

# Welcome to JanusCon!

Lorenzo Miniero

 [@lminiero@fosstodon.org](mailto:@lminiero@fosstodon.org)

Napoli, Italy  
April 29<sup>th</sup> 2024



Wi-Fi

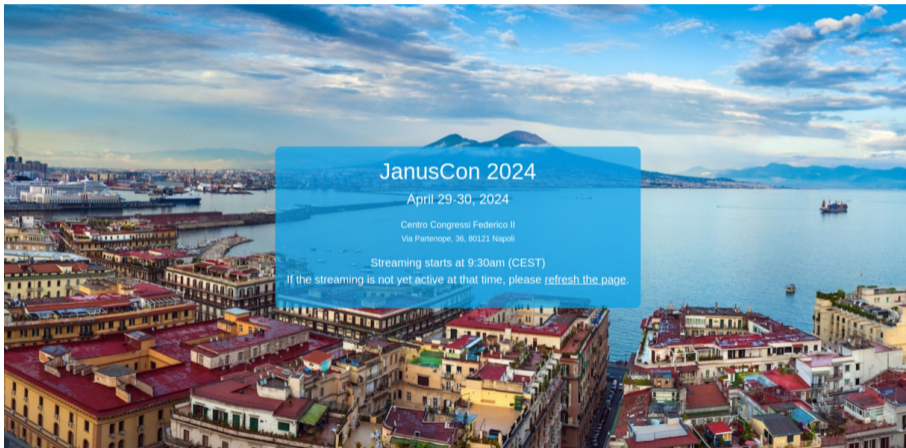


**Network:** JanusCon2024

**Password:** J@nusCon24



# Streaming (with Janus!)



<https://www.meetecho.com/events/januscon2024/>



Where were we?





Oh yeah, something happened back then...





Second edition of JanusCon (finally!)



# Januscon<sup>2</sup>





Wait, what is 2 in binary..?



Januscon<sup>10</sup>



It all makes sense now!!







Do you like our new venue? (thanks, DIETI!)



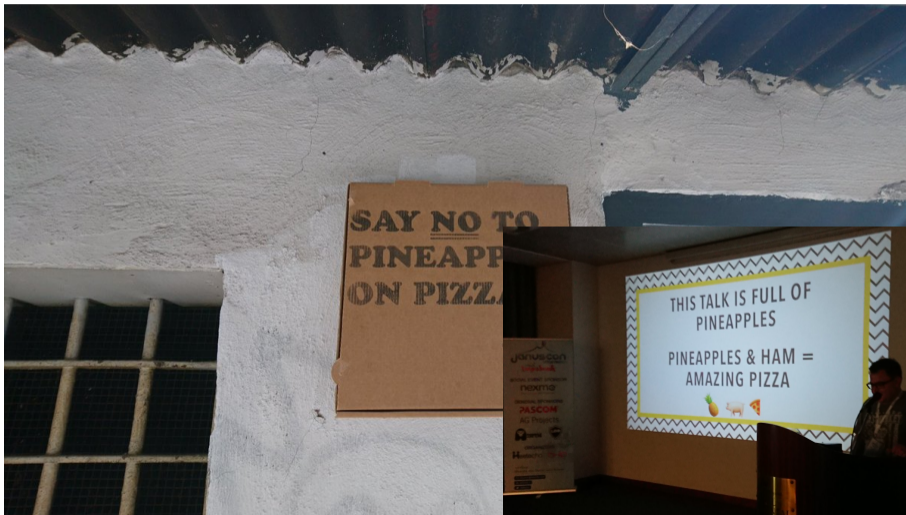


# Napoli: Safety tip #1 (food)





# Napoli: Safety tip #1 (food)



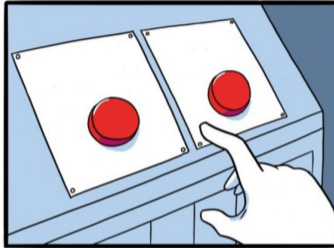


Napoli: Safety tip #2 (riccia or frolla?)





# Napoli: Safety tip #2 (riccia or frolla?)



JAKE-CLARK.TUMBLR





# Napoli: Safety tip #3 (football)





## Napoli: Safety tip #3 (football)





# Napoli: Safety tip #3 (football)







Meetecho is 15 years old!





