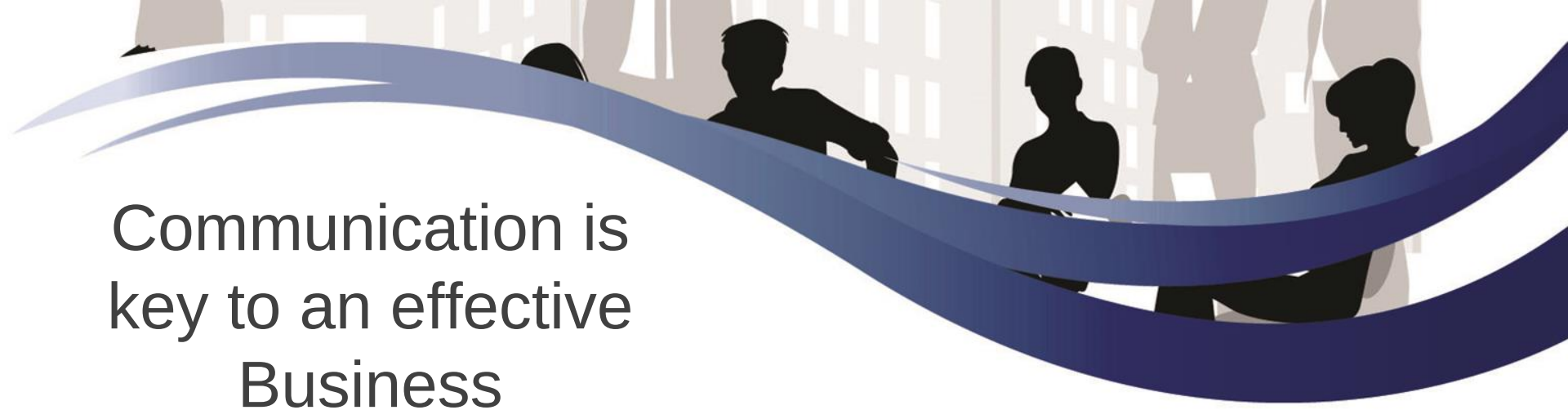
MediaConf

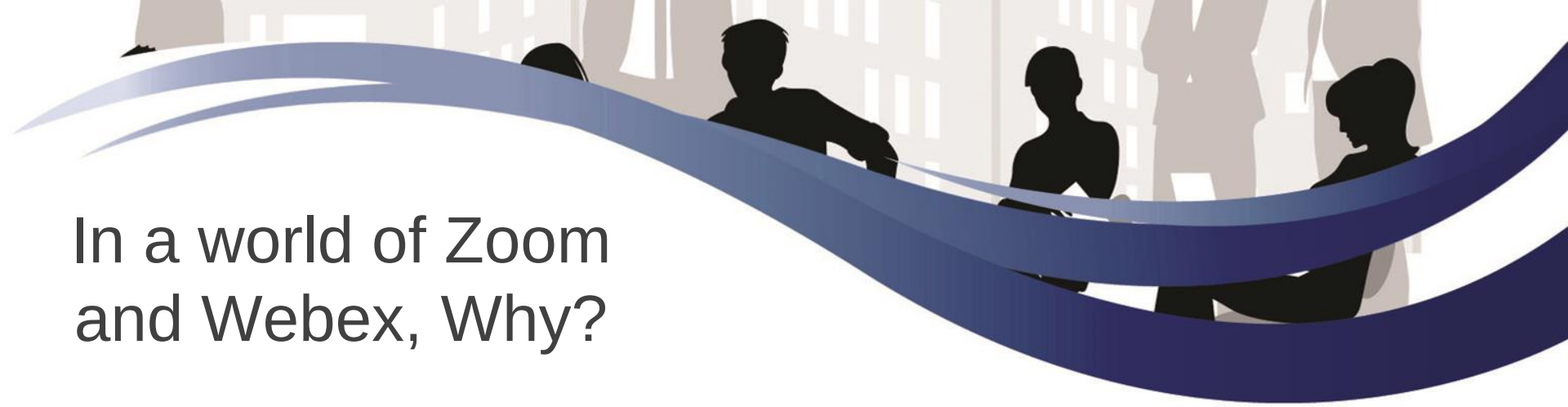
Video Conference Hardware
with the Intel NUC


OPEN
BUSINESS AS
NEW NORMAl



Communication is key to an effective Business

- Its more difficult to communicate with WFH. Phone calls, conferences, emails and texts.
- Efficiency takes a hit because of adaptation to what’s new.
- And no checks and balance for what your staff are doing.



