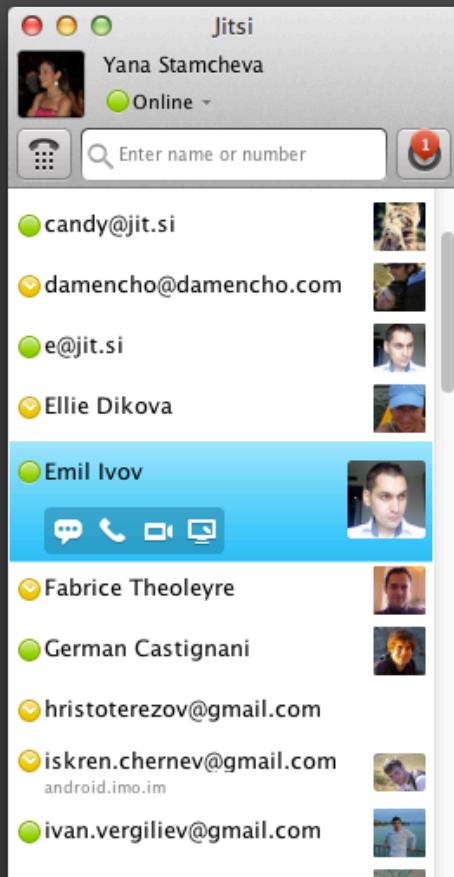


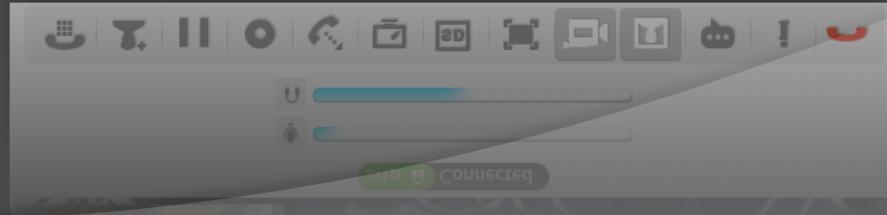


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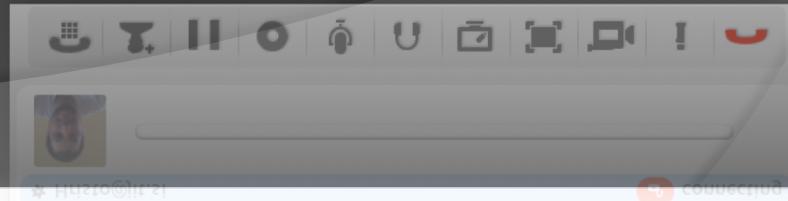
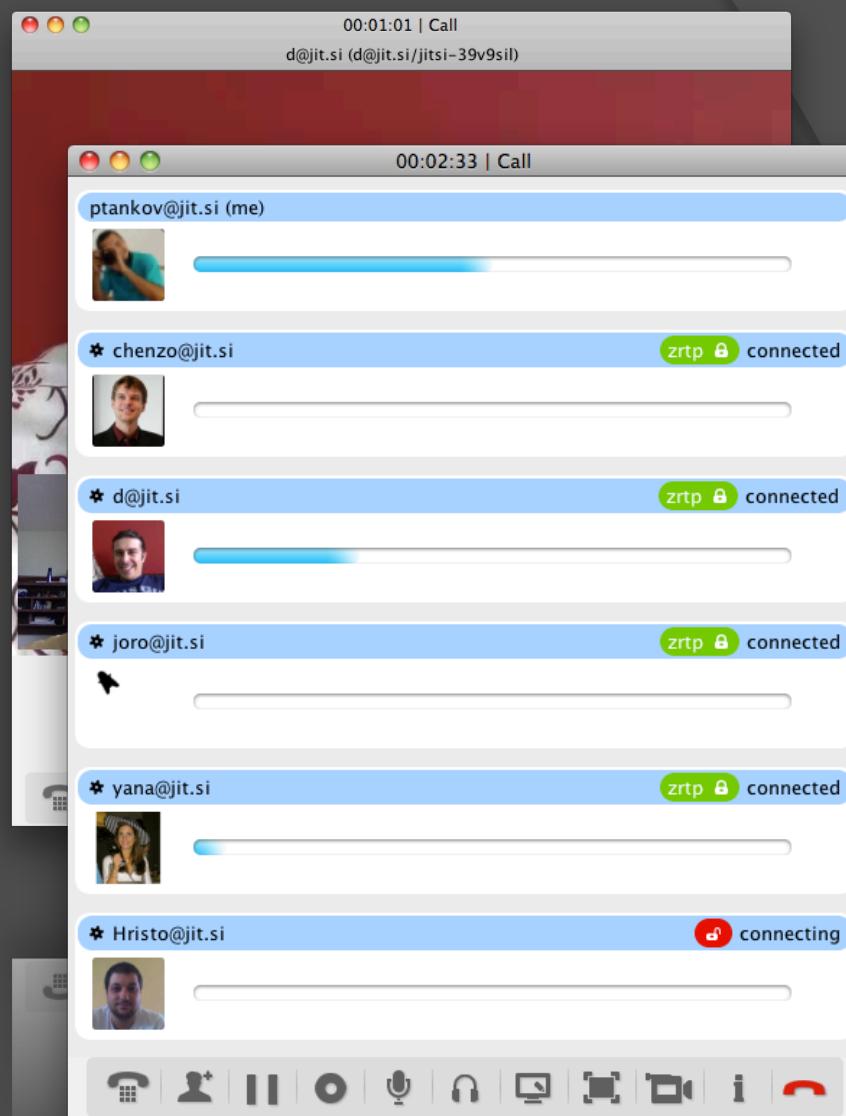


Voice & Video



Voice & Video

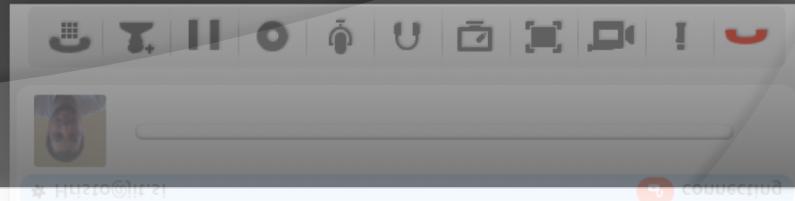
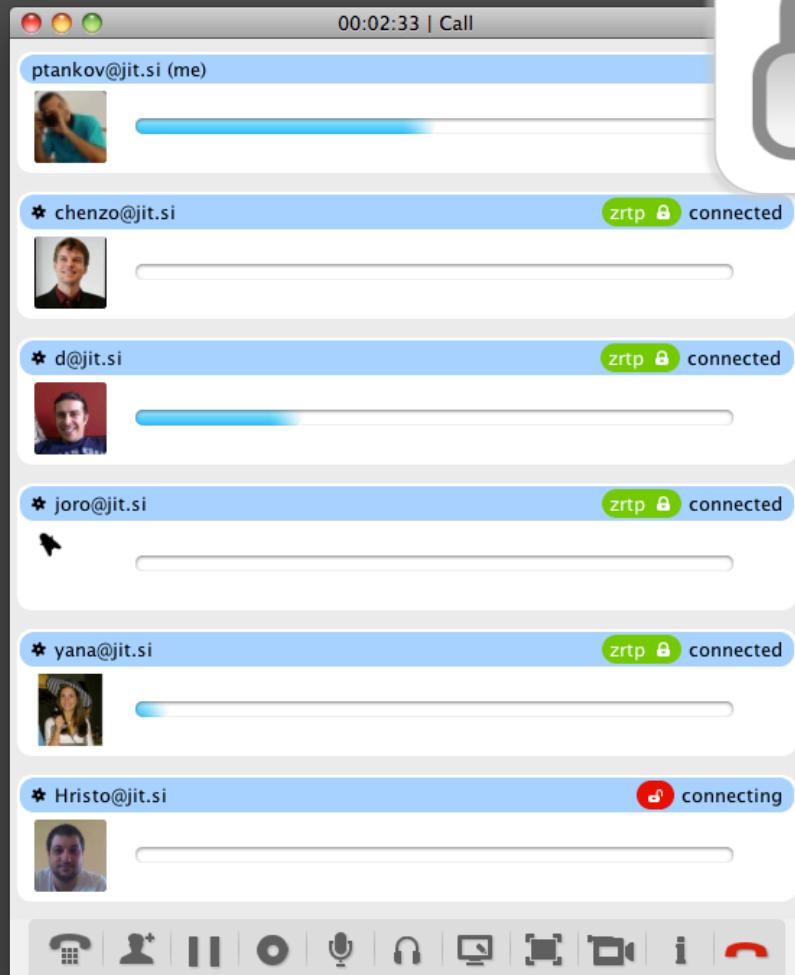
Conference Calls



