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WebRTC: The Future of Communications?

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Comrex Corporation

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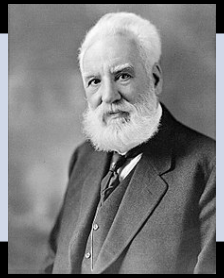
A Very Brief History of (Comrex) Time

1876



1983

2010

WebRTC

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WebRTC timeline

2010
Google buys Global IP Solutions

Presents to IETF and W3C

Release of open-source project

2011
Ericsson Labs first implementation “Bowser”

2013
First browser-browser video call

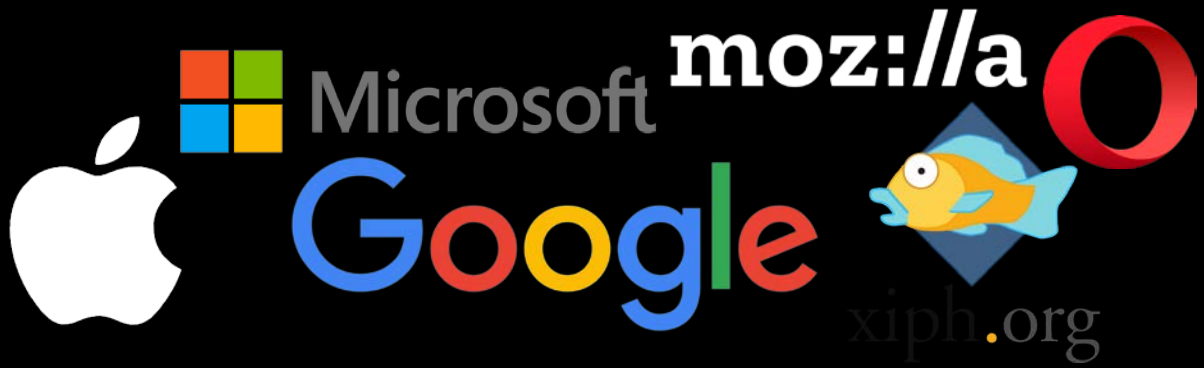
2014 First browser-browser data transfer

2014
Google Hangouts… kinda

2017
Comrex Opal introduced

2018
First stable Release

First Opal units ship



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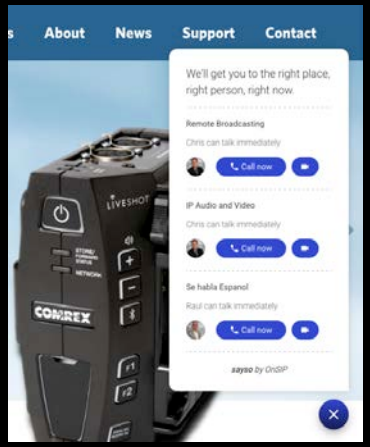
WebRTC: the basics

Audio Engine	Video Engine	Data Engine
G.722 Opus	VP8 H.264	Most commonly Text messaging

- JavaScript “wakes up” Engine
- STUN employed for NAT and Firewall traversal
- SSL Certificate exchange
- Asks for permission to use Camera and/or mic on device
- Peer-to-Peer connection between browsers
  - WebRTC server “manages” call



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What else is under the hood?

WebRTC Application

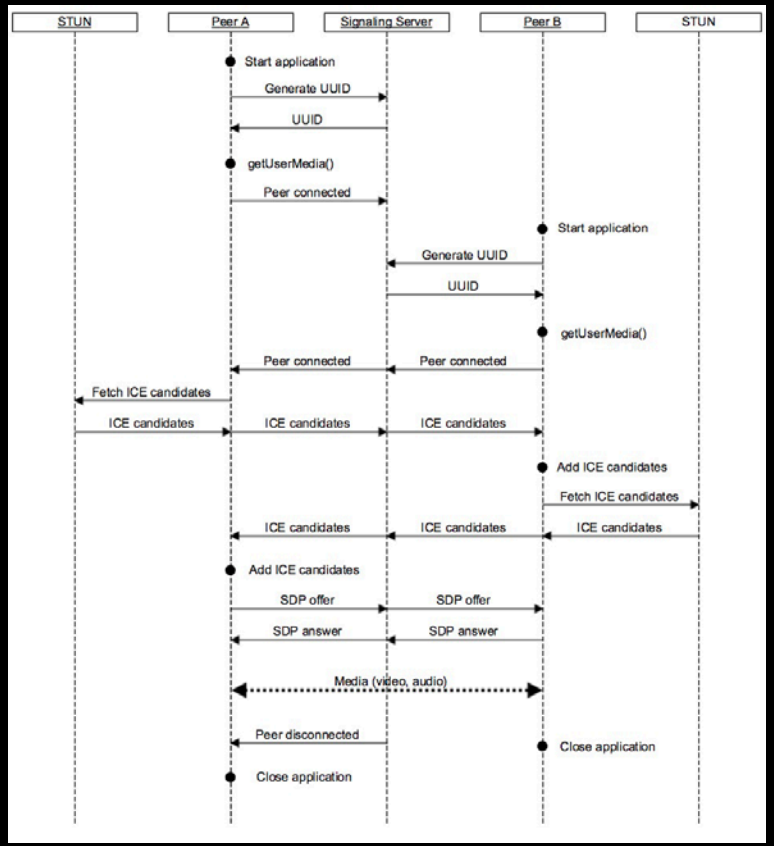
WebRTC API

Media Capture

Encode/Decode A/V

Transportation Layer

Session Management



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Uh…so it's like Skype?

