



# **IAB / IRTF WORKSHOP ON CONGESTION CONTROL FOR INTERACTIVE REAL-TIME COMMUNICATION**

July 28, 2012

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# Meeting Materials

- Workshop homepage:  
<http://www.iab.org/activities/workshops/cc-workshop/>
- Papers:  
<http://www.iab.org/activities/workshops/cc-workshop/papers/>
- Presentations:  
<http://www.iab.org/activities/workshops/cc-workshop/slides/>
- Agenda:  
<http://www.iab.org/wp-content/IAB-uploads/2012/07/CCWorkshopAgenda-revised.pdf>

# Logistics

- Webex for remote participants – info distributed to the remote attendees
- Jabber room: [irtf@jabber.ietf.org](mailto:irtf@jabber.ietf.org)
- Jabber scribe: Mat Ford
- Minute takers: Alissa Cooper, Spencer Dawkins
- Rules for minutes: to be published with name attributions

# Logistics – post workshop

- Workshop report: Lars Eggert, Hannes Tschfoenig
- Dinner

[Don Francesco's](#)

655 Burrard Street

Vancouver BC

RSVP: <http://doodle.com/rkue58thhcuee3rg>

# Agenda

- 09:00 - 09:15: Welcome and Logistics (Workshop organizers)
- 09:15 - 10:30: Keynote (Mark Handley): Mark will share his ideas about the problem and which mechanisms may and may not work.
- 10:30-10:45: Short break
- 10:45 – 11:45: Data (Discussion Lead: Cullen Jennings): In this session we will review data (simulations or real-world measurements).
  - Relevant papers:
    - Paper #4 - Zaheduzzaman Sarker (Ericsson)
    - Paper #6 - Stefan Holmer (Google)
    - Paper #9 - Ilpo Järvinen, Markku Kojo (University of Helsinki)
    - Paper #11 - Cullen Jennings, Suhas Nandakumar (Cisco)
    - Paper #25 - Mo Zanaty (Cisco)
    - Paper #28 - Keith Winstein, Anirudh Sivaraman (MIT)
    - Paper #30 - Pierre-Ugo Tournoux, Tuan Tran Thai, Emmanuel Lochin, Jerome Lacan and Vincent Roca

# Agenda (part 2)

- 11:45 - 12:45 Constraints (Discussion lead: Hannes Tschofenig) : What are the limitations given the state of current deployment?

- Relevant papers:

- Paper #1 - Michael Welzl (Univ of Oslo)
- Paper #14 - John Leslie (remote)
- Paper #23 - Matt Mathis (Google)
- Paper #32 - Jim Gettys (Bell labs)

- Background information:

Bauer and Beverly, “Measuring the current state of ECN support in server, clients, and routers”,  
<http://mirrors.bufferbloat.net/Talks/AIMS2011/bauer-ecn-aims-2011.pdf>

- 12:30 - 13:30 Lunch

# Agenda (part 3)

- 13:30 - 15:00: Desirable Properties of Solutions (Discussion Lead: Lars Eggert)

In this session we will:

- Discuss success metrics suggested within the submissions.
- Discuss potential requirements. Note: We are not trying to decide on a set of “must do” requirements but instead find a set of desired properties and the gain an understanding of the tradeoffs between solutions flawed in different ways.

–Relevant papers:

- Paper #3 - Harald Alvestrand (Google)
- Paper #6 - Stefan Holmer (Google)
- Paper #18 - Randell Jessup (Mozilla)
- Paper #24 - Mo Zanaty (Cisco)
- Paper #26 - Tim Terriberry (Mozilla)
- Paper #32 - Jim Gettys (Bell labs)
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- 15:00 - 15:30: Coffee



# Agenda (part 4)

- 15:30 - 17:00: What can we do? (Discussion Lead: Bernard Aboba): In this session we will discuss various building blocks that could be part of the solution mix. What new standardization and research work is needed?
  - Relevant Papers:
    - Protocol and algorithmic aspects:
      - Paper #1- Michael Welzl (Univ of Oslo)
      - Paper #8 - Wesley Eddy (MTI Systems)
      - Paper #12 - Xiaoqing Zhu (Cisco)
      - Paper #13 - Sanjeev Mehrotra, Jin Li (Microsoft)
      - Paper #14 - John Leslie (remote)
      - Paper #15 - Dirk Kutscher, Bob Briscoe (NEC)
      - Paper #21 - Ali Begen (Cisco)
      - Paper #27 - Murari Sridharan (Microsoft)
      - Paper #28 - Keith Winstein, Anirudh Sivaraman (MIT)
      - Paper #31 - Stephen Botzko, Mary Barnes (Polycom)
      - Paper #32 - Jim Gettys (Bell labs)
    - API Considerations
      - Paper #7 - Ted Hardie (Google)
      - Paper #19 - Varun Singh (remote), Jorg Ott, Colin Perkins (Aalto University, University of Glasgow)

# Agenda (part 5)

- 17:00 - 18:00: Summary and Conclusions (Discussion Lead: Hannes Tschofenig)

In this session we will summarize the workshop discussion and identify the key conclusions.

- 20:00 Dinner

# Workshop Committee (alphabetical)

- Harald Alvestrand (Google, W3C Web RTC Working Group Co-Chair)
- Bernard Aboba (Microsoft, IAB Chair)
- Mary Barnes (Polycom, IAB Executive Director)
- Gonzalo Camarillo (Ericsson, IETF RAI Area Director)
- Alissa Cooper (CDT, IAB Member)
- Spencer Dawkins (Huawei, IAB Member)
- Lars Eggert (NetApp, IRTF Chair)
- Wesley Eddy (MTI Systems, IETF TSV Area Director)
- Matthew Ford (ISOC)
- Randell Jessup (Mozilla)
- Cullen Jennings (Cisco, IETF RTC Web Working Group Co-Chair)
- Jon Peterson (Neustar, IAB Member)
- Robert Sparks (Tekelec, IETF RAI Area Director)
- Hannes Tschofenig (Nokia Siemens Networks, IAB Member)

# Attendees (doodle order)

- Dirk Kutscher
- Carsten Bormann
- Michael Welzl
- Magnus Westerlund
- Colin Perkins
- Murari Sridharan
- Klaus Hartke
- Pier Luca Montessoro
- Varun Singh \*
- Vincent Roca
- Ali C. Begen
- Mo Zanaty
- Jin Li
- Dave Thaler
- Bob Briscoe
- Barry Leiba
- Jari Arkko
- Stewart Bryant
- Martin Stiemerling
- John Leslie \*
- Marc Blanchet
- Anirudh Sivaraman \*
- Zaheduzzaman Sarker
- Mark Handley \*
- Xiaoqing Zh
- EKR
- Suhas Nandakumar \*
- Bill VerSteeg
- Sean Turner
- Keith Winstein
- Maire Reavy
- Michael Tüxen \*
- Ilpo Järvinen
- Emmanuel Lochin \*
- Stefan Holmer
- Jörg Ott
- Timothy B. Terriberry
- Benoit Claise
- Ted Hardie
- Stephen Botzko
- Matt Mathis
- David Benham
- Jim Gettys
- Sanjeev Mehrotra
- Adrian Farrel
- Greg White
- Markku Kojo
- Stuart Cheshire
- Xavier Marjou
- Emile Stephan

\* = Remote Participant



**FURTHER I**