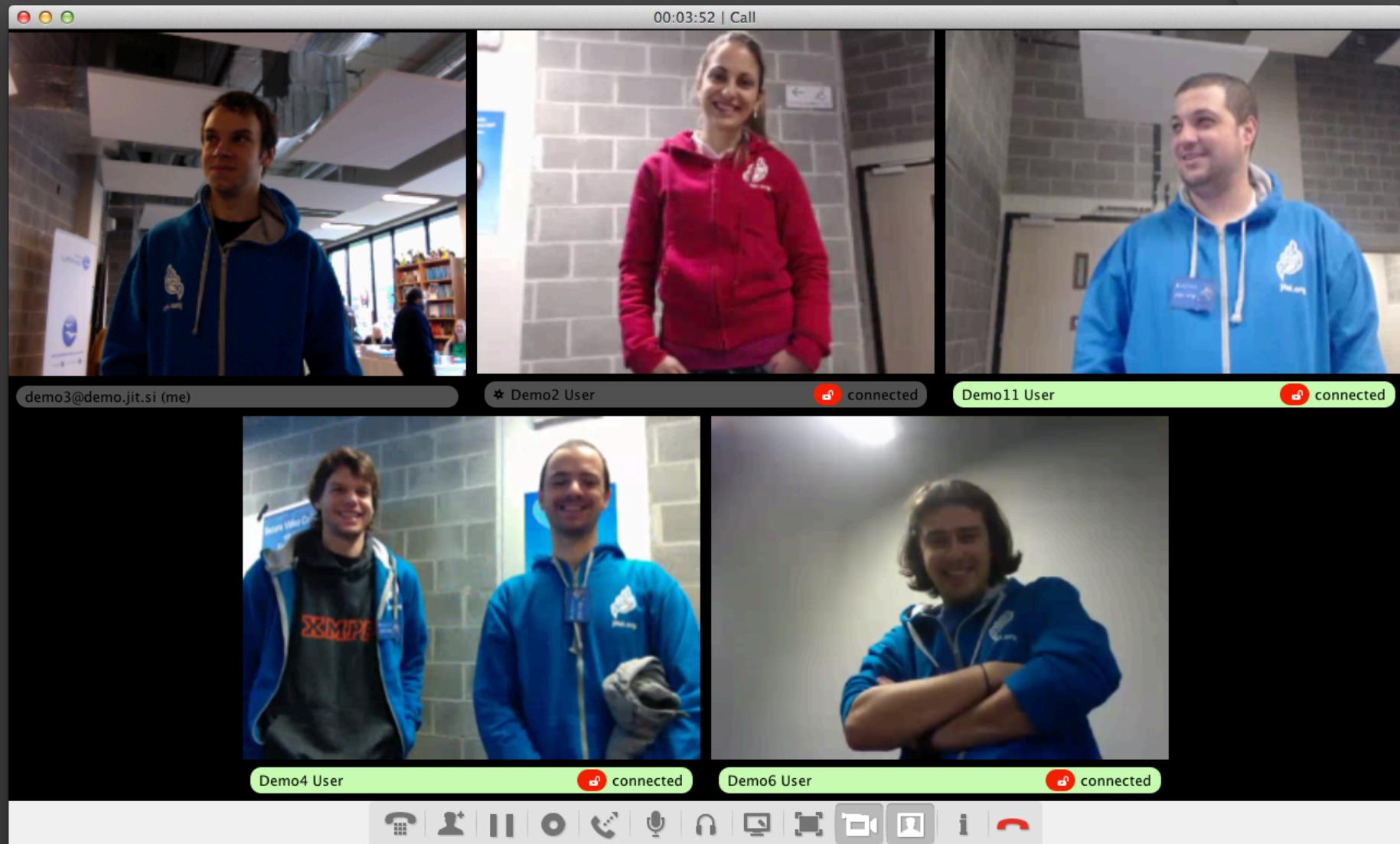
Voice & Video

Conference Calls

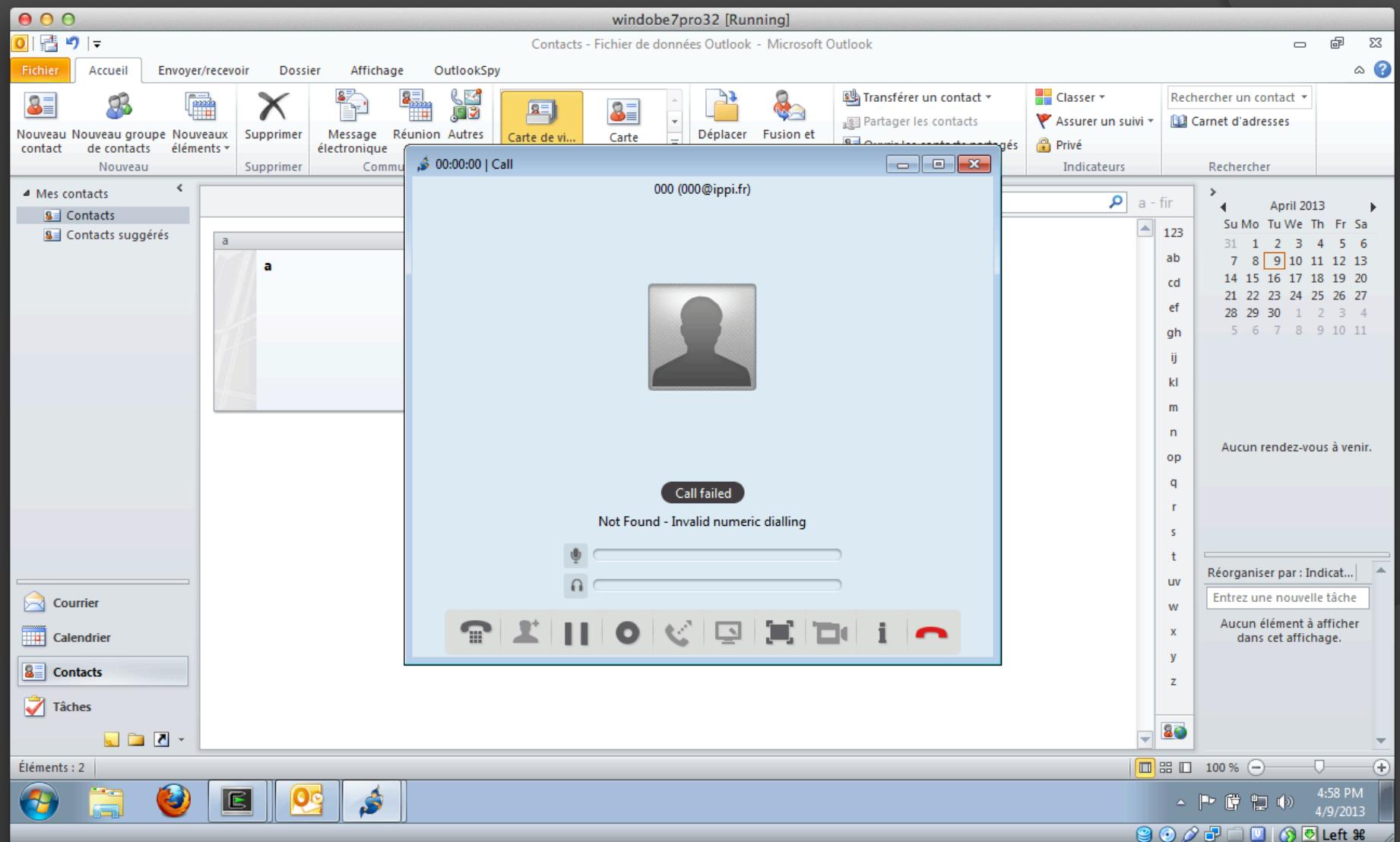
Call Encryption



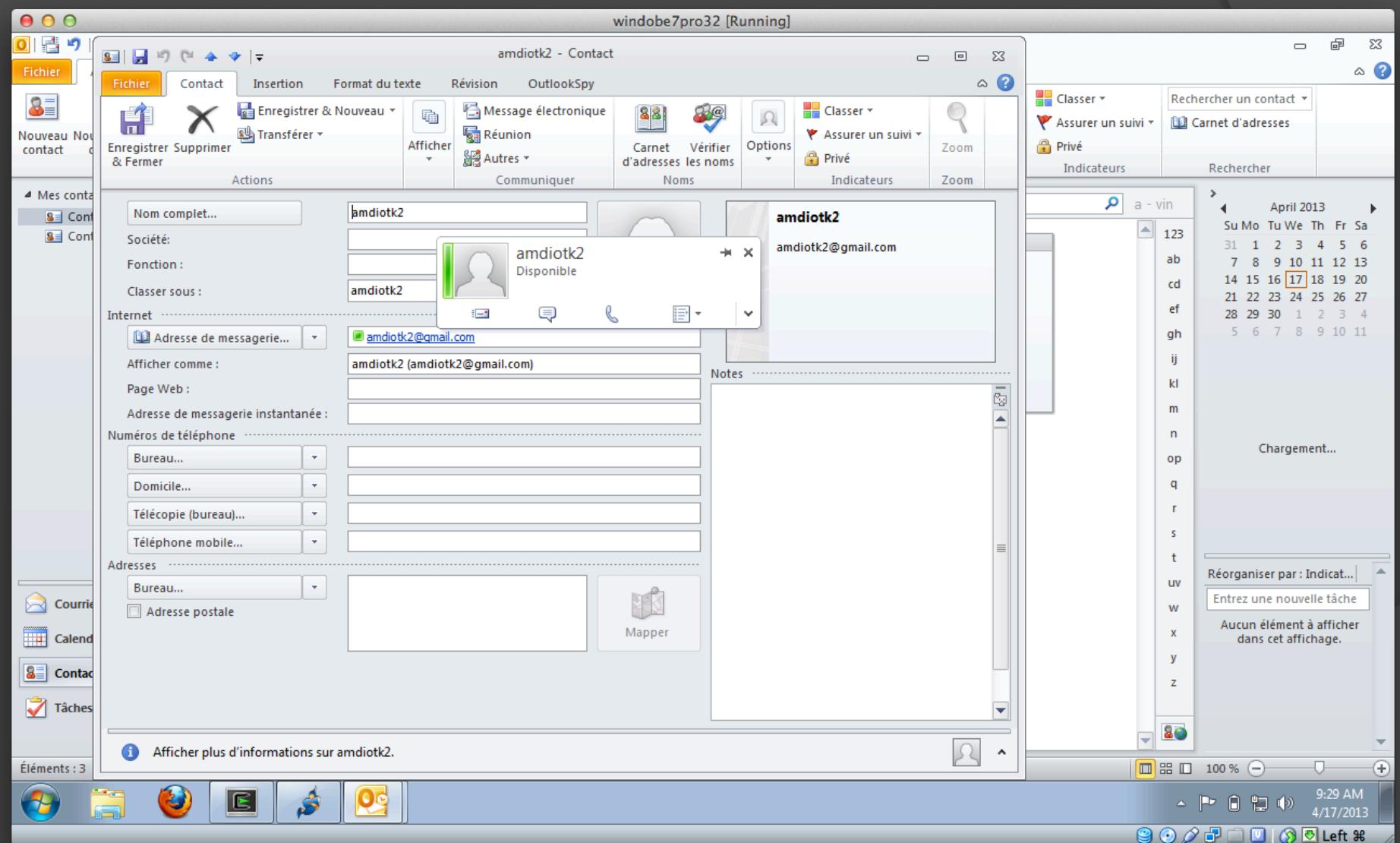
Video Conf Calls



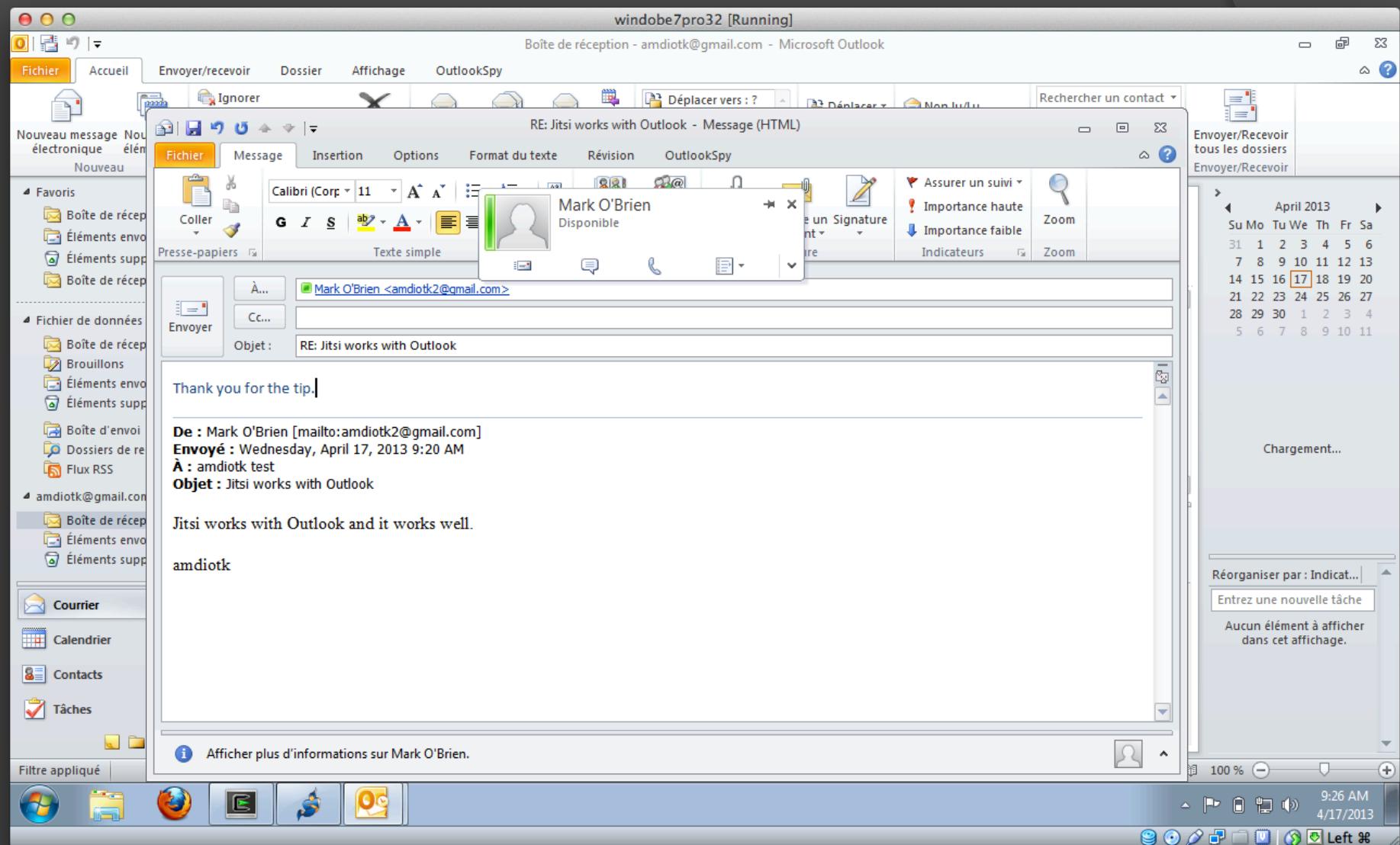
MS Outlook Integration

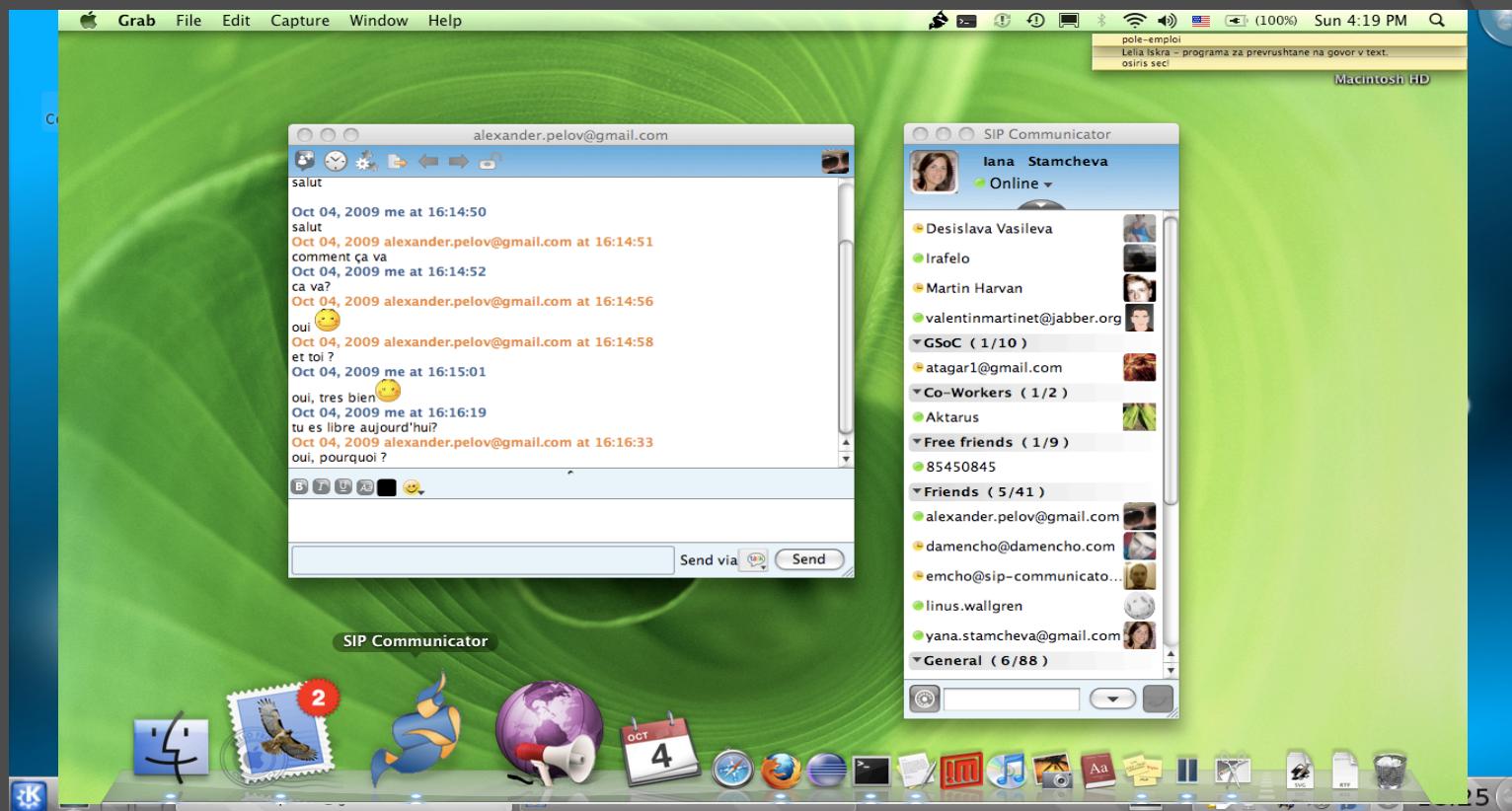