Skype is an application

WebRTC is a technology

Skype must be on user Device (or Skype for Web)

WebRTC is built-in to Common browsers

Skype is owned by Microsoft

WebRTC is open-source

Skype requires user to be registered on app

WebRTC can be a simple link

Skype is well engineered but not friendly for integration

WebRTC is relatively easy to Integrate. 7 billion endpoints

Skype uses SILK

WebRTC used Opus

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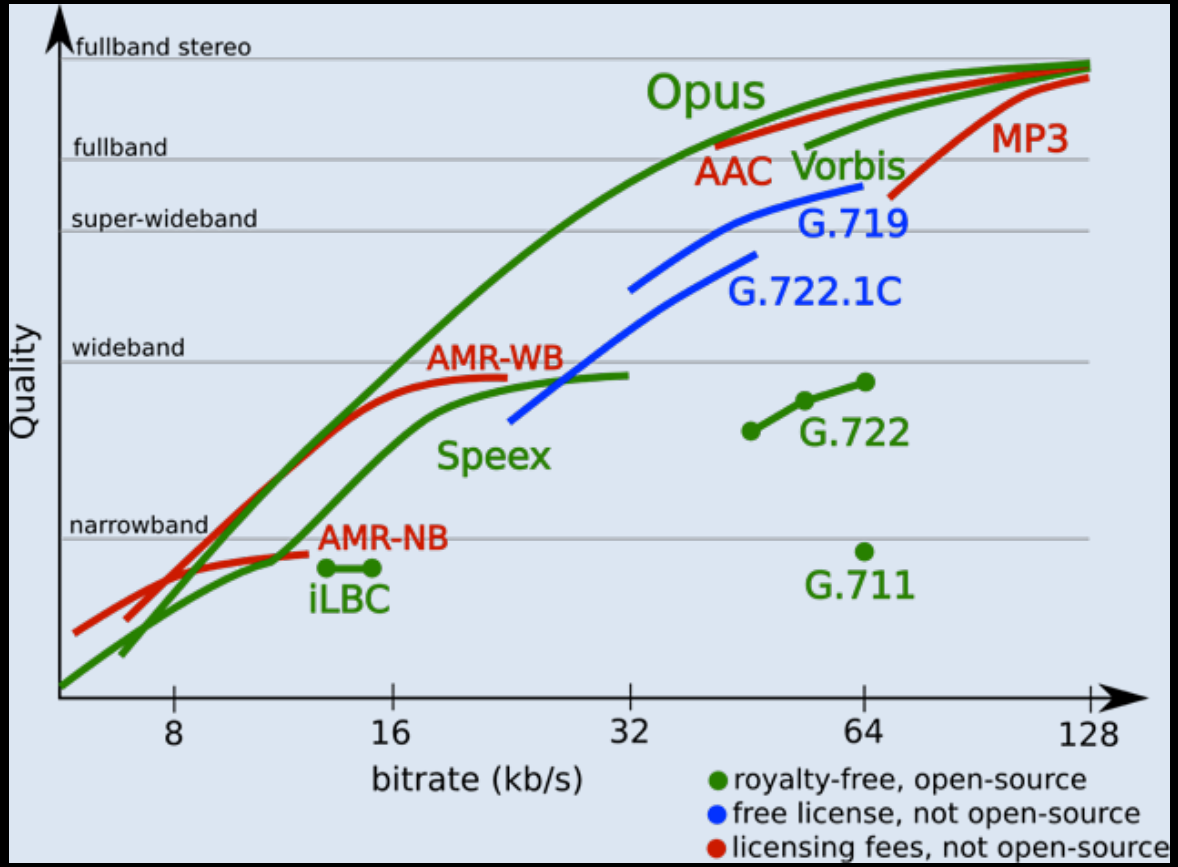
opus

skype™

WebRTC


fullband stereo
fullband
super-wideband
wideband
narrowband
Quality
Opus
MP3
AAC
Vorbis
G.719
G.722.1C
AMR-WB
G.722
Speex
AMR-NB
iLBC
G.711
8
16
32
64
128
bitrate (kb/s)
royalty-free, open-source
free license, not open-source
licensing fees, not open-source

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applications

Edge
Chrome
Firefox
Safari
Opera
Vivaldi
Brave
Puffin
others

Android
  Chrome
  Firefox
  Opera
Chrome OS
Firefox OS
Blackberry 10
iOS
Tizen
Gstreamer

Online education
Telemedicine
Gaming
Alexa
Google Nest
Google Home

Google Meet/Hangouts
Facebook Messenger
WhatsApp
SnapChat
Discord
Amazon Chime
Houseparty
Appear.in
Gotomeeting
Peer5
BlueJeans

Opal

ipDTL
SourceConnect Now
Cleanfeed
LiveSwitch
Sermon.net
QGoLive
Comrex Opal

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applications

- real-time marketing
- real-time advertising
- technical support
- back office communications (CRM, ERP, SCM, FFM)
- HR management
- social networking
- dating services
- online medical consultations
- financial services
- surveillance
- multiplayer games
- live broadcast
- e-learning

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how good is good enough?

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WebRTC for Broadcast

Turn offs
Turn ons

AGC

Echo Cancellation

Other streaming apps on same network

QoS/MAC priority
For Best effort

Super simple interface

Dedicated hardware/server

Educated users

Realistic expectations

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future applications

SaaS, MaaS, IaaS,
PaaS, XaaS

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