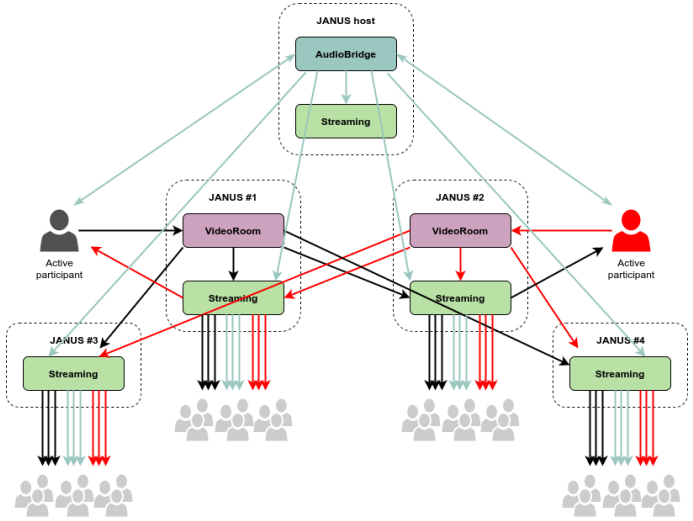
VideoRoom + RTP forwarding + Streaming



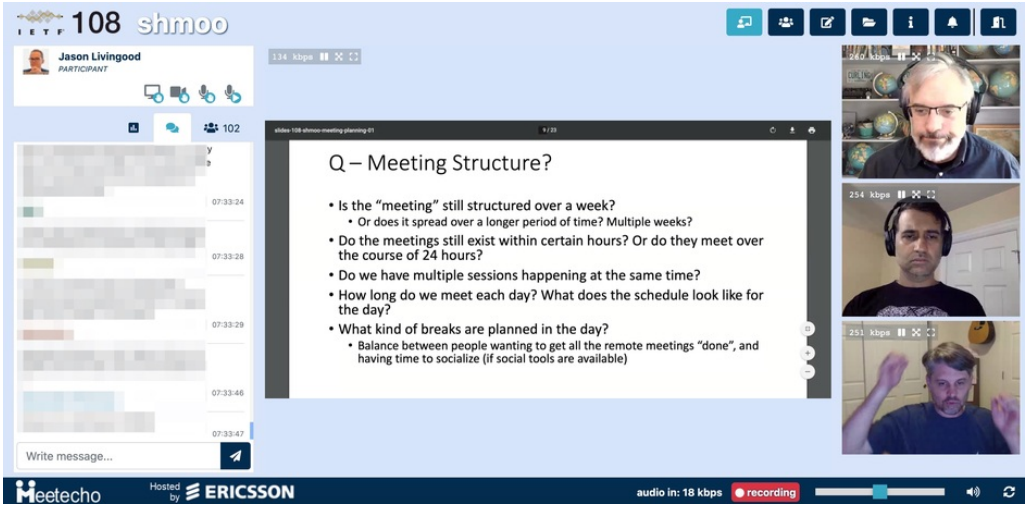
VideoRoom + RTP forwarding + Streaming



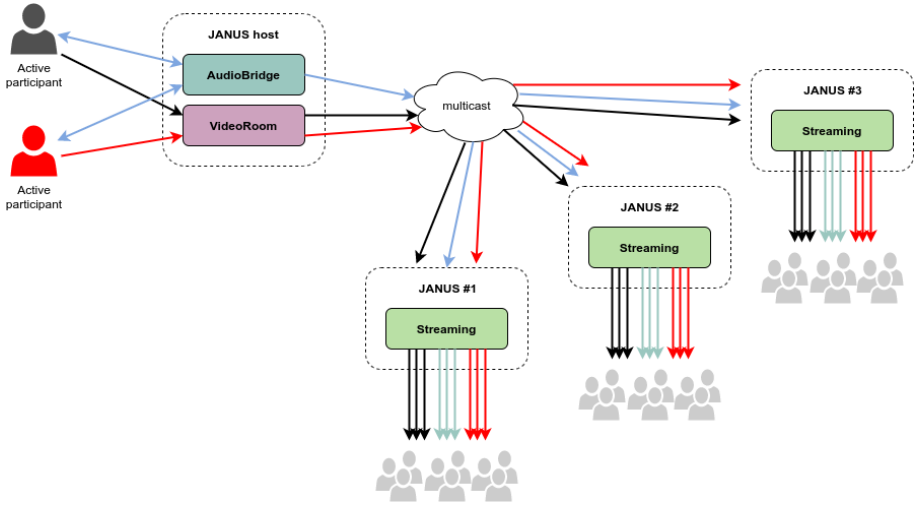
Bringing it all together for Virtual Events



The end result: IETF 108 in “Madrid”



From IETF 108 to 109: multicast!