MS Outlook Integration

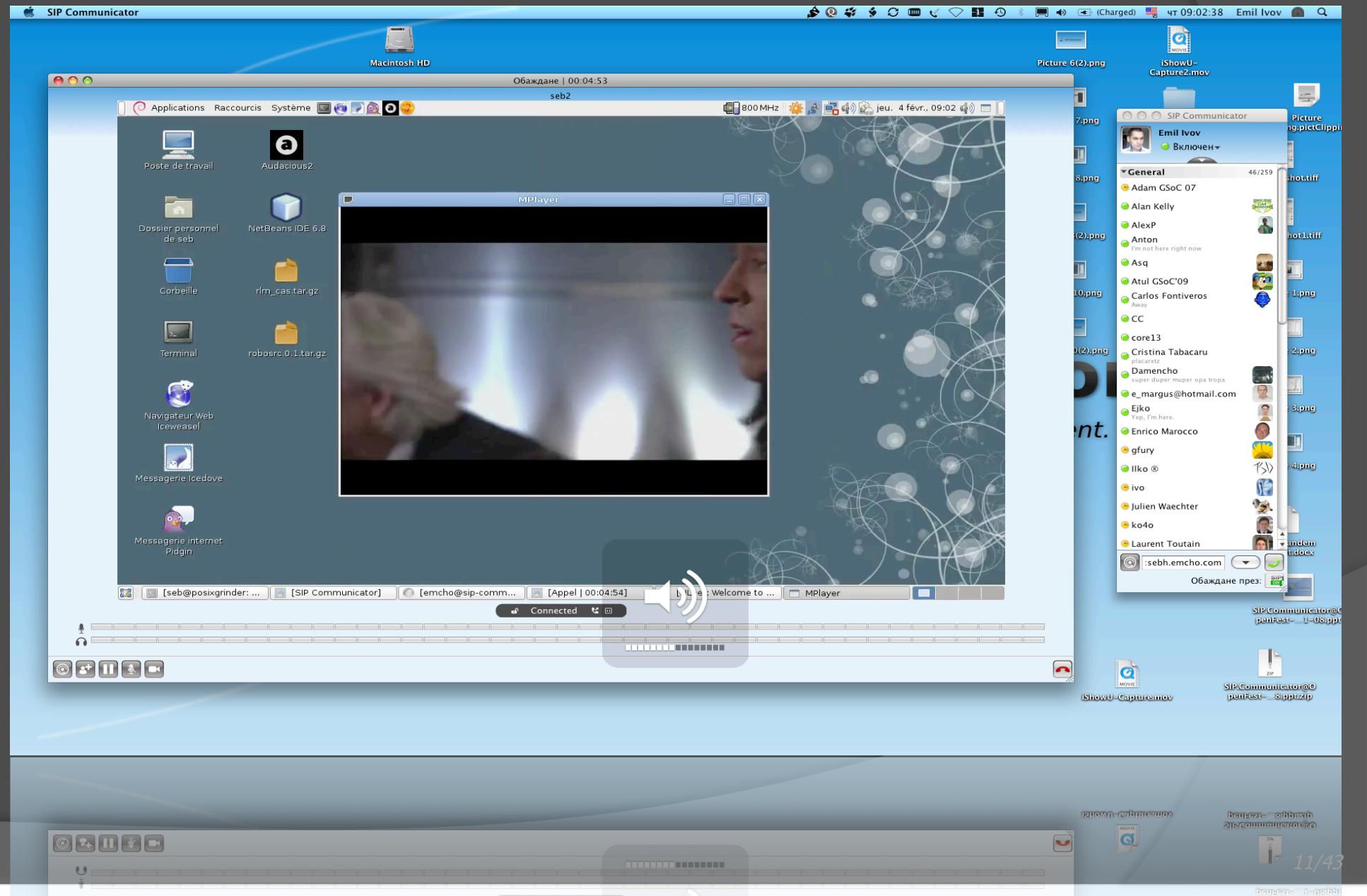


MS Outlook Integration





Desktop Streaming



LDAP

on-line provisioning

external address books

Opus and SILK codecs (with FEC)

libjitsi



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(any questions so far?)



