



1st TF-WebRTC Meeting

Paris, France

Monday, 15 December 2014

After a short preparation phase the new task force of the GÉANT Association to provide a forum for exchanging and promoting ideas, experience and knowledge, as well as fostering collaborations among National Research and Education Networks and academic and research institutions on web - real time communication solutions, services, developments and deployments have been formulated. The task force Terms of Reference can be found at <https://www.terena.org/activities/tf-webrtc/TF-WebRTC-v2.pdf>

The very first TF-WebRTC meeting was kindly hosted by RENATER in Paris, France. In addition to that, participants had the opportunity to attend the commercial WebRTC conference happened on the following three days also in Paris. 34 people came to TF-WebRTC and other 17 followed the presentations and the discussion remotely. About 15 people attended the commercial WebRTC conference from our community where we got a discounted offer from the organisers as well as a booth at the exhibition area.

The task force meeting's presentations can be found at

<https://www.terena.org/activities/tf-webrtc/meeting1/programme.html>

1. Introductions

After a brief welcome speech by RENATER, the task force meeting was opened by its appointed chairman, Mihaly (Misi) Meszaros at NIIF/HUNGARNET. The task force aims at serving two major roles: In one hand, it will build up the community around the WebRTC technology and gravitate people from the NRENS and beyond towards new, value-added services based on the technology. On the other hand, the task force will serve as an open forum and information gathering and sharing platform/interface for the EC funded GN4 Phase 1 project's WebRTC related activity in order to help focusing the efforts of the project on tangible achievements that the entire European R&E community can benefit from.

The introductory slides of Misi can be seen at

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/TF-WebRTC-Paris.pdf>

After lunch, Jan Meijer from UNINETT gave an introduction to the GN4 Phase1 project's WebRTC task (coded SA8T2) that's going to start in April 2015 and will have funding for about 2FTE manpower over a period of one year. It is expected that the GN4 project task and the GÉANT Association task force will closely work together. Jan has gained very valuable experiences on real time communications needs of the Norwegian higher education and

academic research sector via the eCampus project of UNINETT. Context-based video collaboration seems to be the hottest topic for them to be solved. WebRTC is the most promising technology for that because it is web based and supported by the browser (not yet all of them though) without and additional software plugins. The GN4 project efforts in the first year will be focusing on building up the competence and proposing a roadmap for the European R&E sector to be engaged with the industry developments. WebRTC has all the potentials to be a disruptive technology that challenges the existing assumptions and more importantly the existing investments in real time communication platforms across NREN. It is very important to see clearly and do investigation before actually do coding something.

Jan, in his presentation, suggested a mind shift stating that video conferencing is not the primary thing that you do, you want to do collaborative work and video just plugs into that. His slides are available at:

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/meijer-gn4-tfwebrtc.pdf>

2. Presentations about NRENs' work

Frank Rupin and Frederic Loui talked about RENATER's voice, video and collaboration platform development in France. The traditional video conferencing system/service called RENAVisio+ is powered by SeeVogh technology. Due to long procurement cycles and extensive costs on both hardware and operations as well as to limited scalability RENATER considered to introduce a new platform based on WebRTC. This is not to replace the legacy from one day to another but to create an extra opportunity for the users. The new system called RENDEZ-VOUS is powered by Jitsi. Shortly after its launch the new WebRTC-based system served 12000 meetings per month (on one single machine) compared to the old system that only handled 5000 meetings per month. It was a quick success because it is very easy to use and join the service. No complex network settings, no NAT, no firewalls, etc. However, today, users still demand for H323, that's why the two systems must interoperate. The current focus is on SIP audio and video interoperability powered by the FreeSwitch gateway, H323 is challenging though.

The user conception behind WebRTC that is primarily a peer-to-peer technology is different from standard video conferencing. The user community has to be convinced to build a new ecosystem around the new tool. Changing habits needs at least 1-2 years.

The presentation can be found at

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/RENATER.pdf>

Jan Meijer and Stefan Otto talked about the WebRTC related activities at UNINETT, Norway. They have a nation-wide SIP infrastructure powered by Microsoft Lync. Any WebRTC developments should take this infrastructure into account as a pre-condition. MS actually announced WebRTC support for their Lync development platform already in March 2014. This is mainly for Lync Mobile and Lync Web Apps. UNINETT built a proof-of-concept platform and a SIP-WebRTC audio gateway for experimentation purposes.

The results have been demonstrated by Stefan. For more details please refer to his presentation at

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/Uninett.pdf>

3. Commercial/SME speakers invited

Lorenzo Miniero (Meetecho / University of Napoli Federico II) introduced Janus; a general purpose WebRTC gateway. This is available open source on Git. It has a modular architecture, the core implements the full WebRTC stack and includes plug-in interfaces to clients. All libraries are independent and must be adopted to different browsers.

WebRTC is a peer-to-peer technology deliberately chosen. Why do we need a gateway to legacy? There are good reason for both yes and no. On the positive side, leveraging on the existing technologies (e.g., SIP infrastructures) would be beneficial in various aspects (e.g., in case of signalling that is not covered by WebRTC). The Janus prototype has started to be used for web conferencing, streaming webinars, social TV and other things at the university. Supporting mobile access has just recently started. Google Chrome is promising to translate the full WebRTC stack to Android but this area is open for improvement. Echo cancelling and dominant speaker selection is done by the browser and not by Janus. The SIP gateway functionality has been implemented but there are no plans for H323 support. Might be an area for NRENs to actively engage with!