Supporting pre-recorded talks for ANRW

DNS and BGP

ANRW'20 - Welcome and Introduction.pdf (page 6 of 10)

Some notes on Meetecho

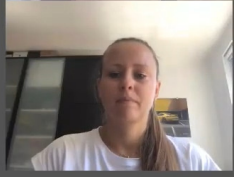
Videos are pre-recorded, so we will take questions at the end of each presentation!

To ask a question,
enter the queue (mic+hand logo),
then the chairs will call you out
and enable your audio!

Screenshot of media controls when sending audio.

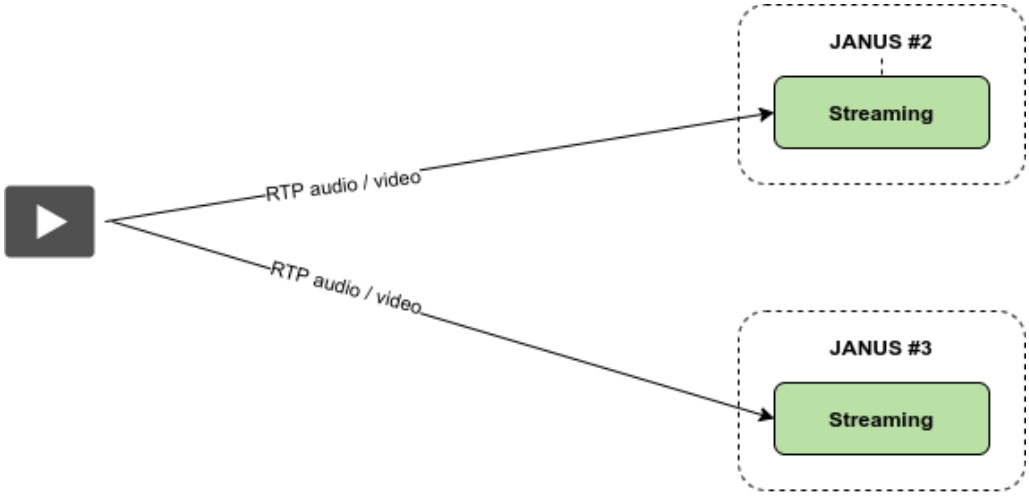
More information on Meetecho usage can be found here:
https://www.ietf.org/media/documents/Documentation-Meetecho-IETF.pdf