# Janus is 10 years old!



meetecho / janus-gateway

Type to search

Code Issues 11 Pull requests 12 Actions Security Insights Settings

janus-gateway Public

Edit Pins Unwatch 383 Fork 2.4k Star 7.7k

be35fac 10 Branches 83 Tags

Go to file Code

About

Janus WebRTC Server

janus.conf.meetecho.com

Readme

Feb 11, 2014, 4:20 PM GMT+1

Security policy

Activity

Custom properties

7.7k stars

383 watching

2.4k forks

Report repository

Releases

83 tags

Create a new release

Used by 139

meetecho	First commit	be35fac · 11 years ago	1 Commits
certs	First commit		11 years ago
conf	First commit		11 years ago
docs	First commit		11 years ago
html	First commit		11 years ago
plugins	First commit		11 years ago
COPYING	First commit		11 years ago
Makefile	First commit		11 years ago
README	First commit		11 years ago
apierror.c	First commit		11 years ago
apierror.h	First commit		11 years ago
cmdline.c	First commit		11 years ago
cmdline.h	First commit		11 years ago



# Janus is 10 years old!



meetecho / janus-gateway

Type to search

Code Issues 11 Pull requests 12 Actions Security Insights Settings

janus-gateway Public

Edit Pins Unwatch 383 Fork 2.4k Star 7.7k

be35fac 10 Branches 83 Tags

Go to file Code About

File	Commit	Time
meetecho	First commit	11 years ago
certs	First commit	11 years ago
conf	First commit	11 years ago
docs	First commit	11 years ago
html	First commit	11 years ago
plugins	First commit	11 years ago
COPYING	First commit	11 years ago
Makefile	First commit	11 years ago
README	First commit	11 years ago
apierrorr.c	First commit	11 years ago
apierrorr.h	First commit	11 years ago
cmdline.c	First commit	11 years ago
cmdline.h	First commit	11 years ago

1 Commits

11 years ago

Feb 11, 2014, 4:20 PM GMT+1

Security policy

Activity

Custom properties

7.7k stars

383 watching

2.4k forks

Report repository

Releases

83 tags

Create a new release

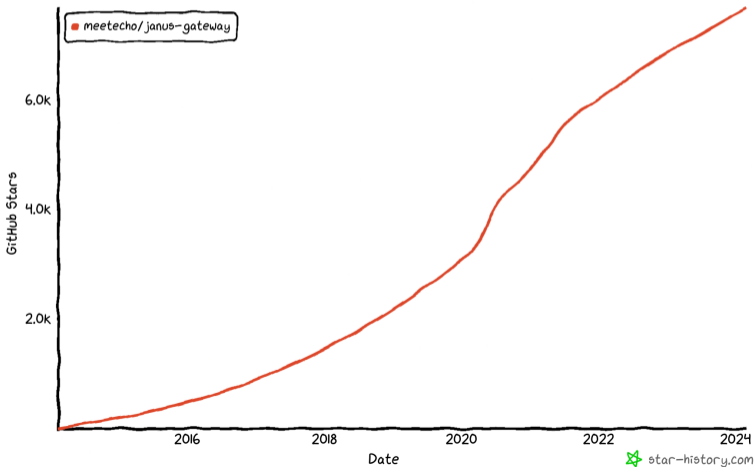
Used by 139



Thanks to our amazing community!



 Star History

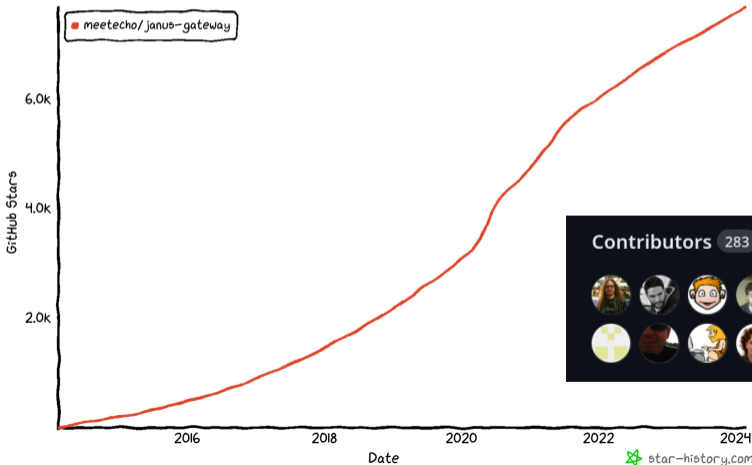




Thanks to our amazing community!



### Star History



Contributors 283



# We moved our community group to Discourse



Hi all,

after the successful first edition of JanusCon, our in-person event on anything Janus and RTC, many have been asking if and when it'd be back. Five long years (and a pandemic) later, we can finally announce that JanusCon is back!

JanusCon

JanusCon 2024 - Napoli

all categories all tags Categories Latest Top

See 1 new or updated topic

Category	Count	Topic	Count
Staff	4	Welcome! (read me 1st)	2
Announcements	12	Issues with the Simple-WhIP-Server and VideoRoom	1
General	325	When use AudioBridge plugin, Is there way to reduce receiving data when all participatns is muted?	0
Janode	4	Janus 1.1.3 audio stopped recording for one publisher	0

<https://janus.discourse.group/>



Meet the Meetecho team!