In a world of Zoom and Webex, Why?

Freemium Model

- Entice users with something usable but limited.
- Pay for a more usable service

Issues

- 40-60 minute meetings? Most meetings last longer (setup included)
- No guarantees of service. After all, its free…(like oops @Webex we deleted the VM for it or Zoom and Teams down in May 2020)
- Privacy? Zoom calls routed to China. 6 digit numeric password with unlimited concurrent ability to “guess” so easily breakable

The New York Times

Partial Zoom Outage Is Fixed After School Disruptions

Some school districts and colleges also had outages on Canvas, an online learning platform.

The Register

Biting the hand that feeds IT

DATA CENTRE SOFTWARE SECURITY DEVOPS BUSINESS PERSONAL TECH SCIENCE EMERGENT TECH BOOTNOTES VENDOR VOICE

{* NETWORKS *}

Cisco Webex meltdown caused by script that nuked its host VMs

Comms software flinger confesses to ultimate snafu, trigger still under investigation

Wed 3 Oct 2018 // 15:37 UTC

15 GOT TIPS?

Gareth Corfield BIO EMAIL TWITTER

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Cisco has confessed that the cause of the mega Webex outage last week – which it is still trying to clean up – was an automated script "which deleted the virtual machines hosting the service".

A chunk of Webex was KO'd last week, including Teams, Calling, Meetings, Control Hub, Hybrid Services and more, as we reported at the time.

// MOST READ

IT blunder permanently erases 145,000 users' personal chats in KPMG's Microsoft Teams deployment – memo

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Zoom security issues: Here's everything that's gone wrong (so far)

By Paul Wagenseil a month ago

More than a dozen security and privacy problems have been found in Zoom. Here's an updated list.

Comments (8)

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Receive mail from us on behalf of our trusted partners or sponsors? Yes No

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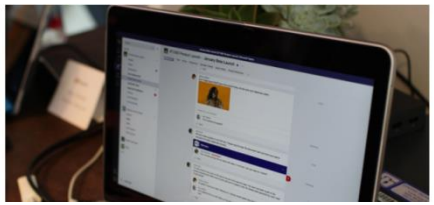
Microsoft Teams goes down — just as everyone starts working from home

Zack Whittaker @zackwhittaker / 11:07 pm CST • March 16, 2020

Comment



FOX6 MILWAUKEE

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Zoom goes down as thousands of users report issues with video conferencing

Published May 17 | Coronavirus | FOX 6 Now Milwaukee

SAN JOSE, Calif. -- Users around the world tried logging on to the video conferencing app Zoom Sunday morning, May 17, only to have reported issues with its audio and visual features.

By Tom Warren | @tomwarren | Feb 3, 2020, 11:23am EST

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VERGE DEALS

ANDROID POLICE

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Google has resolved its massive server issues affecting Gmail, Drive, Keep, Docs, Meet, Chat, and Voice

Some people couldn't send emails or upload files

Manuel Vonau

Aug 20, 2020

APPLICATIONS G SUITE GOOGLE NEWS

Real Cost of “Free”

Published Rates:

- ✓ Zoom $14.99-$19.99/host/month
- ✓ Google Meets $4.20 - $25/user/month
- ✓ Microsoft Teams $5.00 - $20/user/month
- ✓ EZTalks - $10 - $50/host/month
- ✓ Cisco Webex $13.5 - $26.95/host/month
- ✓ Skype Free (but difficult to use poor support)

Real Costs?

