Real-time communication services infrastructure support

Task update &

4K support status

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WebRTC TF + JRA4 T4&5 meetings, Helsinki

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GÉANT
Networks · Services · People

Real-time communication services infrastructure support

GN2020 GN4-2 JRA4 T5

technical infrastructure support for real-time communication services

Real-time communication services infrastructure support

Key elements:

Develop components for a technical infrastructure that interconnects real-time communication services.

Real-time communication services infrastructure support

JRA4-T5 develops an underlying technical infrastructure, which:

- enables and interconnects a pan-European Web-RTC based set of real time communication and multimedia services and

- links these to traditional conferencing systems and infrastructures.

This includes:

- service verification

- unified dialing

- addressing

- directory harmonisation

- monitoring

Real-time communication services infrastructure support

8 NRENs directly involved:

Cooperation:

Latin American Advanced Networks Cooperation
Argentina, Brazil, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Mexico, Uruguay and Venezuela

Real-time communication services infrastructure support

WebRTC / legacy VC:

- Mihály Mészáros - NIIFI
- Stefan Otto - UNINETT
- Carole Hounkonnou - RENATER

Monitoring / testing:

- Saša Davidović - CARNet
- Tobias Appel - DFN (BADW-LRZ)

Mobile solutions

- Lino Valdivia - RedIRIS (i2CAT)
- Luca De Cicco - GARR (Politecnico de Bari)

Programming / development:

- Dariusz Janny (volunteer) - PSNC
- Piotr Skałecki (volunteer) - PSNC
- Carole Hounkonnou - RENATER

Integration / testing / documents:

- Maciej Stróżyk - PSNC
- Sergiusz Zieliński - PSNC

Real-time communication services infrastructure support

Key objectives:

- to provide the technical aspects of infrastructure for interconnecting a pan-European Web-RTC based set of real time communication and multimedia services

- to link these Web-RTC based set of services to traditional conferencing systems and infrastructures

- follow appropriate GN4-1 SA8T2 recommendations (roadmap report)

GN4-2 SA8T2 – recommendations

Provide a complete solution to end user:

- make one or more easy to use WebRTC desktop videoconferencing service available to all European R&E users through the GÉANT Cloud Catalogue

- closely track market developments for the WebRTC data channel as it has potential for interesting R&E use cases

- establish a GÉANT STUN/TURN pilot service to support WebRTC technology early adoption

GN4-2 SA8T2 – recommendations

Provide functional blocks for integrating by end users:

- continue to investigate the concept of, and possibilities for, a GÉANT Media API Service to facilitate low-cost, R&E domain-specific, contextual communication

- add a WebRTC-to-SIP and WebRTC-to-H323 gateway to the GÉANT cloud catalogue

- investigate the feasibility of establishing a GÉANT service that may act as a hub for key Unified Communication data

Real-time communication services infrastructure support

Provide services to the community:

- GÉANT STUN/TURN service to support WebRTC technology early adoption (several locations)

- GÉANT WebRTC MCU

- WebRTC-to-SIP (and WebRTC-to-H323) gateway

Real-time communication services infrastructure support

Extend basic functionality:

- WebRTC infrastructure monitoring

- Testing engines

- Mobile WebRTC solutions

Follow-up previous tasks:

- eduCONF support + functional follow-up

- directories integration

Is WebRTC mature enough to support high resolutions?