**Lorenzo  
Miniero**

*Chairman*



**Tobia  
Castaldi**

*CEO*



**Alessandro  
Amirante**

*CTO*



**Simon Pietro  
Romano**

*Research*



Meet the Meetecho team!



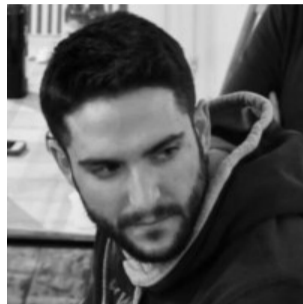
**Danilo  
De Mari**

*CFO*



**Paolo  
Saviano**

*Full Stack Engineer*



**Alessandro  
Toppi**

*Software Engineer*





Meet the Meetecho team! (**NEW!**)



**Paolo  
Navarretta**

*Front-End Developer*

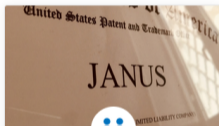


**Antonio  
Bevilacqua**

*Machine Learning Engineer*



## SERVICES



### Support and Licensing

Premium support plans and commercial license for [Janus®](#)

[Read More](#)



### Consulting Activities

Design and implementation of WebRTC products on top of [Janus®](#)

[Read More](#)



### Turnkey Solutions

Explore Our Cutting-Edge add-ons for [Janus®](#)

[Read More](#)



### Streaming of Live Events

Stream your live event to the world and let people participate remotely

[Read More](#)



Thanks to our Great Sponsors!



# Meetecho

QXIP





Thanks to our Great Sponsors!



La Quattro Stagioni (Gold)





Thanks to our Great Sponsors!



La Bufala (Silver)





Thanks to our Great Sponsors!



La Marinara (Bronze)



webRTC.ventures





Win a ticket to CommCon! (London or SF)





Social event tonight (thanks Sipfront!)







# Social event tonight (thanks Sipfront!)



Best 1 min 4 min 1 min

Search along the route

Restaurants Coffee Groceries Things to do

Centro Congressi Federico II, Via Parteno...  
Fontana del Gigante, Via Partenope, 8013

Add destination

Options

Send directions to your phone Copy link

via Via Partenope 4 min 300 m  
Details

Mostly flat

Mamma Napoli Pizza - SS  
Antonio & Antonio Italian - SS  
Hotel Royal Continental 4.3 ★ (4960) 4-star hotel  
Grand Hotel Santa Lucia 4.4 ★ (11025) 4-star hotel  
Eurostars Hotel Excelsior 4.4 ★ (1715) 4-star hotel  
Rex Lifestyle 4.5 ★ (585) 3-star hotel

Fontana del Gigante

Circolo Rari Nantes ...  
VIA SCOLLIERA, Via Sa...  
40.829628, 14.250237

Map data ©2024 Google Italy Terms Privacy Send Product Feedback 50 m



We have a great schedule for you...





A trip down Memory Lane...





Last time we were here, Janus was **v0.7.4...**



Welcome to JanusCon!

Lorenzo Miniero

 [@elminiero](https://twitter.com/elminiero)

Napoli, Italy  
September 23<sup>rd</sup> 2019



# Multistream finally merged → v1.0.0! (2022)



Januscon

2022 Home Status Documentation Pages Meetlog JanusCall

### Plugin Demo: Echo Test lib

Local Stream 1000x750 176 kbit/s Remote Stream

Write a DataChannel message

Janus WebRTC Server © Meetecho 2014-2019

Streams 0

Stop Multistream In0 (1 audio, 2 video) (live)