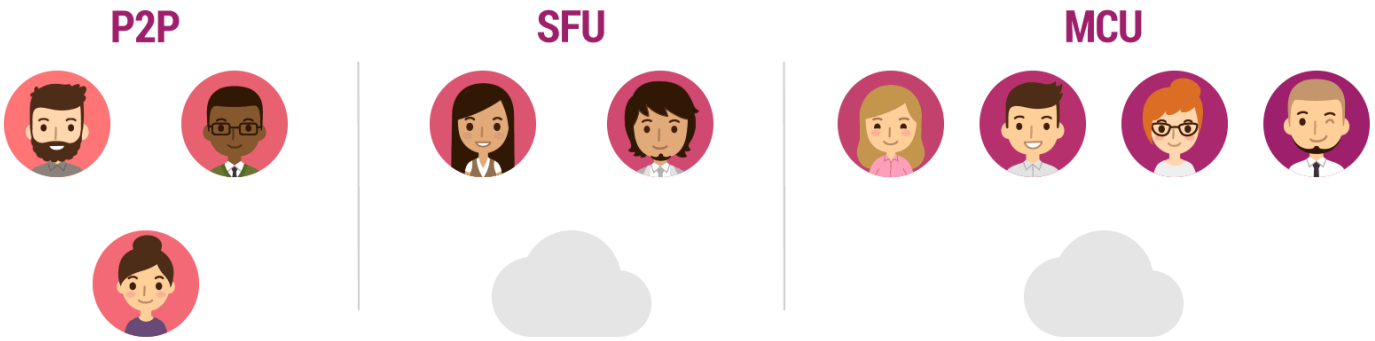
- ✓ Office with 5 hosts
- ✓ @5$/host = $300
- ✓ @14/host = $840

- ✓ 5 Classrooms 13 grades
- ✓ @$5/host = $3900
- ✓ @$14/host = $10920

Quick Introduction to WebRTC (Real Time Communications)

There are three major topologies for conferencing systems:

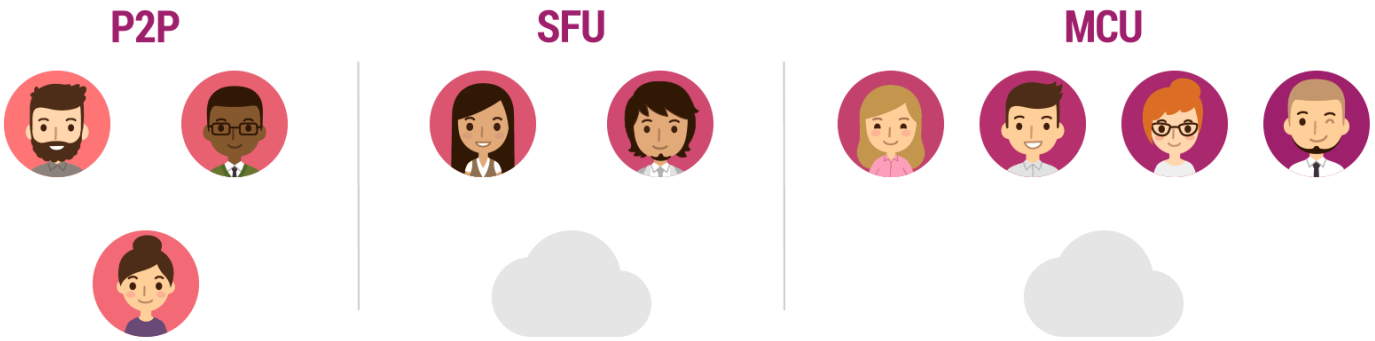
1) Peer to Peer Viber/Skype/Whatsapp
2) MCU Multipoint Conference Unit (Zoom/Cisco)
3) SFU Selective Forwarding Unit (Google Hangouts/Meets)



Quick Introduction to WebRTC (Real Time Communications)