CUSAX: Combined Use of SIP and XMPP

draft-ivov-xmpp-cusax

Emil Ivov - Jitsi

Peter Saint-Andre - Cisco

Enrico Marocco - Telecom Italia



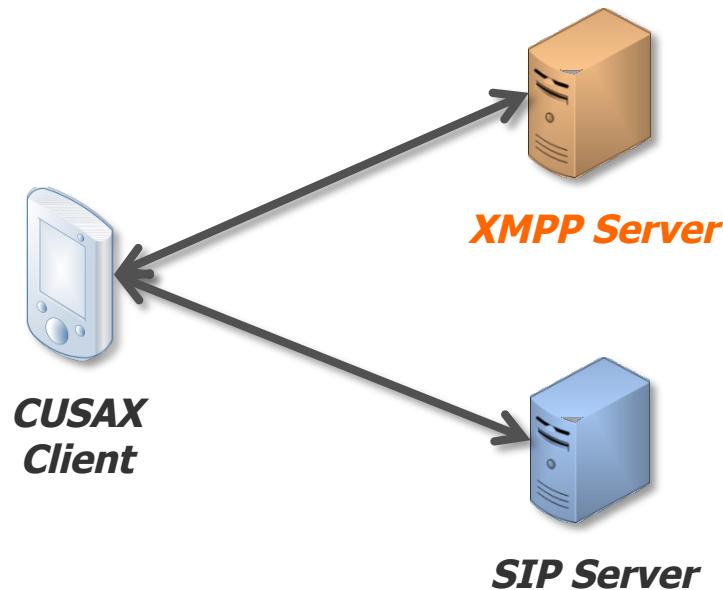
CUSAX: Why?

- Existing SIP server implementations often have:
 - Rich sets of telephony features (voicemail, call queues, call parking, 3PCC ...)
 - Support for media services (transcoding, call mixing, HNT etc.)
 - Abundance of PSTN gateways
 - Relatively poor support for things like presence, instant messaging, server stored contact lists, file transfer, etc.
- Existing XMPP server implementations often have:
 - Great support for things like presence, instant messaging, server stored contact lists, file transfer, etc.
 - Poor or no support for anything related to telephony
 - Mostly an implementation issue
- Entirely based on requests from Unified Communication service provider



CUSAX: What?

- Double stack clients SIP+XMPP clients
- Connect simultaneously to SIP and XMPP infrastructure
- Use SIP for VoIP (only!). No XCAP, no MSRP
- XMPP for IM/P and everything else (no Jingle)





CUSAX Approach

- Not specifying new stuff.
- Reuse
 - vCard-s
 - SIP (Call-Info) headers



CUSAX: Matching JIDs to AORs

- Retrieve SIP AORs from vCard-s

```
<vCard xmlns='vcard-temp'>
    <TEL>
        <CELL/>
        <WORK/>
<NUMBER>+33.1.77.62.43.39</NUMBER>
    </TEL>
</vCard>
```

```
<vCard xmlns='vcard-temp'>
    <TEL>
        <CELL/>
        <WORK/>
<NUMBER>sip:alice@atlanta.com</NUMBER>
    </TEL>
</vCard>
```



CUSAX: Matching JIDs to AORs

- Retrieve JIDs from additional SIP (Contact) headers

```
INVITE sip:bob@biloxi.com SIP/2.0
    To: Bob <sip:bob@biloxi.com>
From: Alice <sip:alice@atlanta.com>;tag=1928301774
...
Contact: <sip:alice@pc33.atlanta.com;gr=some-rsrc>
Call-Info: <xmpp:alice@example.com> ;purpose=impp
```



CUSAX: Related Work

- Similar to SIXPAC but:
 - Does not introduce new SIP headers
 - Does not add new stanza
 - Little interaction between both protocols



CUSAX: Other Details

- SIP and XMPP infrastructure are meant to be provided by a single maintainer.
- Account provisioning recommended but out of scope

Service Login

Service ID: [_____]
Service Passwd: [_____]

Service Login

SIP ID: [_____]
SIP Passwd: [_____]
SIP Server: [_____]

XMPP JID: [_____]
XMPP Passwd: [_____]

OK!

NOT REALLY OK!

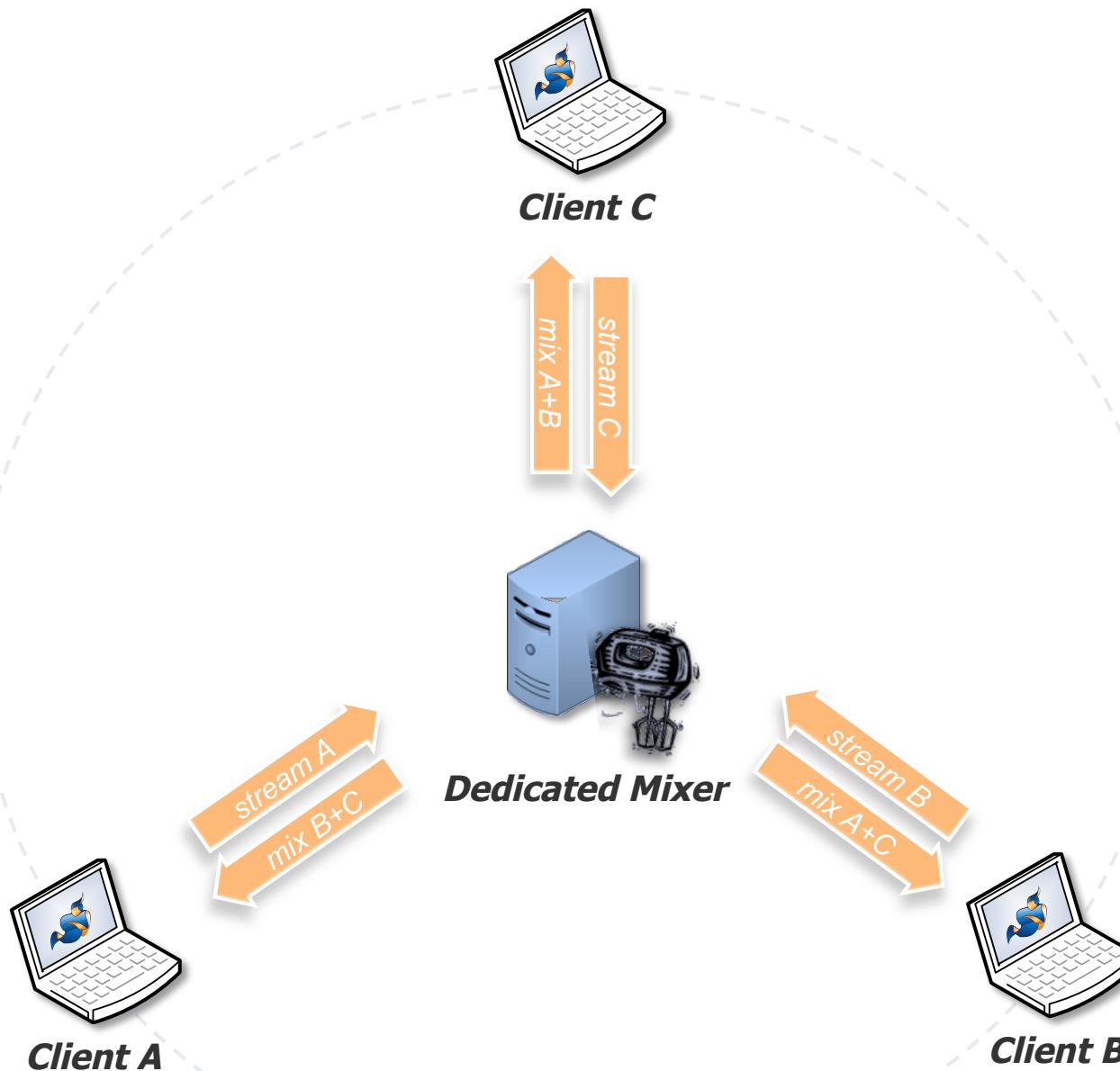


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Conventional Audio Conferencing





Audio Mixing

Client A's speech

+

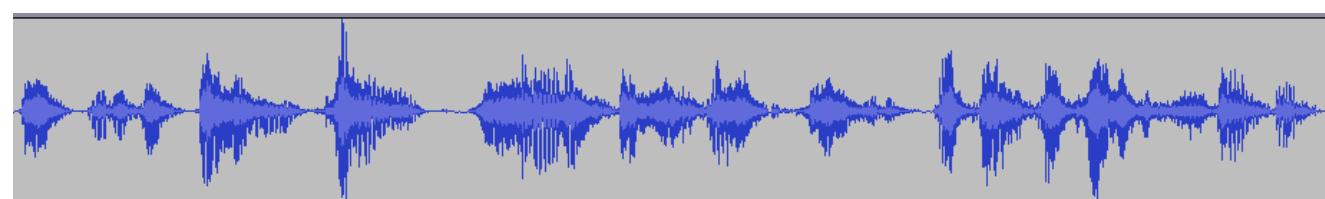
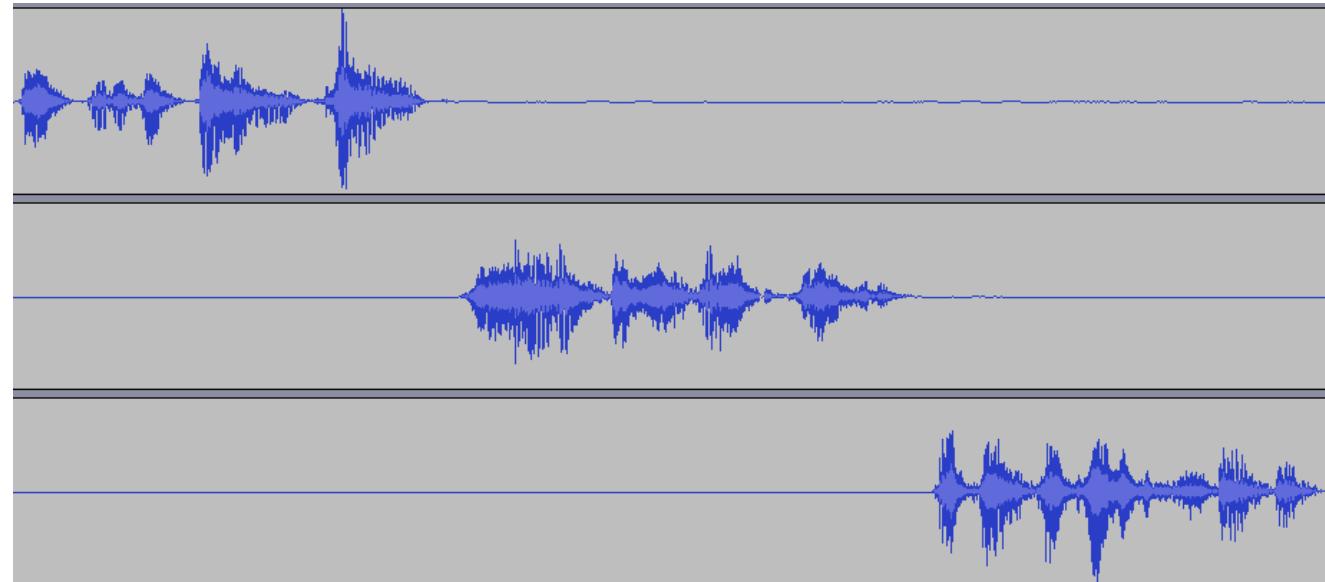
Client B's speech