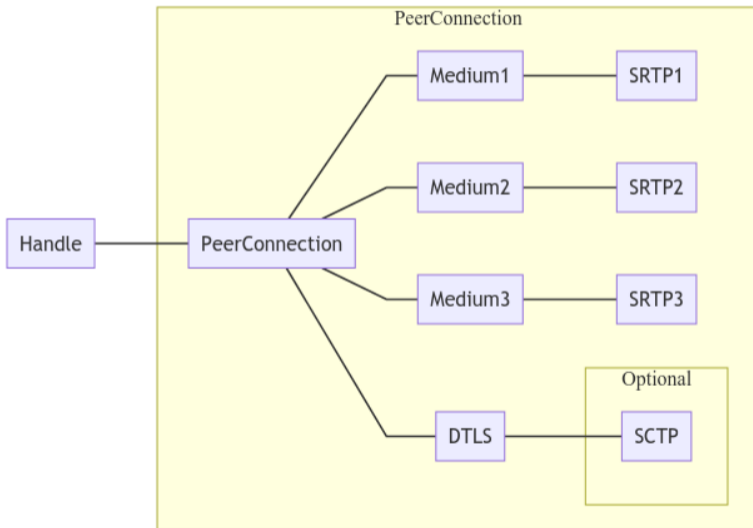
Audio stream

Video stream #1 800x450 176 kbit/s

Video stream #2 800x450 100 kbit/s



# Better use of resources (network, threads, etc.)





# 0.x branch is “legacy” (security/bug fixing only)



## About

### Janus: the general purpose WebRTC server

**Note Well:** these are the demos and documentation for the **0.x** version of Janus, which is considered legacy. If you want to check a more recent version of Janus instead (e.g., **1.x**, a.k.a. “multistream”) click [here](#) instead.

Janus is a WebRTC Server developed by [Meetecho](#) conceived to be a general purpose one. As such, it doesn't provide any functionality per se other than implementing the means to set up a WebRTC media communication with a browser, exchanging JSON messages with it, and relaying RTP/RTCP and messages between browsers and the server-side application logic they're attached to. Any specific feature/application is provided by server side plugins, that browsers can then contact via Janus to take advantage of the functionality they provide. Example of such plugins can be implementations of applications like echo tests, conference bridges, media recorders, SIP gateways and the like.

The reason for this is simple: we wanted something that would have a **small footprint** (hence a C implementation) and that we could only equip with what was **really needed** (hence pluggable modules). That is, something that would allow us to deploy either a full-fledged WebRTC gateway on the cloud, or a small nettop/box to handle a specific use case.



Check the **Documentation** for more details about Janus, or check out the **Demos** to see it in action.

Janus WebRTC Server © [Meetecho](#) 2014-2024



# Changelog to help keeping track of changes



meetecho / janus-gateway Public

Code Issues 9 Pull requests 12 Actions Security Insights

Files

master

Go to file

- .github
- conf
- docs
- fuzzers
- html
- npm
- src
- test
- .editorconfig
- .eslintrc.js
- .gitattributes
- .gitignore
- CHANGELOG.md**
- COPYING
- Makefile.am
- README.md
- 

janus-gateway / CHANGELOG.md

Iminiero Updated Changelog (1.2.2) ✓ 004c2b5 · 2 days ago History

Preview Code Blame 1183 Lines (993 loc) · 89.7 KB Raw

## Changelog

All notable changes to this project will be documented in this file.

### [v1.2.2] - 2024-04-02

- Update demos and docs to Bootstrap 5.x [PR-3300]
- Fixed rare race condition in VideoRoom [PR-3331]
- Fixed broken end-to-end encryption for subscribers in VideoRoom
- Fixed ports leak when using remote publishers in VideoRoom plugin [Issue-3345]
- Perform audio-level detection in AudioBridge participant thread [PR-3312]
- Fixed memory leak in AudioBridge in case of late packets
- Ship speeddsp's jitter buffer as part of local AudioBridge dependencies [PR-3348]
- Add support of abs-capture-time RTP extension to Streaming plugin (thanks @IbrayevRamill) [PR-3291]
- Don't call close\_pc in SIP plugin if there was no SDP [PR-3339]
- Fixed broken faststart when postprocessing AV1 recordings (thanks @corthiclem!) [PR-3317]
- Added new connectionState callback to janus.js (thanks @RSATom!) [PR-3343]

<https://github.com/meetecho/janus-gateway/blob/master/CHANGELOG.md>





# Changelog to help keeping track of changes



meetecho / janus-gateway Public

Code Issues 9 Pull requests 12 Actions Security Insights

Files

0.x

Go to file

- postprocessing
- test
- transports
  - .editorconfig
  - .eslintrc.js
  - .gitattributes
  - .gitignore
  - CHANGELOG.md
  - COPYING
  - Makefile.am
  - README.md
  - SECURITY.md
  - apierror.c
  - apierror.h
  - auth.c
  - auth.h
  - ...

janus-gateway / CHANGELOG.md

lminiero Updated Changelog (0.14.2) 636fec · 2 days ago History

Preview Code Blame 1183 Lines (913 loc) · 88.7 KB Raw Download Edit

## Changelog

All notable changes to this project will be documented in this file.

### [v0.14.2] - 2024-04-02

- Perform audio-level detection in AudioBridge participant thread [\[PR-3312\]](#)
- Fixed memory leak in AudioBridge in case of late packets
- Ship speedsp's jitter buffer as part of local AudioBridge dependencies [\[PR-3348\]](#)
- Don't call close\_pc in SIP plugin if there was no SDP [\[PR-3339\]](#)
- Fixed broken faststart when postprocessing AV1 recordings (thanks @corthiclem!) [\[PR-3317\]](#)
- Added new connectionState callback to janus.js (thanks @RSATom!) [\[PR-3342\]](#)
- Exposed Janus and Admin API ping request via GET [\[Issue-3336\]](#)
- Other smaller fixes and improvements (thanks to all who contributed pull requests and reported issues!)