Peer To Peer

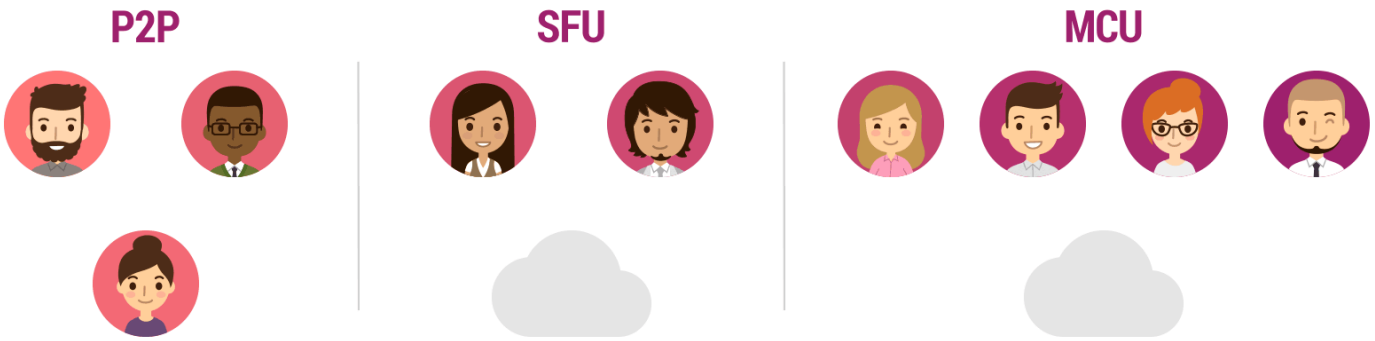
Advantages: Cheap to implement and is serverless
Disadvantage: Once you get past 3 or more the point to point mesh becomes unwieldy.



Quick Introduction to WebRTC (Real Time Communications)

Multipoint Conference Unit (MCU)

Everyone sends out a high bitrate stream, the MCU decodes it converts it to the right resolution constructs the video window with all the participants and sends out a single composed “broadcast” stream to each participant

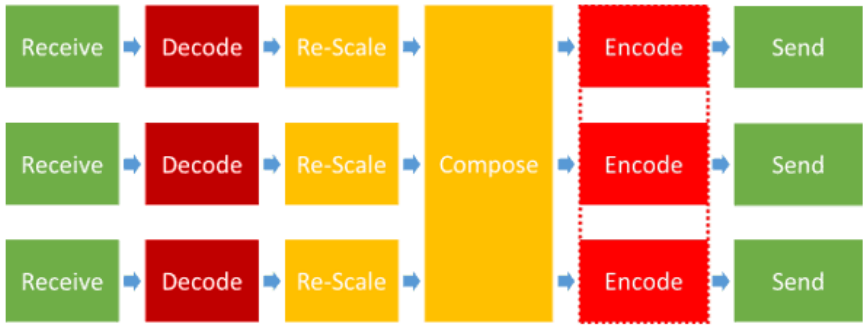


Quick Introduction to WebRTC (Real Time Communications)

Multipoint Conference Unit (MCU)

Advantage is one stream out one stream in. Lower bandwidth and processing at the client side.

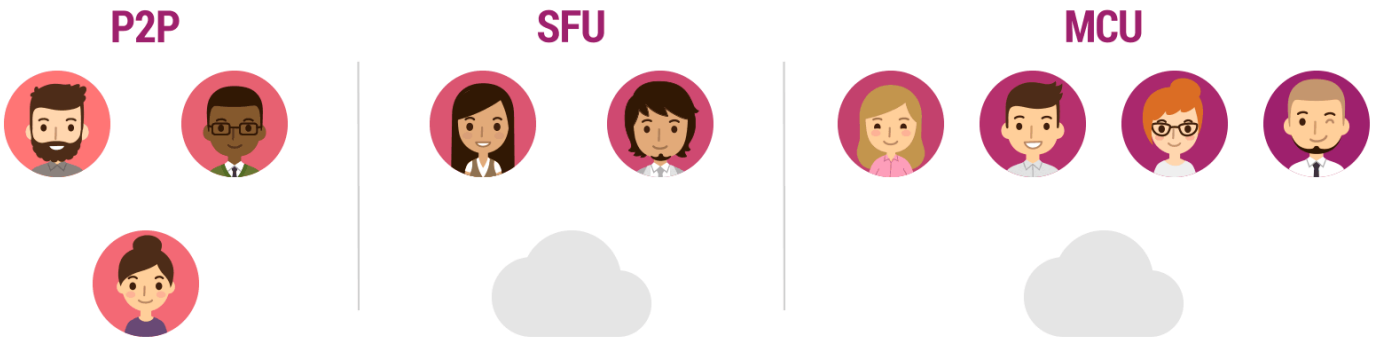
Disadvantage - Central servers required high CPU resources and costly when scaled. Imagine doing decodes of all the videos and re-encoding them in real time to make the single window video. This is a very costly endeavor to scale. This is done per room. Also if its not WebRTC compatible you need a client.