5

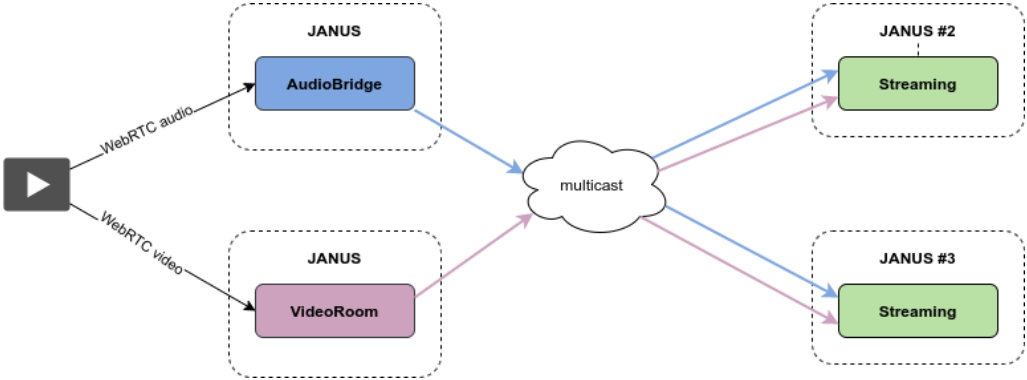


ANRW 2020
Applied Networking Research Workshop

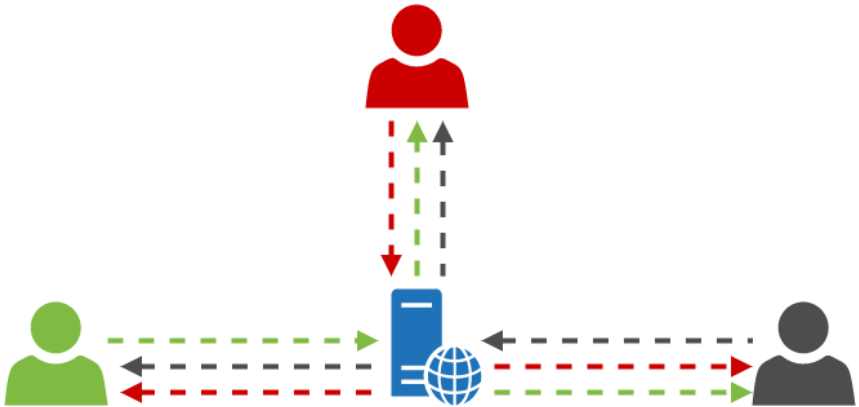
How that worked during IETF 108



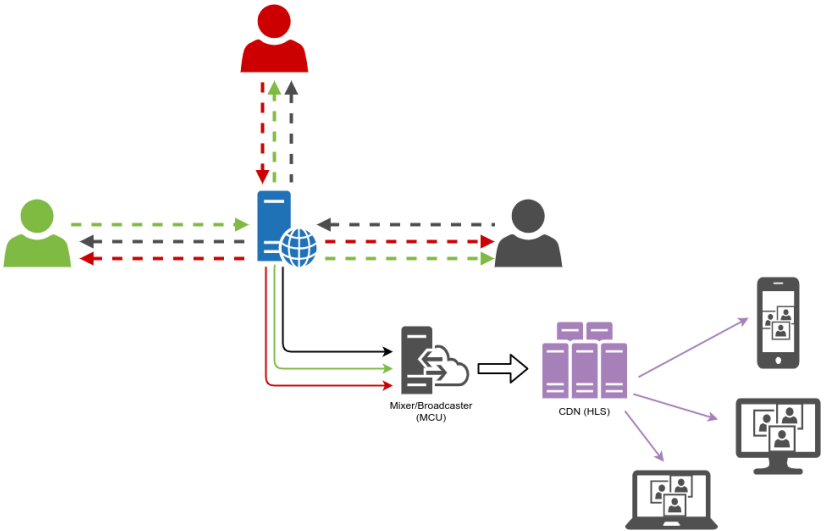
How it will work at IETF 109



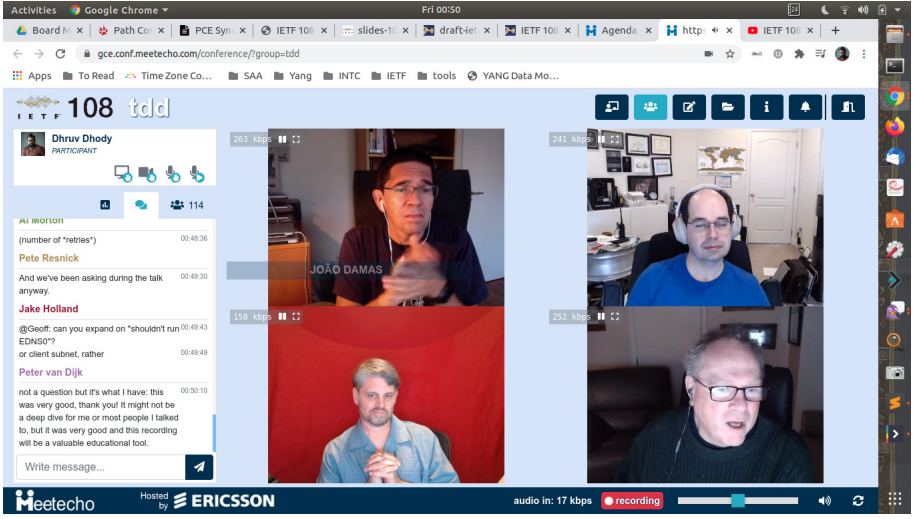
Broadcasting WGs to YouTube Live



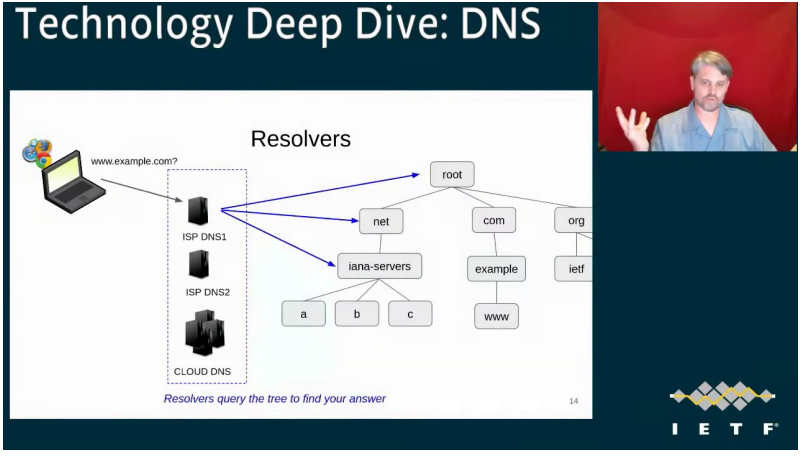
Broadcasting WGs to YouTube Live



A practical example: TDD @ IETF 108