### [v0.14.1] - 2023-12-06

<https://github.com/meetecho/janus-gateway/blob/0.x/CHANGELOG.md>



Worked a lot on scalability/reliability



## Turning live events to virtual with Janus

Lorenzo Miniero

 @elminiero

CommCon 2020

July, from my couch at home



# Around that time, we released Janode too!



meetecho / janode Public

Notifications Fork 29 Star 83

<> Code Issues 4 Pull requests 2 Actions Projects Security Insights

master 3 Branches 16 Tags Go to file Code

**atoppi** videoroom example: update deps, await detach, do not detach whe... 14ce8af · last week 123 Commits

.github/workflows	build: lint code through GitHub Actions	2 years ago
examples	videoroom example: update deps, await detach, do not ...	last week
src	videoroom: add vp9 profile to create	3 weeks ago
.eslintrc.json	Update eslint rules	3 years ago
.gitignore	gitignore: update	2 months ago
LICENSE	Initial commit	3 years ago
README.md	readme: add references to npm	last year
package-lock.json	version: bump to v1.6.11	2 months ago
package.json	version: bump to v1.6.11	2 months ago

**README** ISC license

.. . .

**About**  
A Node.js adapter for the Janus WebRTC server

- Readme
- ISC license
- Activity
- Custom properties
- 83 stars
- 16 watching
- 29 forks
- Report repository

**Releases** 16

v1.6.11 (Latest) on Feb 29

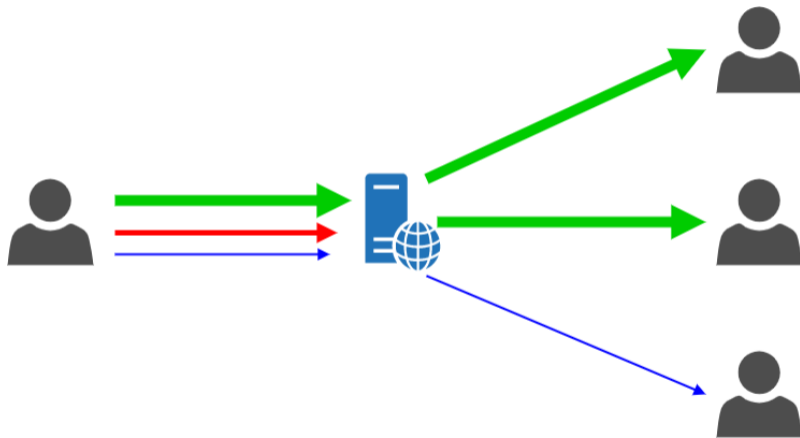
+ 15 releases

**Packages**  
No packages published

<https://github.com/meetecho/janode/>

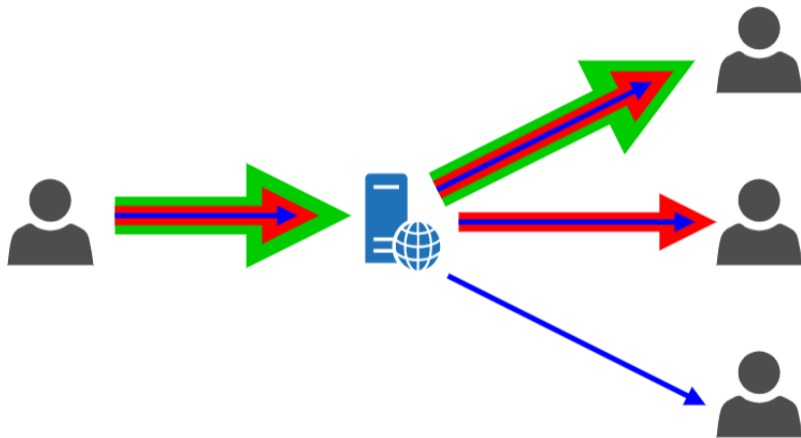


Simulcast got a ton of improvements (+VP9)