Quick Introduction to WebRTC (Real Time Communications)

Selective Forwarding Unit - SFU

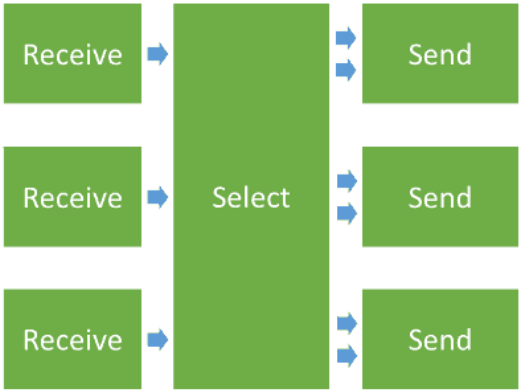
SFU asks the client to send out 3 encodes of their same video. These are then sent to a server which selectively forwards the appropriate stream to the end user. So effectively what the SFU server is doing is just forwarding packets based on endpoint capability and with the presenter at a higher bitrate.



Quick Introduction to WebRTC (Real Time Communications)

Selective Forwarding Unit - SFU

That means higher outbound bandwidth as you are streaming out 3 bitrates of your video, plus on the receiving side you are receiving all the individual streams of the participants. So we trade off big CPU resources for bandwidth and distributing the load back to the client. But most clients cpe's now have the horsepower to do the decodes for a "reasonable" number of streams.



Quick Introduction to WebRTC (Real Time Communications)

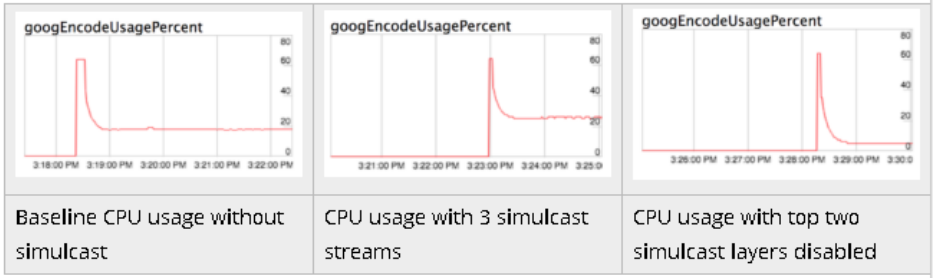
Selective Forwarding Unit - SFU

But what about 30-100 participants???? Wow my cpu can't handle that! TRUE…

But remember there is a signaling protocol to route what bandwidth is sent to you….

So managing it can reduce Both CPU and data

CPU Usage



Baseline CPU usage without simulcast	CPU usage with 3 simulcast streams	CPU usage with top two simulcast layers disabled

Bits per second

Baseline send bitrate without simulcast	Bitrate with 3 simulcast streams	Bitrate with top two simulcast layers disabled

Quick Introduction to WebRTC (Real Time Communications)

Selective Forwarding Unit - SFU

Advantages – Lower server CPU requirements, can handle thousands of participants with a single server. For scalability this is a good solution. No client needed. WebRTC support built into Chrome Firefox Safari etc.

Disadvantage – Higher BANDWIDTH and higher load at the endpoint.

However endpoints now are powered enough to decode 10-20 streams concurrently (one large video the rest are low bitrate). Also bandwidth is LOCAL. You don’t have to stream all the way to HK/SG/USA for this. Mitigation of the bandwidth and CPU at the endpoint can be managed by “smart” selection.

MediaConf

What is MediaConf?

SFU based Video Conferencing Hardware Appliance

Optimized Embedded OS

Easy to manage using a Web Interface

Low cost of startup Low cost of operation.

MediaConf

What is MediaConf?