+

Client C's speech

||

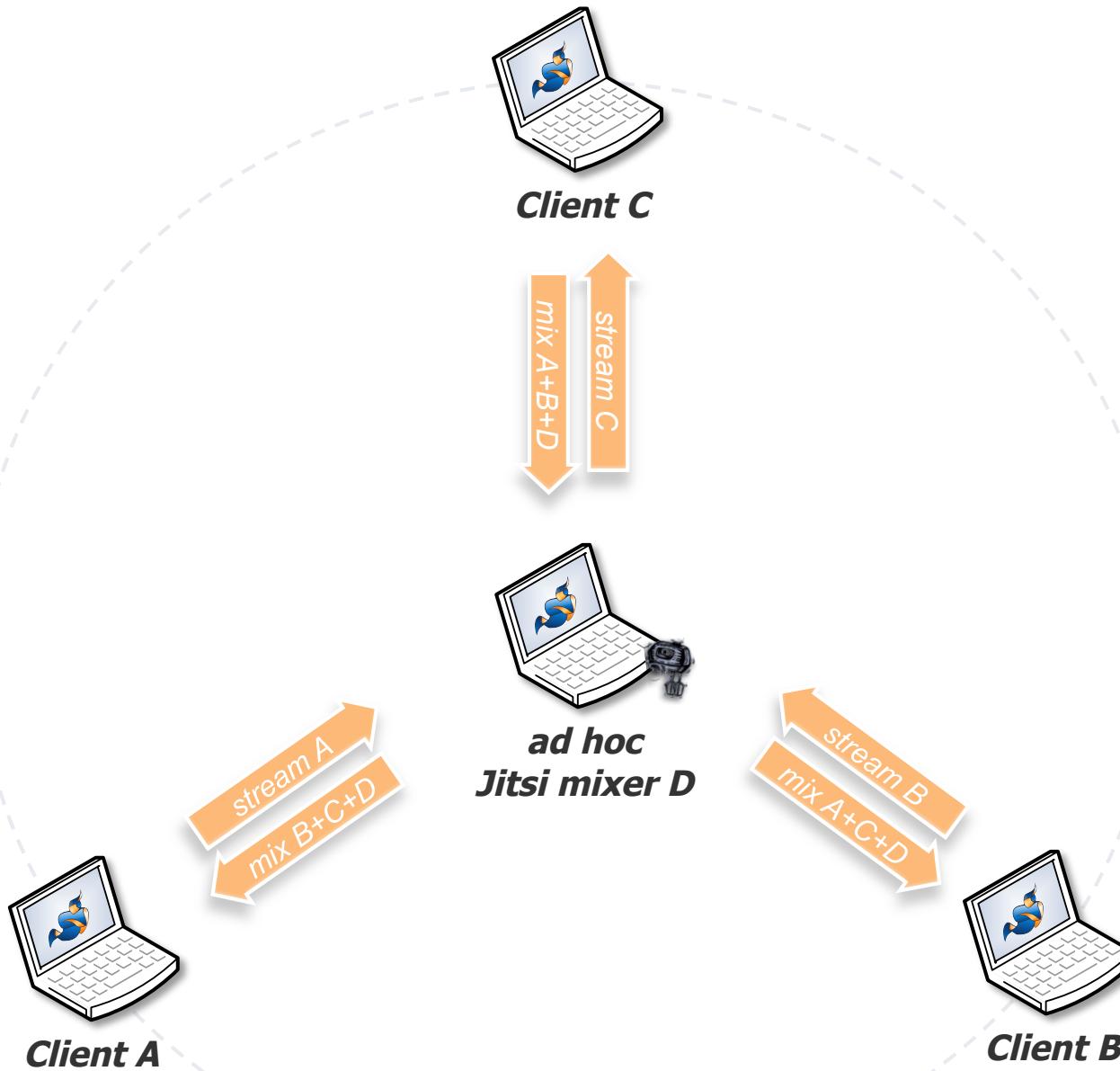
Conf Mix A+B+C



img src: audacity



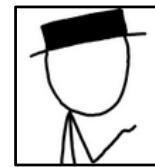
Conventional (ad hoc) Audio Conferencing