4K WebRTC

Software

- Windows 10

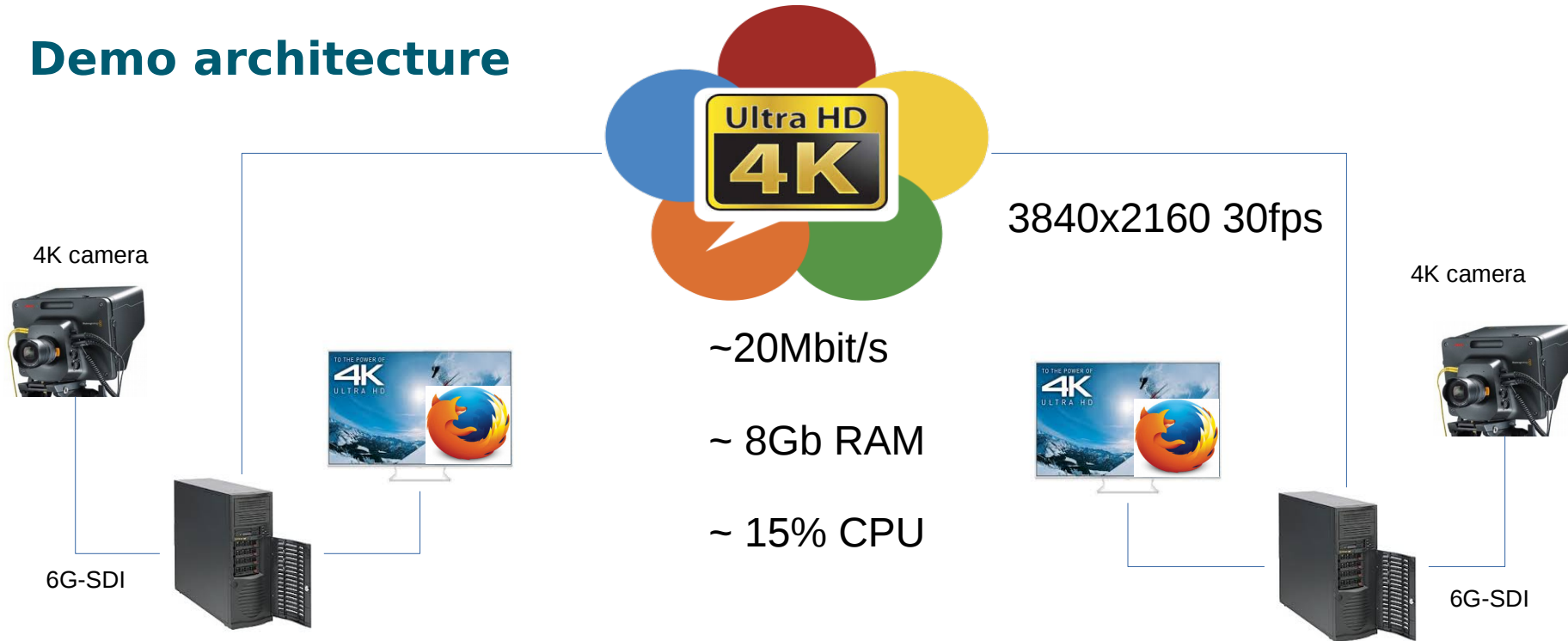- Firefox 48.0, 49.0

- Chrome 53

Hardware

- PC workstation (2x XEON E5-2687w)

- 4K ready graphics card (Nvidia 980GTX, M4000)

- 4K Blackmagic Studio Camera

- 4K Blackmagic DeckLink 4K Extreme capture card

4K WebRTC

Demo architecture

3840x2160 30fps

4K camera

4K camera

~20Mbit/s

~ 8Gb RAM

~ 15% CPU

6G-SDI

6G-SDI

4K WebRTC

Browsers

- Firefox 48.0

    - Config modifications required:

            media.navigator.video.height - 2160

            media.navigator.video.width - 3840

    - Full support, bi-directional 4K connection (https://appr.tc)

- Firefox 49.0

    - Frozen Video, Crashes

4K WebRTC

Browsers

- Chrome 53

  – 4K video local preview in the browser with resolution constraints 3840x2160

  – 4K video is not sent

4K WebRTC

Codecs

- **VP8**

  - Firefox – preferred codec

  - Chrome - supported by default

- **VP9**

  - Chrome – preferred codec

  - Firefox – configuration modifications required:

    - `media.mediasource.webm.enabled - true`

    - `media.peerconnection.video.vp9_enabled - true`

- **H.264**

  - Firefox – supported by default

  - Chrome - supported by default

4K WebRTC

WebRTC applications

- Appr.tc

    - 4K support (used for demo)

- Appear.in

    - 4K support, some problems with grabbing 4K video (1 way connection tested)

- Rabb.it

    - 4K support, some problems with grabbing 4K video (1 way connection tested)

- Jitsi.org

    - 4K support (1 way connection tested)

4K WebRTC

Is WebRTC mature enough to support high resolutions?

eduCONF and its potentials to support WebRTC

Thank you!

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