MediaConf Lite – upto 10 concurrent users in a single room

NUC BOXNUC7PJYH1 June Canyon 4GRam 128GSSD

MediaConf Standard – upto 20 concurrent users with three rooms

NUC BXNUC10I5FNH1June Canyon 8GRam 256GSSD

MediaConf Enterprise – upto100 concurrent users in a room

Dell i9/Xeon 16G 500GSSD 2TB HDD

*conditions apply based on number of actual videos bitrate etc…

MediaConf

MediaConf Benefits - Cost

- Unlimited usage with no monthly bill.
- The solution is designed to allow more communication without the huge costs of counting hosts or minutes of use.
- Easier communications in the new normal.
- Productivity increase.

MediaConf

MediaConf Benefits – Less Support

- Appliance solution - configure the server with a browser no additional software required. (yank-the-plug device)
- IT resources can be better focused at other tasks.
- Just install an SSL certificate (can use Letscrypt which is free for 90 days and system will auto renew) based on a FQDN.
- No clients for Firefox, Chrome, Safari no additional software on desktops with these as the browsers are WebRTC compliant.

MediaConf

MediaConf Benefits – Focus

- MediaConf just does one thing. Give you a good video conferencing service.
- Unlike the all in one services tie your users up with offerings for services such as disk space, email, messaging, hosting etc, etc, MediaConf is focused only video conferencing and does it well.

MediaConf

MediaConf Benefits – Bandwidth

- Yes SFU consumes more bandwidth with larger numbers of participants, however it manages the bandwidth so users who are not speaking send out only the low bandwidth streams.
- This bandwidth is LOCAL. As most of your participants are local as well you are only consuming local bandwidth, and not international data. This means a more responsive conference as the connection does not have to go abroad.

MediaConf

MediaConf Benefits – No limits

- Most freemium services limit how much time you are allowed to use the service. It can pay for itself in a year.
- Use this service without time limits. You can leave it all day and have a better communicative experience with your team members.
- Go from 10, 100 or 1000 concurrent (note limits per room)
- For huge meetings MediaConf can link itself to your Youtube account and broadcast as a Youtube live stream.

MediaConf

MediaConf Benefits – Security

- Many issues have been raised about some services that have rowdy participants. Injecting unwanted materials and disrupting meetings.
- Support OpenVPN option (establish a VPN connection)
- Authentication of hosts and users in 3 modes:
  - Host/User Login
  - Host Login Users with Unified Password
  - Host Login User with No password (anonymous)

MediaConf

Features

- Easy to use. Just open a HTML page no apps for WebRTP browsers such as Chrome, Firefox Safari etc..
- Runs on IOS, Android, Mac, Windows and Linux (Mobile platforms will require an app download)
- Application or Desktop Screen sharing (PC/Mac)
- No limits on duration or participants, but limits are determined by bandwidth and hardware.
- Youtube sharing of videos.

MediaConf

Features

- Kick out or mute participants individually or globally.
- Access control for users allowed to host conferences.
- Password support for secured sessions.
- VPN support and can work with dynamic DNS.
- Raise hand support.
- Allow participants to manage video quality.
- Youtube broadcast

MediaConf

Features

- Logo insertion in main video window.
- Embedded appliance and firmware based architecture, resulting in reduced maintenance requirements for conferencing equipment.
- Reliable IoT/Embedded hardware with small form factor.
- Support for local chat and private chat.
- Support for multiple rooms with multiple participants.
- Web interface to manage device.

MediaConf


Test
V-eCOM
Marvin (Me)
Marvin
Manage video quality
View full screen
Share a YouTube video
Blur my background
BETA
Settings
Mute everyone
Speaker stats
View shortcuts


Test
V-eCOM
Marvin
Manage video quality
View full screen
Share a YouTube video
Blur my background
BETA
Settings
Mute everyone
Speaker stats
Toggle tile view

SFU Some Caveats - Large Meetings

For large meetings lets say 100 participants all doing video and audio, the number of streams INBOUND to the server = 100 (actually its 300 because of 3 bitrates but for the sake of a number lets say one high bitrate and 99 small bitrate streams are sent).

Going out of the server will be 100 streams of the 99 other participants to your client (ouch…). So we expect 100x99 streams OUTBOUND. Also note that a client cannot handle 99 concurrent stream decodes and bandwidth as well….

So the server will have to handle 10K streams, which is not possible.

But note if say, 500 people are meeting in 2 person meetings, you only have 2 inbound and 2 outbound per meeting x 250 conference rooms = 500 inbound and 500 outbound .