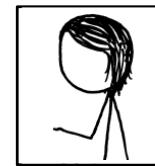
Video Mixing

Client A's video



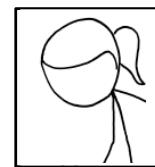
+

Client B's video



+

Client C's video



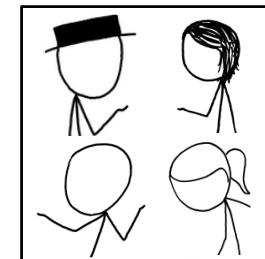
+

Client C's video



||

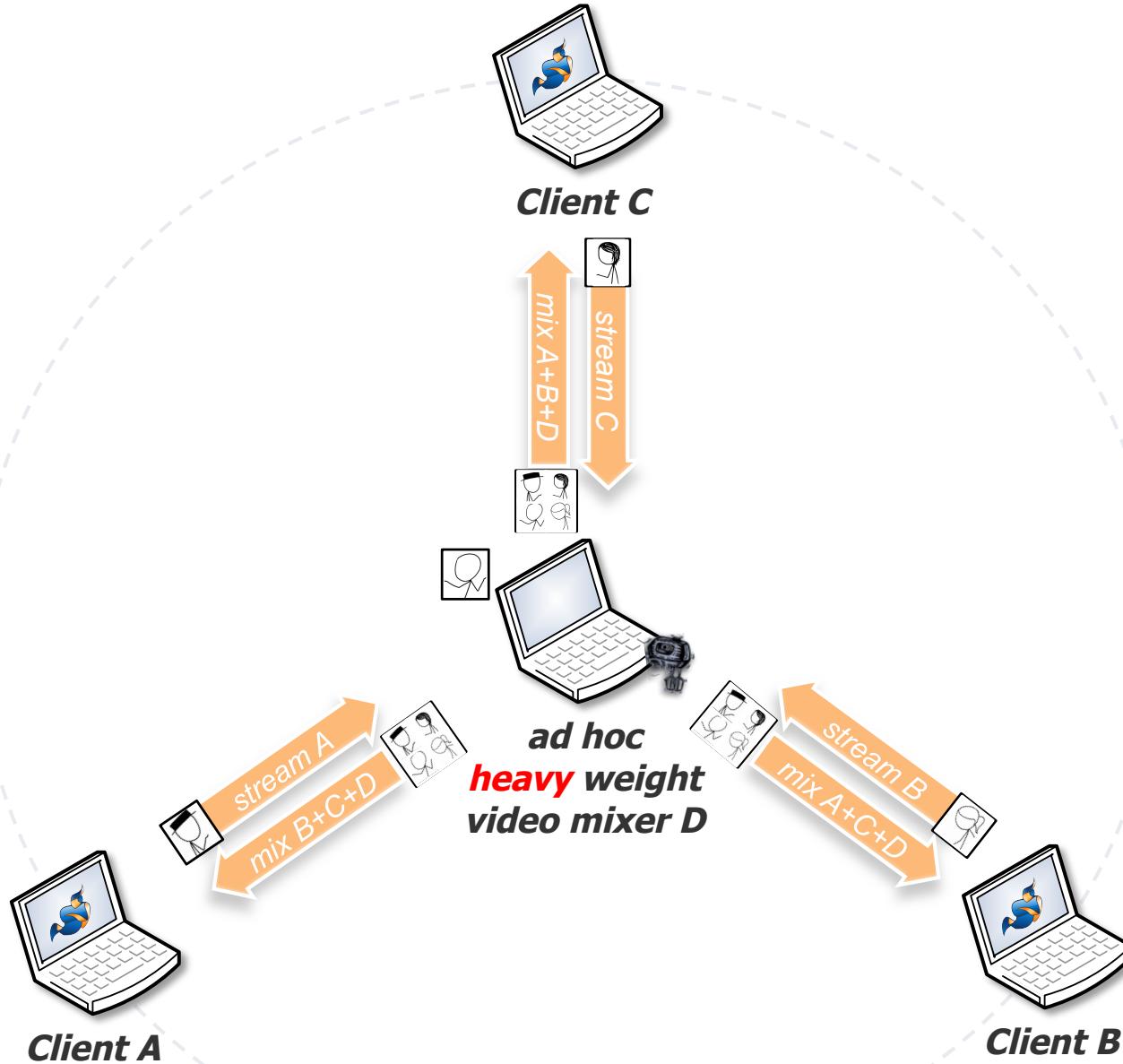
Conf Mix A+B+C



img src: xkcd.org

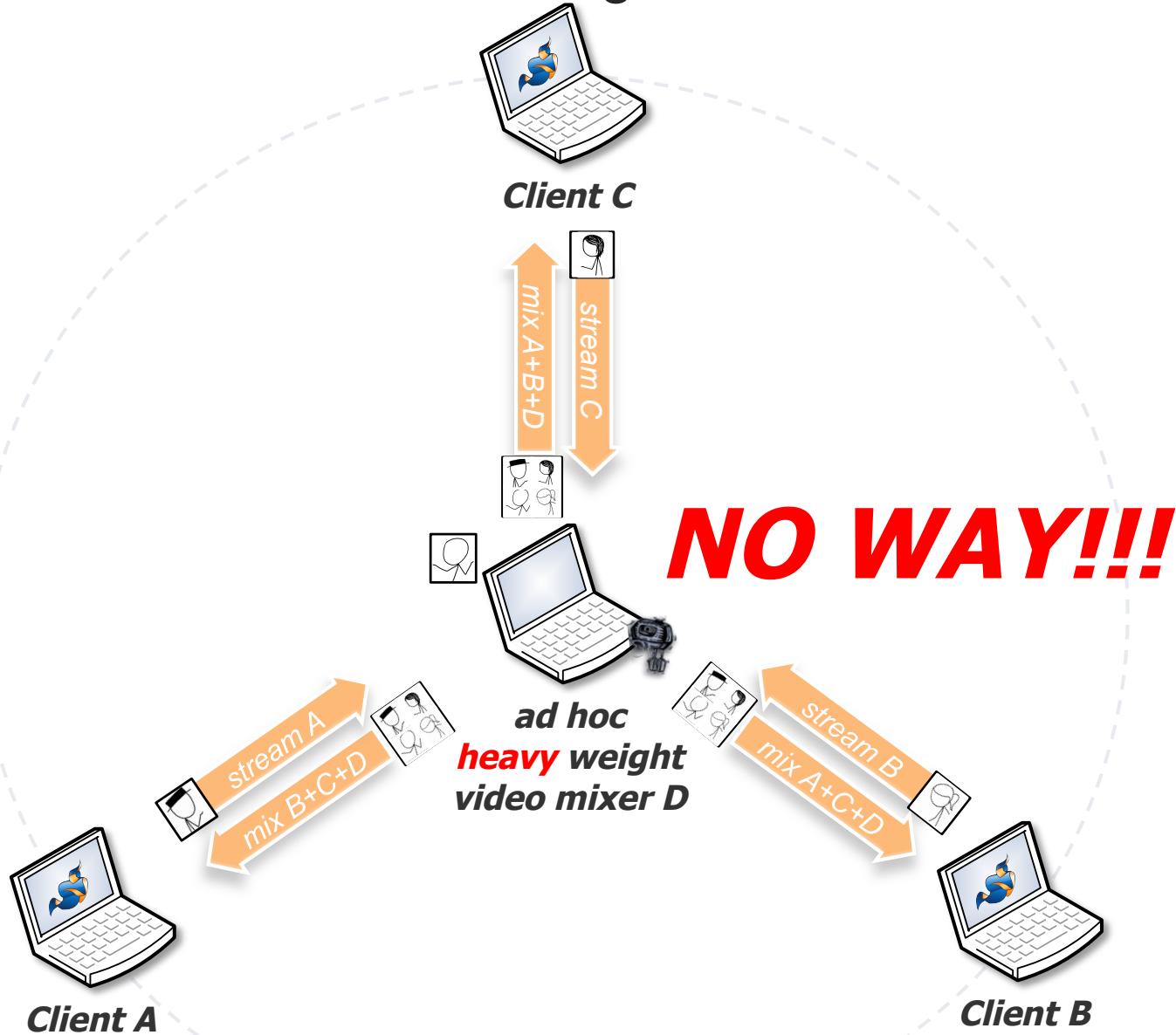