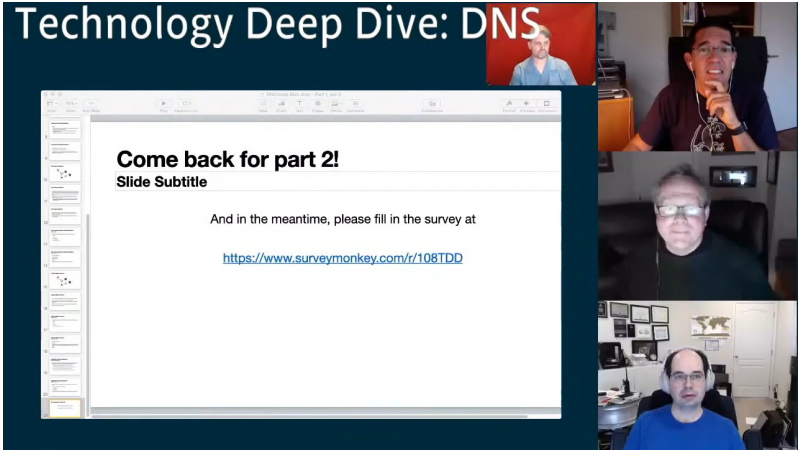


A practical example: TDD @ IETF 108



https://www.youtube.com/watch?v=DV0q9s94RL8

A practical example: TDD @ IETF 108

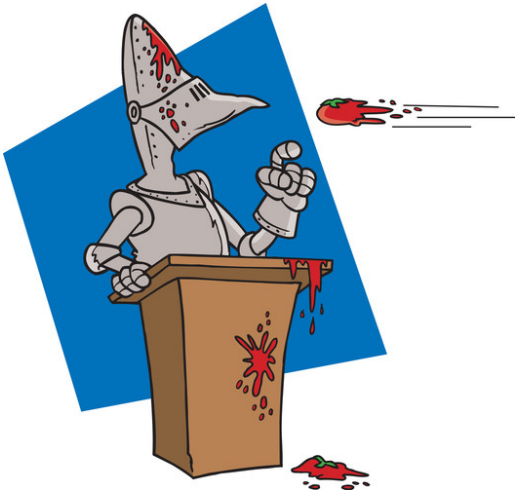


https://www.youtube.com/watch?v=DV0q9s94RL8

A practical example: TDD @ IETF 108

https://www.youtube.com/watch?v=DV0q9s94RL8

A practical example: TDD @ IETF 108

https://www.youtube.com/watch?v=DV0q9s94RL8

Thanks! Questions? Comments?