SFU Some Caveats - Large Meetings

So how can we address large meetings?

a) Don’t have everyone do Video and Audio. This reduces the concurrent streams and allows the system to handle many participants but not as much resources.

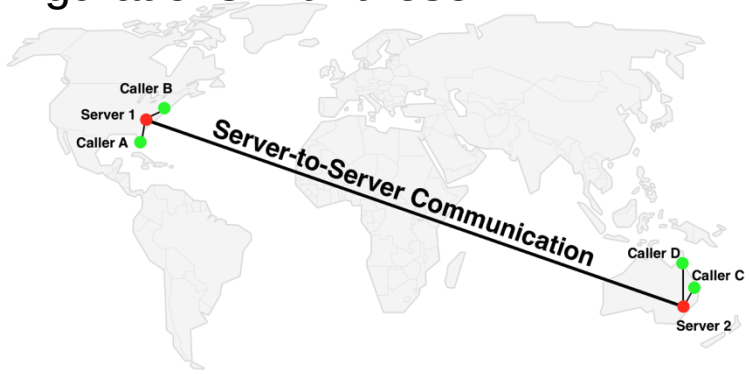
b) If you really want to run a large meeting, it would be difficult to manage 100 people speaking. So, we can allow MediaConf to stream to a Youtube channel. This creates a single broadcast that everyone can download separately, reducing the NxN-1 matrix of streams and saving you bandwidth.

a) Limit the number of video windows in the client. By force setting the max video window parameter which in turn shows the last few speakers on the screen. This reduces what is sent out to clients.

SFU Some Caveats - Large Meetings

So how can we address large meetings?

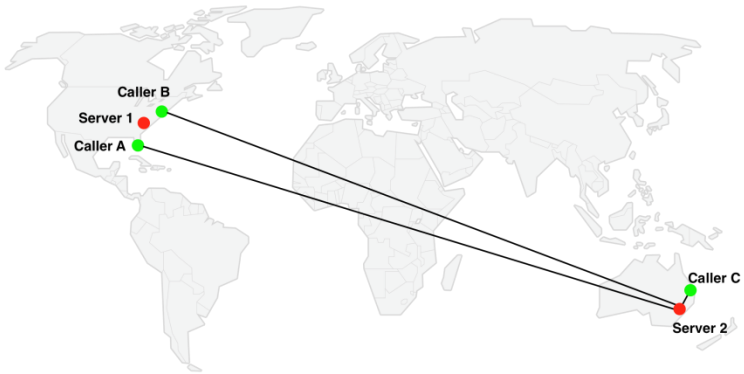
Another way is to create multiple video bridges. Bridges come in two modes. Linked or unlinked. If they are linked, a single conference can be hosted across multiple bridges, which in turn distribute the I/O load to a more reasonable level across several pieces of hardware. Authentication has to be shared across the video bridges. You can create star, mesh, tree and branch configurations with these.

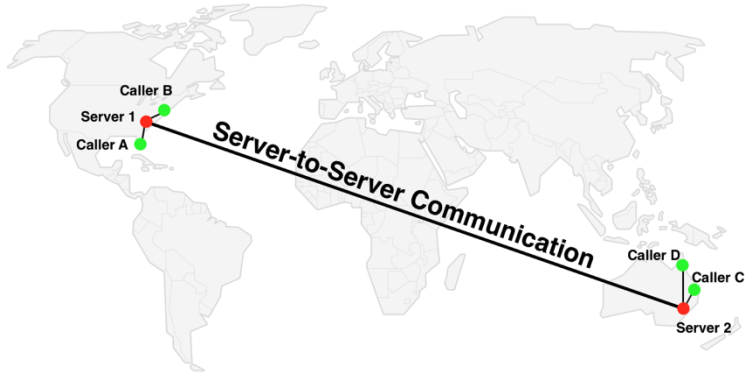


SFU Some Caveats - Large Meetings

So how can we address large meetings?

Although multiple bridges add LATENCY, the performance of the bridge is such that if there is a disruption locally between caller A and Server 1 the response to retransmit is much faster so actually performance of recovering from dropped data is actually much better with bridges in this situation.





Thank You!

Contact us at sales@v-ecom.com