Conventional (ad hoc) Video Conferencing



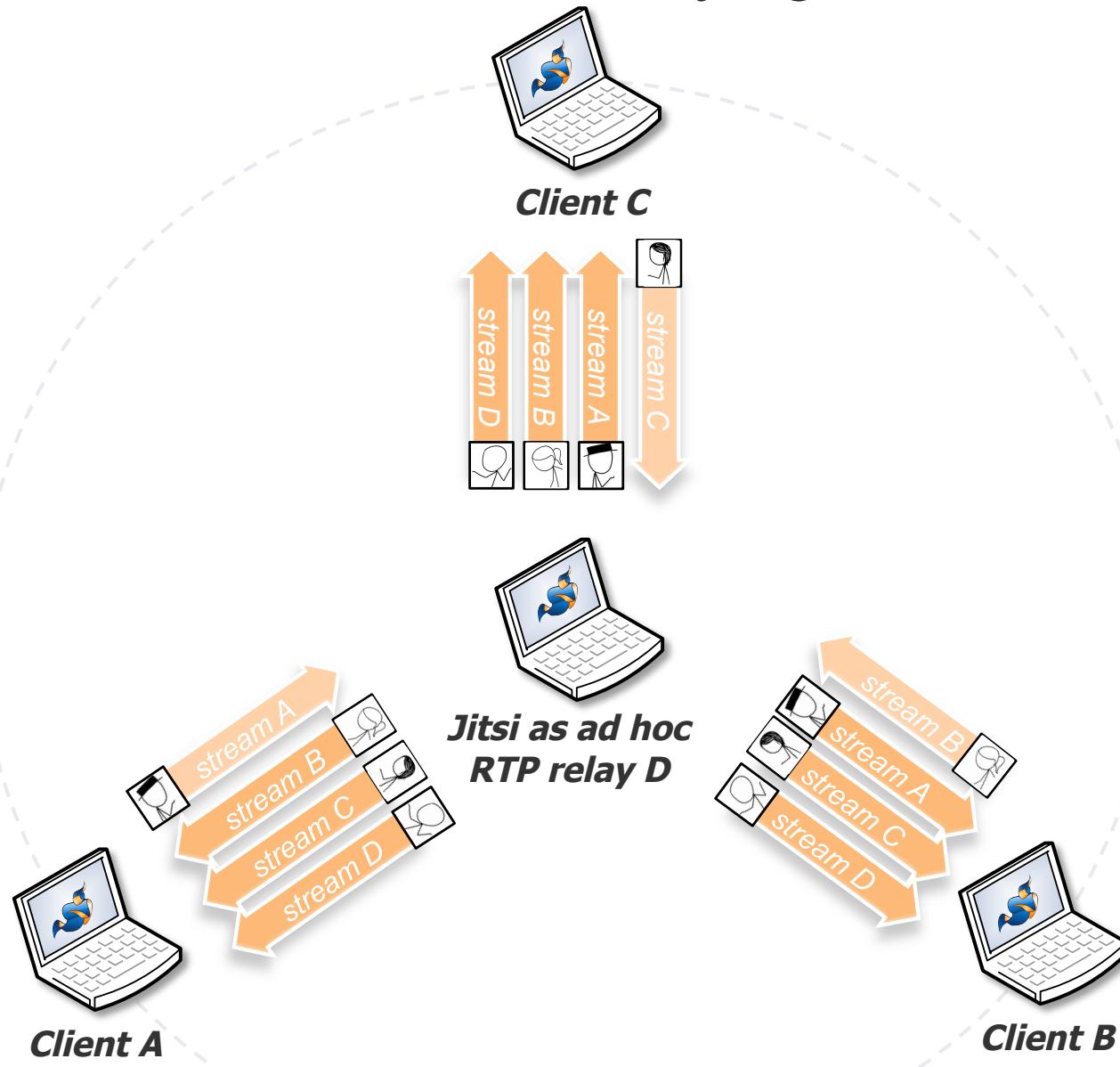


Conventional (ad hoc) Video Conferencing ... not such a good idea





RTP Relaying





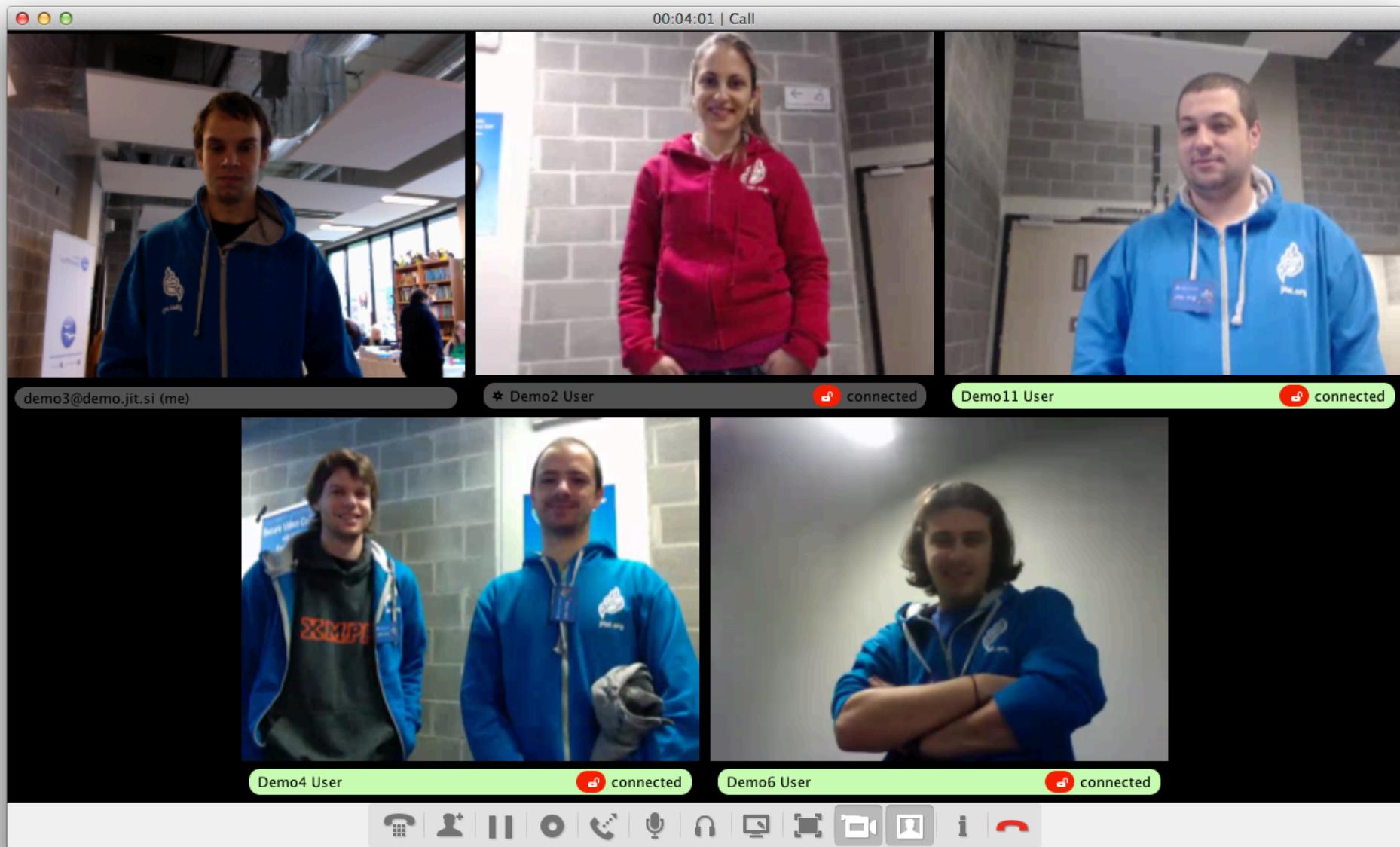
COLIBRI

COnferences with Llightweight BRIdging





Video Conferencing with Jitsi Videobridge



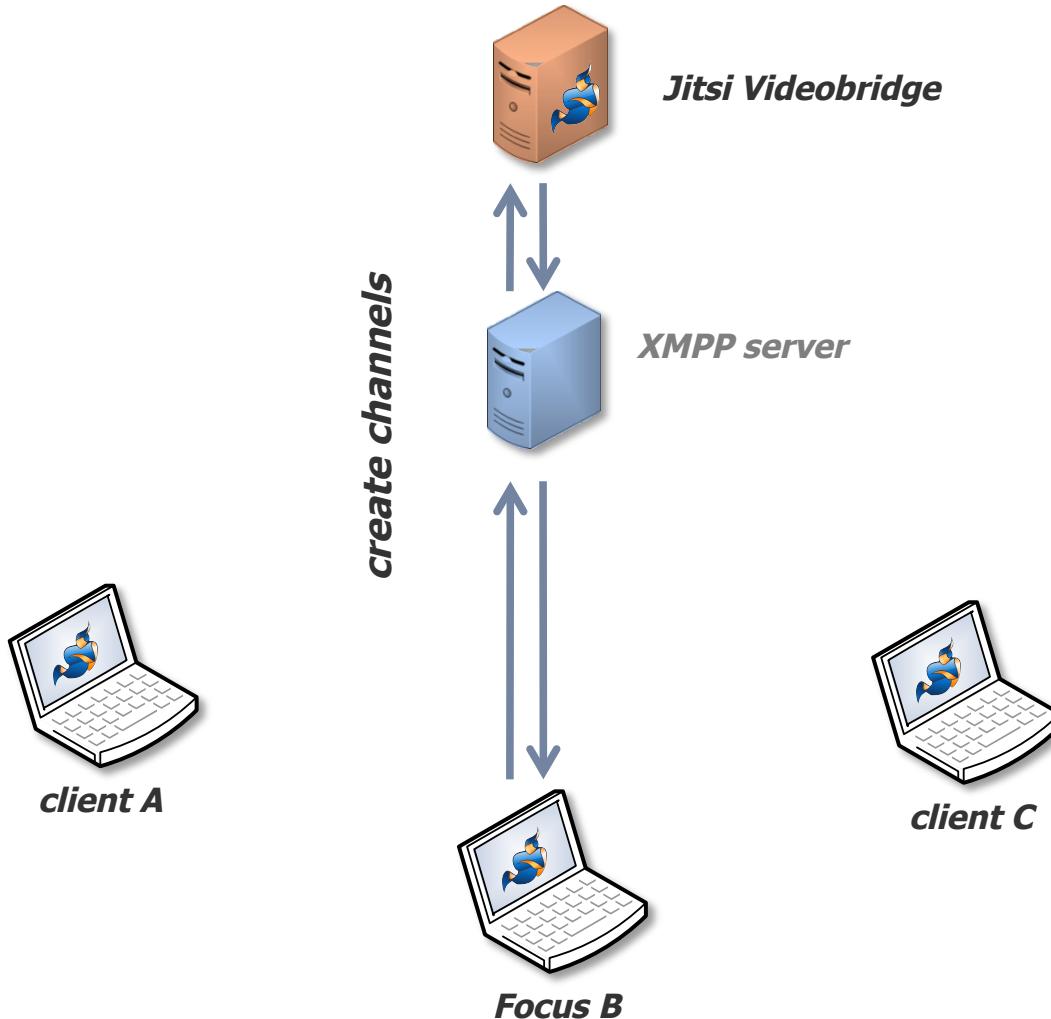


How does this work?



