Rich Communications with Kamailio & IMS
What is he talking about?

- Timetravel: The 90s till today
- IMS on Kamailio

- Definition: Rich Communications
- Rich Communications in SIP and Kamailio

- Practical example: Be surprised...

- Outlook: Doubango Framework & Clients
Let’s look back to the 90’s:

- VoIP is pretty cool
- IMS is pretty cool
  - 3GPP Release 99
...but there was a backdoor:

Voice could still be circuit switched.
And many operators were lazy...

...and kept using circuit switched for voice.
In modern networks there is no backdoor.

If you want Voice, you must have IP.
EVERYTHING is IP!
And now?

- Just All-IP networks left (e.g. LTE, DSL, ...)
- VoIP & SIP is still pretty cool... ...but quite often not really standardized.
- IMS was (back in the 90’s) a pretty cool concept

IMS is still pretty cool!
IMS on Kamailio

- Diameter interfaces added (e.g. Cx, Dx, Sh, Ro, Rx)
- Aligned implementation with IMS specs & created sample configuration
- Will go in Live for an LTE network in Tanzania!
Current Status

So now we’ve got VoIP in mobile/fixed networks.

Boooooring!
Let’s talk about SIP...

- SIP was never designed for just Voice
- H323 was PSTN Emulation
  SIP was Multimedia-Sessions
- SIP is heavily extendable
- Several RFC’s already defined for Rich Communications
Let’s talk about Rich Communications:

- Rich phonebook
- Presence & Instant Messaging
- Video and other Media (Online-Gaming?)
- “SIP beyond VoIP“ was published 2007...

Let’s get started!
SIMPLE Presence

- **SIP for Instant Messaging and Presence Leveraging Extensions**
- Developed by the IETF
- SIMPLE defines an extensible framework based in the Publish-Subscribe-Notify model
- Extended in several RFCs
- Adopted by the GSMA with RCS (rel 1-4, +RCSes)
Rich Communications beyond SIP

XCAP

- XML Configuration Access Protocol
- XCAP-Applications:
  - XCAP capabilities
  - Online Resources (Buddy-Lists, Configuration, ...)
  - Presence rules
  - RLS services (Subscribe to List Changes)

- defined in RFC4825, 4826, 4827 & RFC5025
Rich Communications beyond SIP

MSRP

- Message Session Relay Protocol
- Session based IM for SIP
- RFC 3428 (SIP MESSAGE) is not true IM
- defined in RFC 4975 & 4976
Message Session Relay Protocol

Establish and negotiate an TCP connection between two endpoints

- Chat sessions
- File transfer (RFC 5547)
- Desktop sharing
- Image/Music streaming
Integration in Kamailio

- SIP/SIMPLE is integrated in Kamailio for years
  - Including Extensions for RLS & Conferencing
  - Including an XMPP Gateway functionality

- Integrated XCap-Server was added in 2010

- Integrated MSRP-Relay was added in March 2012

All protocols for GSMA’s RCS-Standards implemented!
What’s next?

Let’s embed Facebook (or Google+ or ...) to your Presence-Experience with LUA:

```lua
function add_facebook_info()
    user = sr.pv.get("rb")
    r, c, h =
    http.request("https://graph.facebook.com/...")
    if c == 200 then
        sr.pv.put("new_content", process(r));
    end
```

And use it in Kamailio:

```plaintext
modparam("app_lua", "load", "/etc/kamailio/lua/fb.lua")
event_route[xhttp:request] { 
    [...]
switch($rm) {
    case "PUT":
        if(lua_run("add_facebook_info"))
            xcaps_put("$var(uri)", "$hu", "$new_content");
        else
            xcaps_put("$var(uri)", "$hu", "$rb");
        exit;
    [...]
```
Just imagine what you could do...

• Use Instant-Messaging for posting on your favorite social network

• Add friends to your buddy list and on your favorite social network using one interface

• Use Facebook photos in your buddy-list

• How about a „Like“ button in your SIP/IMS IPTV-App?
Now we’ve got the Server. How about a client?

The Doubango Framework is an Open-Source/GPL client Framework, with full support for:

- SIP Audio and Video
- SIP Presence / Simple
- XCap
- MSRP
- Audio/Video (AMR, Speex, G.729, G.711, GSM, iLBC, VP8, H.264, H.263, Theora, MP4V-ES...)
- Full HD (1080p) video
More on Doubango.org...

With Reference Implementations:
• IMSDroid for Android-Devices
• iDoubs for IOS (iPhone, iPad, iPod)
• Boghe for Windows

and a brand new SipML5 using WebRTC:
• Audio and Video
• For easy integration into Browsers (or social networks, or...)
• No Plugin or Gateway required
• just HTML5 and WebRTC
Questions?
Thank you!
Contact: www.ng-voice.com - carsten@ng-voice.com