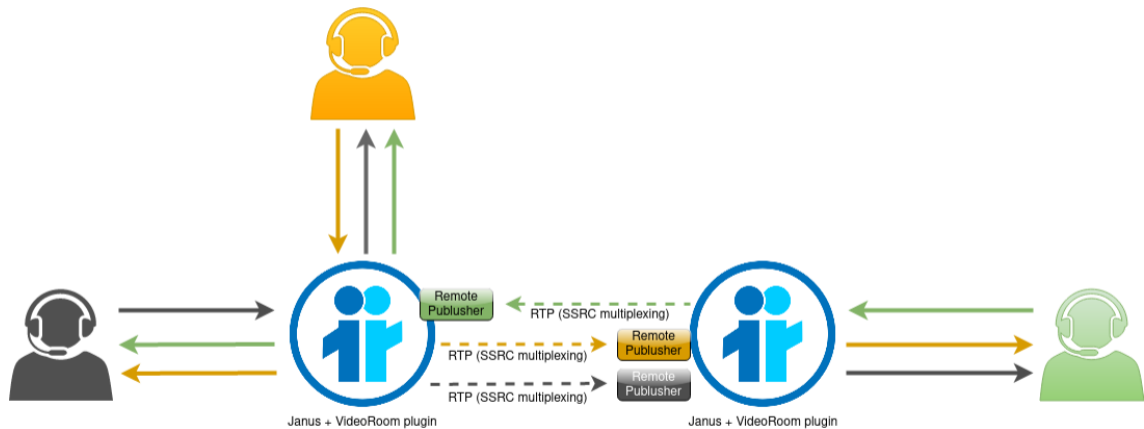
We now have AV1/SVC working too



<https://fosdem.org/2024/schedule/event/fosdem-2024-3000-getting-av1-svc-to-work-in-the-janus-webrtc-server/>

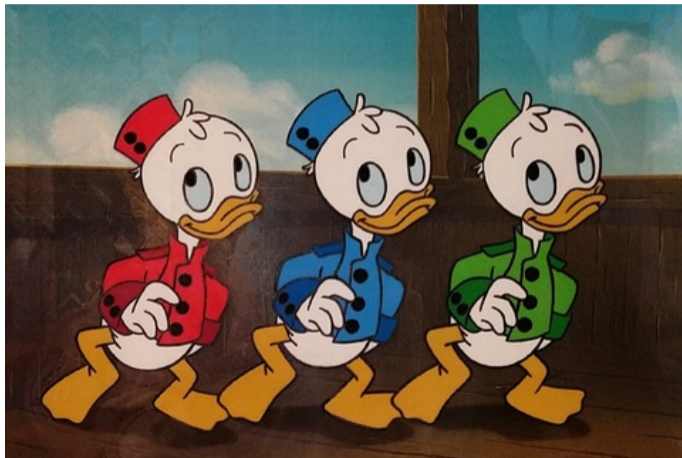


# Cascading publishers across Janus instances



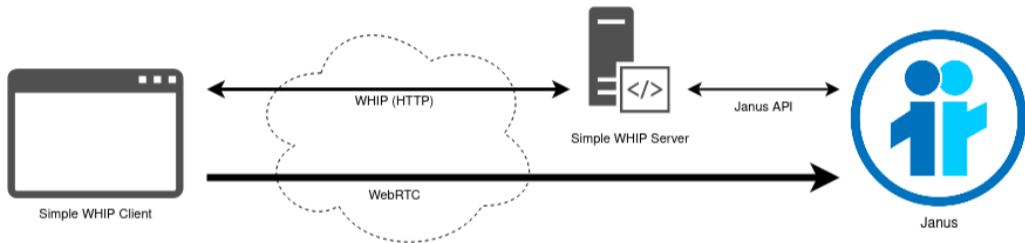


# WHIP, WHEP & WHAP!





# WHIP ingestion with Janus

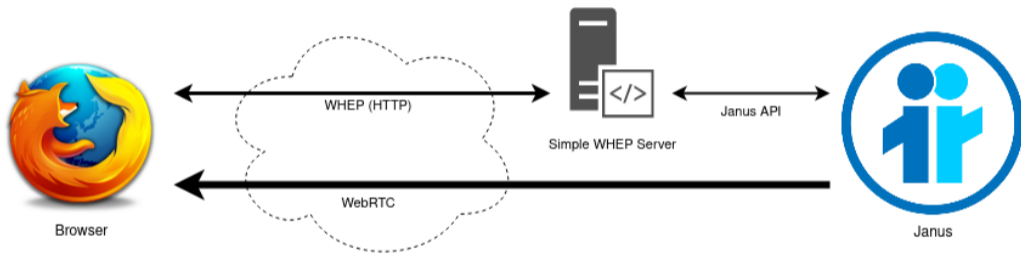


<https://github.com/meetecho/simple-whip-server>  
<https://github.com/meetecho/simple-whip-client>