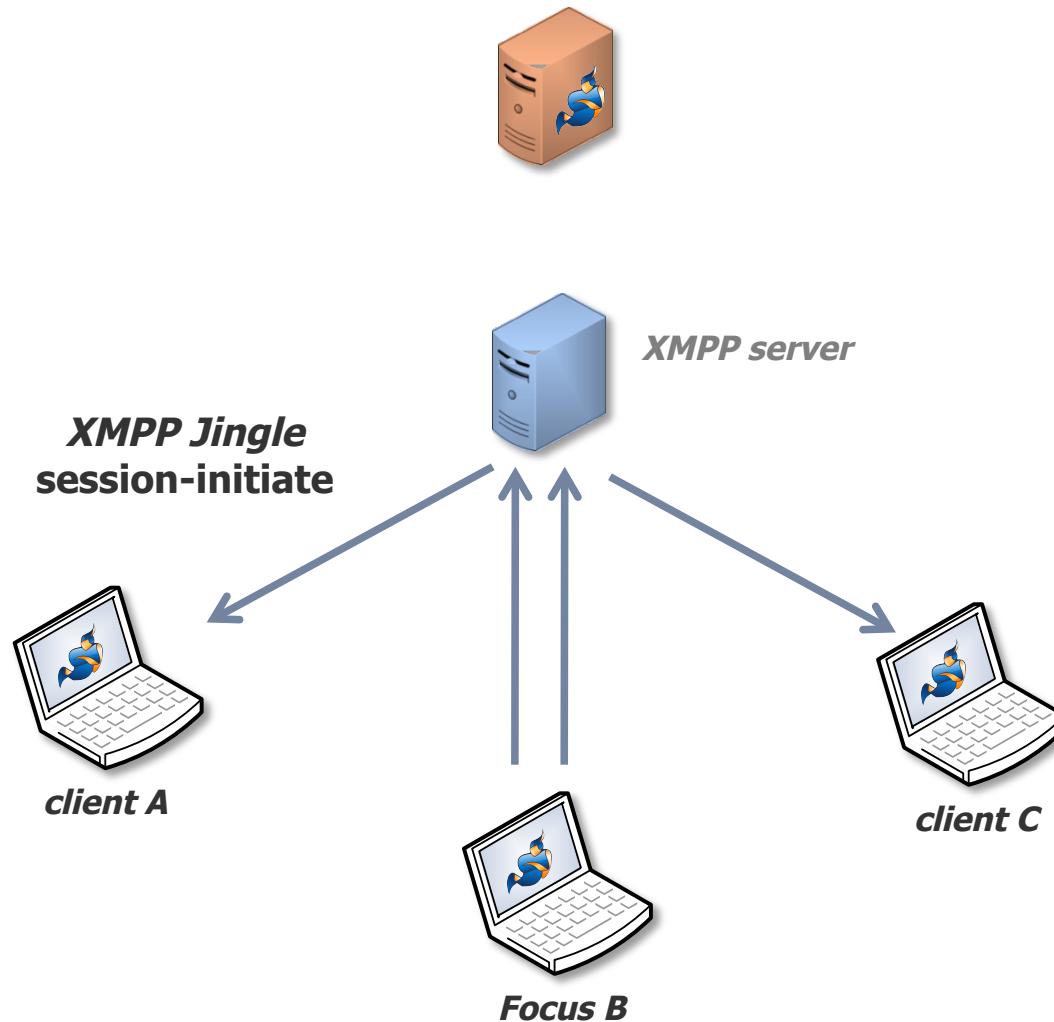
Jitsi Videobridge

A COLIBRI Reference Implementation



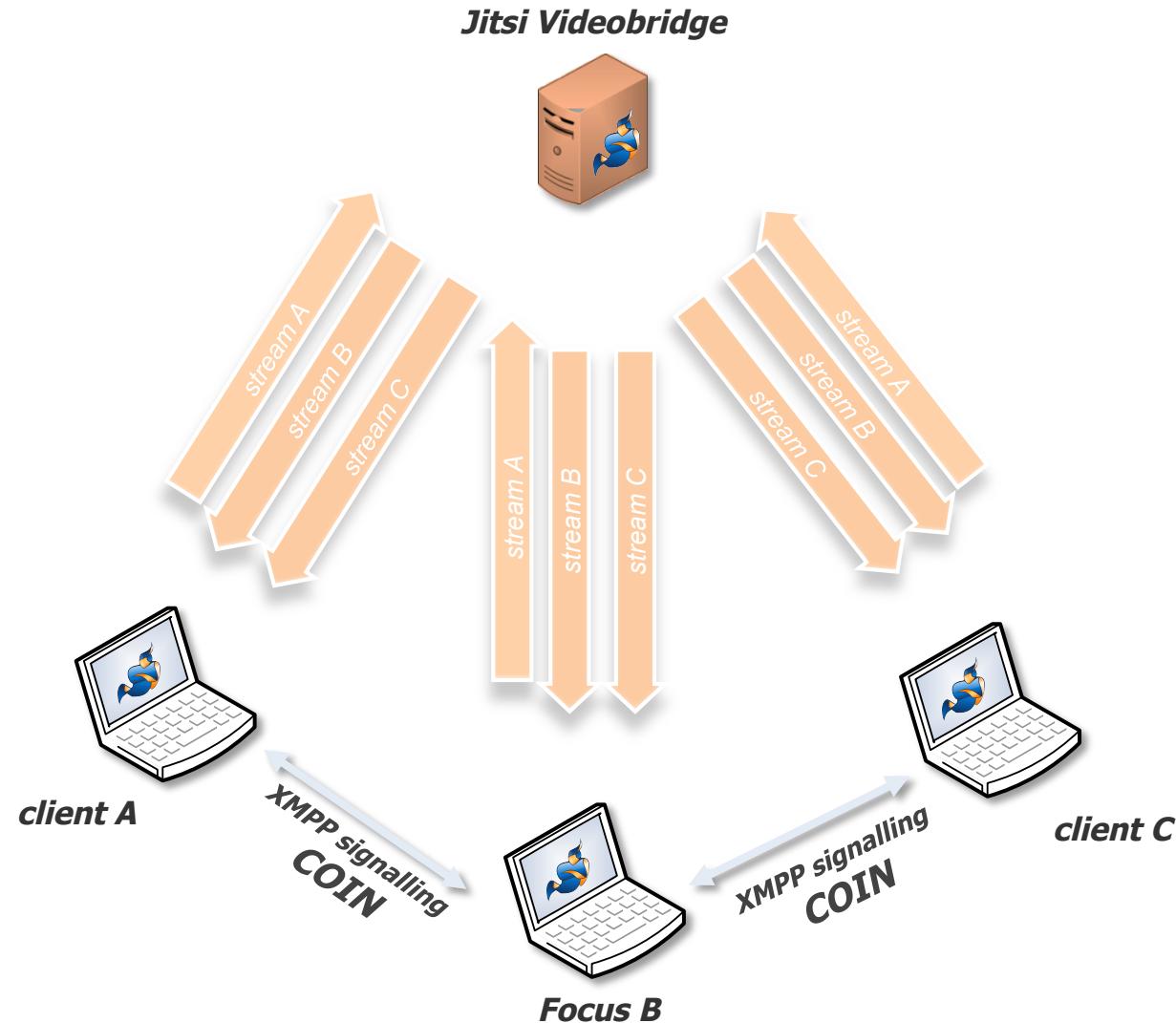


Jitsi Videobridge





Jitsi Videobridge

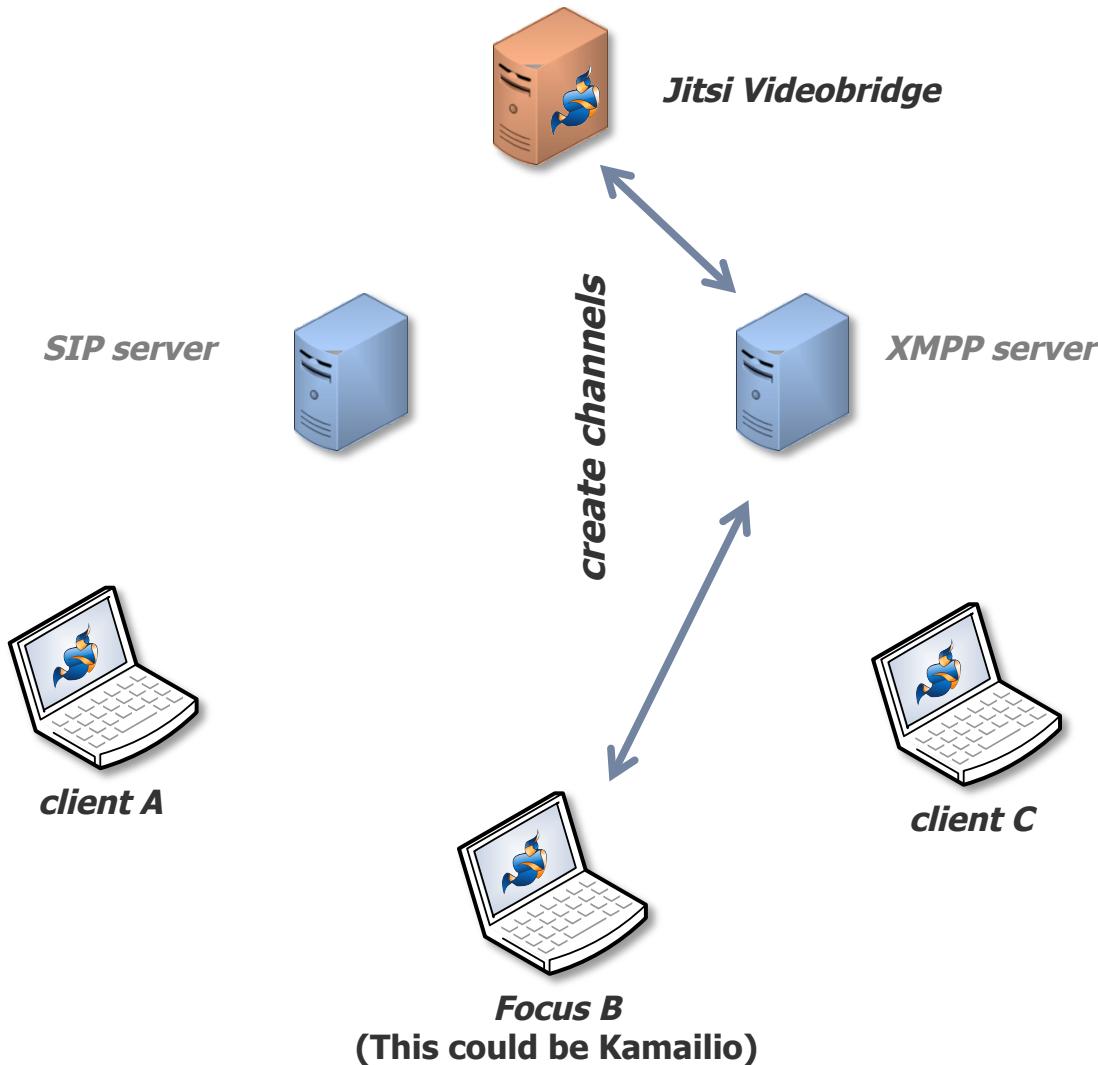




Could this work with SIP?

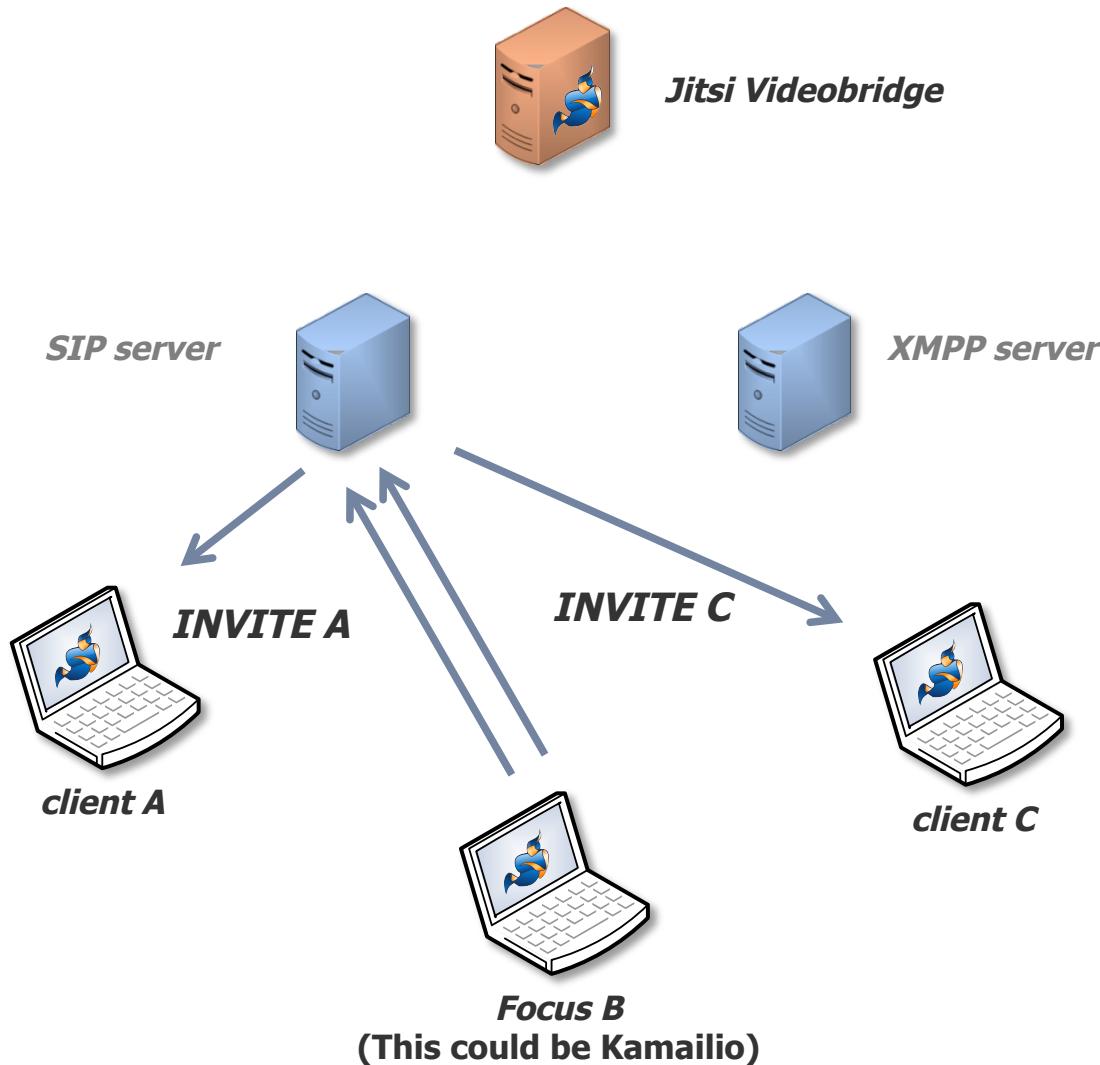


Jitsi Videobridge and CUSAX



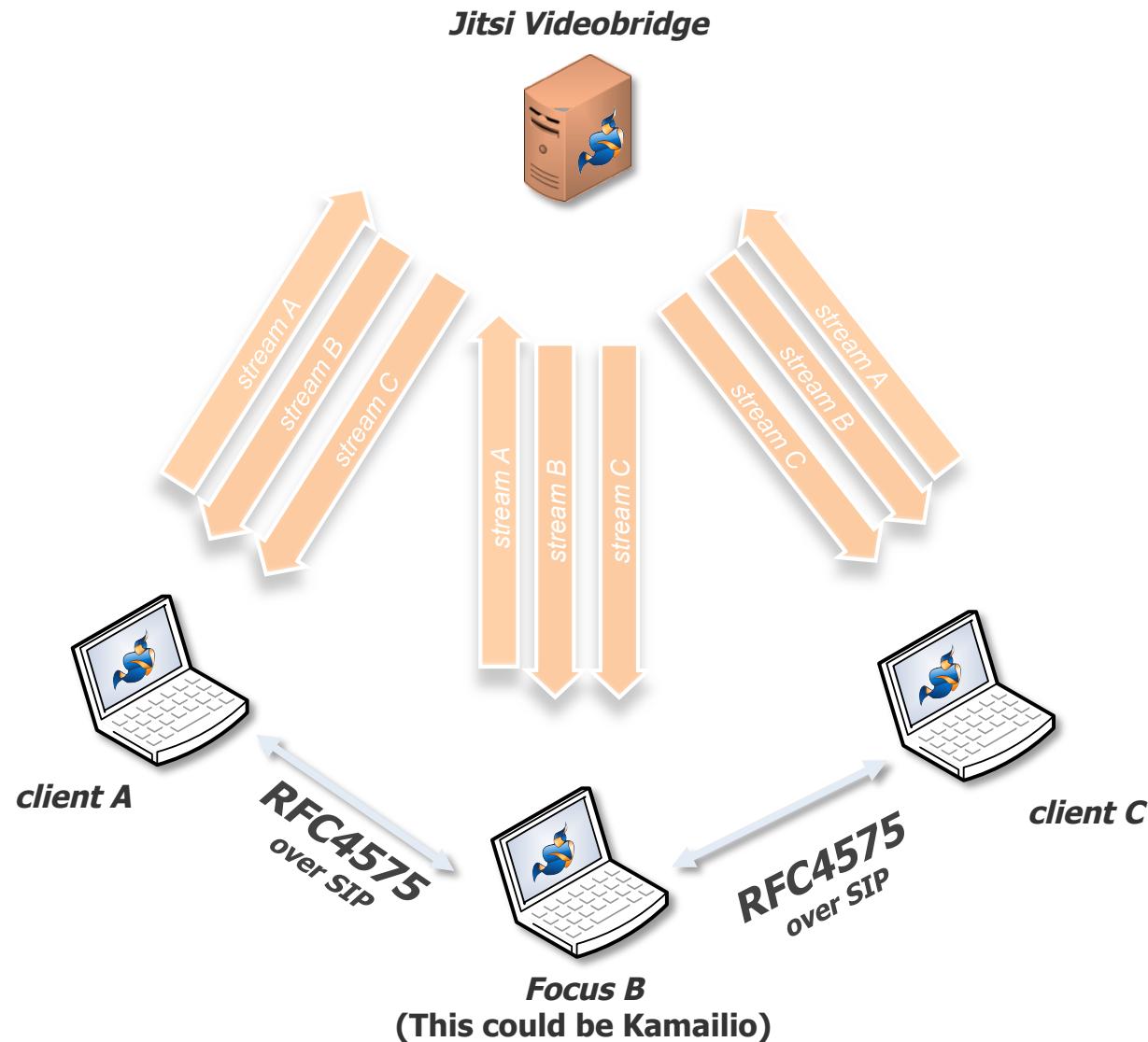


Jitsi Videobridge and CUSAX





Jitsi Videobridge and CUSAX





What Else is Cooking?



SRTP (SDES, then ZRTP and DTLS)



WebRTC

(DTLS and Trickle ICE)



Thanks! Qs r Welcome!