The slides can be find at:

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/Janus.pdf>

Emil Ivov (Jitsi / Bluejimp) gave a talk titled: Jitsi under the hood - The nuts & bolts of using WebRTC. Jitsi is a video bridge or Selective Forwarding Unit (SFU) that works with WebRTC. Google hangout and Skype woks the same way with video routing. While traditional MCUs mix the source signals and transfer one single stream to the client, the SFUs transfer the client streams individually. Therefore, interoperability is a key issue in case of MCUs, performance is the only issue in case of SFUs. The performance issue is addressed by various modern protocols such as Endpoint Generated Bandwidth Estimations (REMB) or Adaptive Last N dominant speaker detection and routing (not trivial though). JIGASI is also available that is a Jitsi gateway to SIP.

The Jitsi software architecture was explained by Emil in detail:

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/Jitsi.pdf>

Stefan Alund, Ericsson Research, talked about OpenWebRTC and Browser. OpenWebRTC is an independent, open source implementation framework at Ericsson, Brower is the only browser that supports WebRTC on iOS at the moment. Ericsson supports it on iOS but it has been developed open source. Currently H.264 video coding is used. It is expected that the new H.265 will offer 20% bitrate spare for the price of 10 times CPU usage. But, the latest mobile devices are getting strong on CPU.

A demo application and open source documentation is available on Git

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/OpenWebRTC.pdf>

Pedro Rodriguez (Lynckia / UPM) gave a Licode project update. Licode is an open source WebRTC MCU with authentication and recording functionalities. The software architecture details can be found on the slides:

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/Lynckia.pdf>

Victor Sanchez (MashMeTV / spin-off from UPM) gave insights in building real-time experiences with WebRTC. MashMeTV is a social video-collaboration platform in the cloud that integrates many tools. Today, it has 800.000+ users over 72 countries. It provides a real-time discussion platform but also a president virtual room in the cloud. It switches from a mono-user experience to a multi-user concept. Every digital content can be synchronized and even recorded/archived. It syncs with most of the social tools, including Google docs, Slideshare, etc. Screen sharing works from the cloud, it streams from the CDN, only operations are sent down to the client to keep in sync.

It is a start-up, most of the clients are innovators, let's make a change!

<https://www.terena.org/activities/tf-webrtc/meeting1/slides/mashmetv.pdf>

Singh Varun (callstats.io) talked about congestion control and performance monitoring in WebRTC. It is a contribution to the Monitoring and measurement WG of the IETF. The tool can be used by the users to monitor their sessions. Several statistical APIs are available. Transport metrics like latency is the most important factor. New features, specifications and wider deployment is to come. The presentation is not available.

4. Closing, next meeting, AoB

In the closing discussion attendees expressed their wish to include more use cases and to figure out what's going to happen on the greenfield. The aim is not to re-implement existing services with the new technology but provide additional value. The browser support issues seems to be the highest barrier at the moment from the service providers' side. It is important to avoid creating separate islands of services. We have to work together!

The next coming public TF-WebRTC meeting will be hosted by NIIF/HUNGARNET on 19 May 2015 in Budapest, Hungary, followed by a GN4 project activity kick-off (invitation only) on 20-21 May 2015.

List of attendees

- Mihály Mészáros (Misi) - NIIF Institute
- Rui Ribeiro - FCT|FCCN
- Emil Ivov - jitsi.org
- ELIAS PEREZ CARRERA - Quobis
- Bartłomiej Idzikowski - PSNC - Poznan Supercomputing and Networking Center
- Panos Louridas - Greek Research and Technology Network
- Erwann THORAVAL - MINES ParisTech
- Dean Bublely - Disruptive Analysis
- Renato Furter - SWITCH
- Vesa Savolainen - Funet/CSC
- Jürgen Hornung - German National Research and Education Network, DFN
- Víctor Sánchez - MashMeTV
- Gonzalo Martín - MashMeTV
- Jan Růžička - CESNET,
- Tim Boundy - Janet
- Pedro Rodríguez - Universidad Politécnica de Madrid/Lynckia
- Peter Szegedi - TERENA
- Alan Ford - Pexip
- Fikri FIRAT - Garanti Technology
- Thomas Baerecke - SWITCH
- Frédéric Loui - GIP RENATER
- Franck Rupin - GIP RENATER
- Nejc Campa - ARNES
- Stefan Otto - Uninett AS
- Varun Singh - callstats.io
- Paul Hii - AARNet
- Jan Meijer - UNINETT
- Håvar Aambø Fosstveit - UNINETT AS
- Jardar Leira - UNINETT
- Stefan Ålund - Ericsson
- Lorenzo Miniero - Meetecho
- Guido Aben - AARnet
- Maglogiannis Ilias - GRNET
- Bitá Milanian - GENBAND

participated remotely

- David Vrtin - ARNES
- Alex Galhano Robertson - RNP - Rede Nacional de Ensino e Pesquisa
- Ben Fineman - Internet2
- Emmanouil Zouraris - University of Crete, Networks and Communications Center
- Kevin Dermody - HEAnet
- Victor Pascual - Quobis
- Charalampos Tsipizidis - Aristotle University of Thessaloniki
- Rob Bristow - TENET
- Dragana Jelušić - Academic Network of Serbia
- Jérémy Hervy - euroscript Systems
- Abdellatif El Maknati - euroscript Systems
- Marie O'Sullivan - HEAnet
- Justin Hourigan - HEAnet
- Hrvoje Lisac - CARNet - Croatian Academic and Research Network
- PAOLO BARBATO - CNR
- Hernan Garcia - RENATA Colombia
- Dennis Baron - Massachusetts Institute of Technology