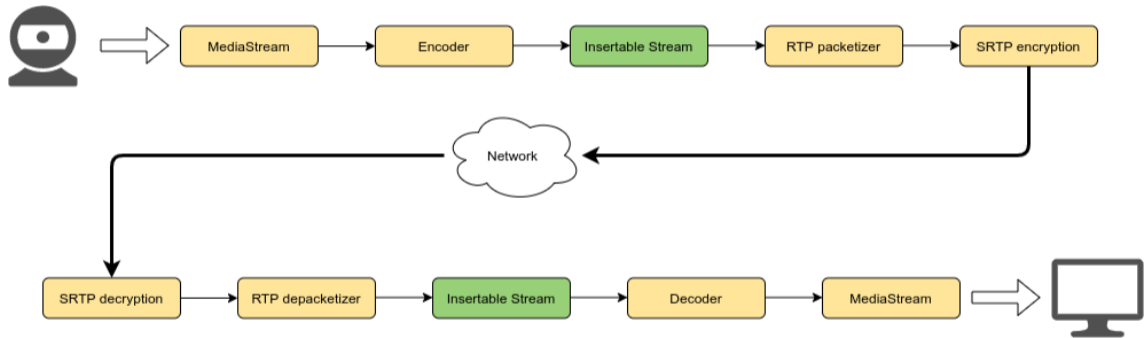
# WHEP distribution with Janus



<https://github.com/meetecho/simple-whep-server>  
<https://github.com/meetecho/simple-whep-client>

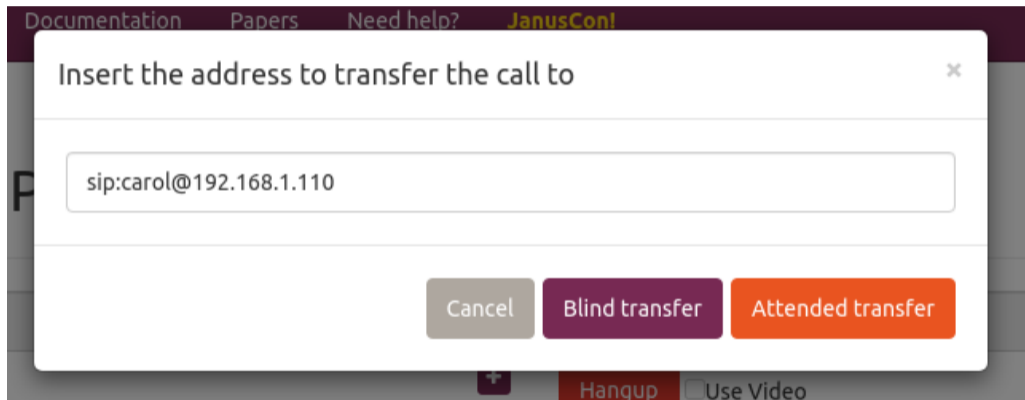


# E2EE support via Insertable Streams





## SIP plugin now supports call transfer





RED support for audio (Opus)



# Web RTC RED

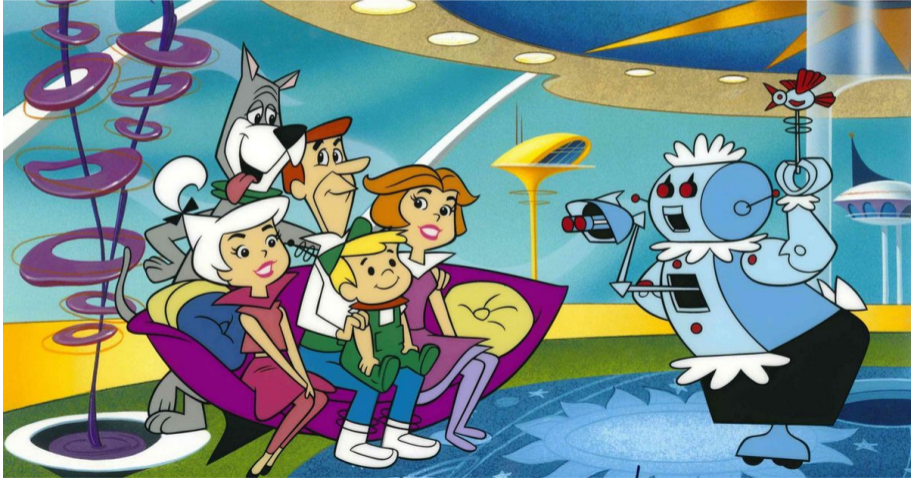


## Several improvements in AudioBridge



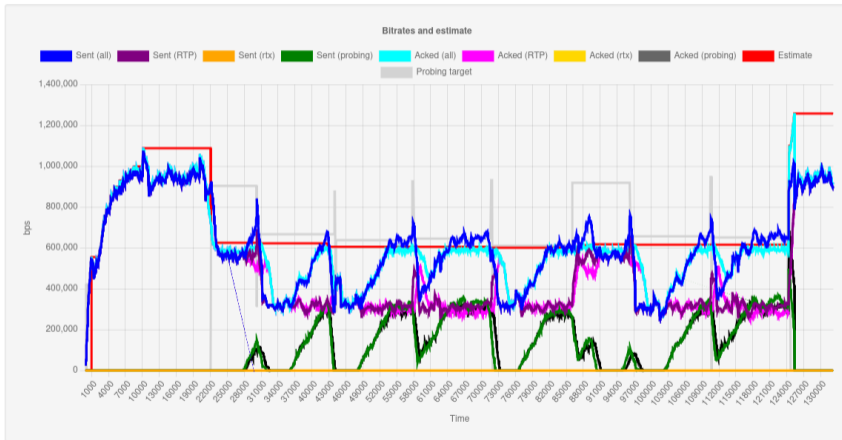


What's in store for the future?





# Complete the work on Bandwidth Estimation!





# Have more fun with AI/ML!



The screenshot shows a Zoom meeting interface. On the left, a participant list includes 'Eve Schooler' (RAW CHAIR) and 'Carl...' (PARTICIP...). Below the list is a 'QUEUE' section. The main video area shows 'Carlos Bernardos' speaking. To the right of the video is a text chat window with the following text:

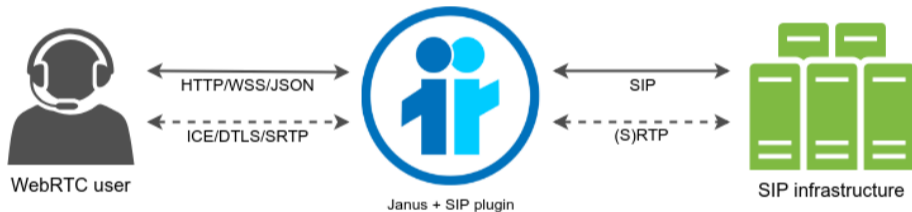
management  
our bar.  
So this a bit the  
motivation and the summary  
of what we doing in this drop,  
which is just our first, to  
foster discussion in the  
group is not more than  
that. So this is the table of  
contents. We have the  
promised statement at the  
beginning. We have some I  
mean, usual and then we  
have the the extensions for  
the terminal. And for that, we  
have a ten initiated section at  
the beginning, then we have  
another control section that  
in this version of the draft, is  
not yet provider, but it's  
basically modification of the  
terminal initiated or terminal  
control mobility

At the bottom of the screen, a blue bar shows 24 participants, and a grey bar indicates 'Speaking: Carlos Bernardos'.



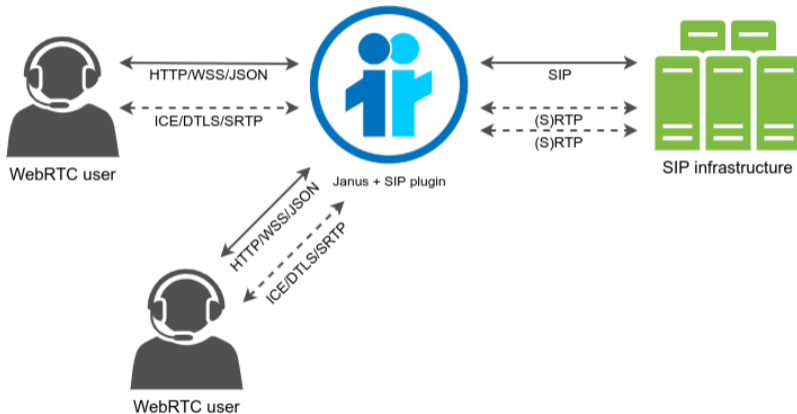


# A SIP trunking mode for the SIP plugin



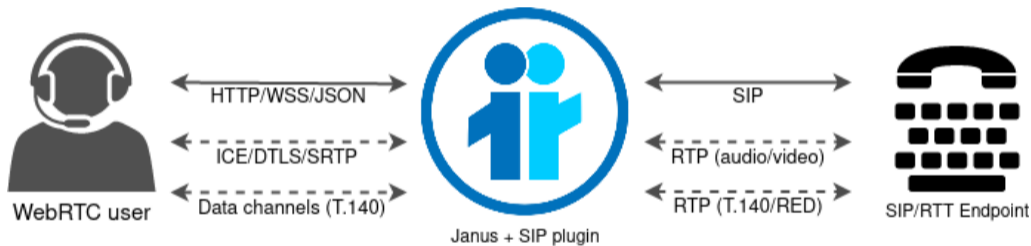


# A SIP trunking mode for the SIP plugin





# Real-Time Text for Emergency Services





Playing more with WASM?



---

<https://www.meetecho.com/blog/playing-with-lyra/>



# Waiting for WebTransport (WebRTC ↔ MOQ)





Now sit back and enjoy!

