

# Congestion Control Workshop Agenda and Materials

**08:30 – 09:00: Coffee**

**09:00 – 09:15: [Welcome and Logistics](#) (Workshop organizers)**

- Note Well
- Attendee list
- Volunteers: Minute takers, Workshop Report

**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 – 11:30: [Data](#) (Discussion Lead: Cullen Jennings)**

In this session we will review data (simulations or real-world measurements). Some potentially relevant papers include:

- 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

**11:30 – 12:30 [Constraints](#) (Discussion lead: Hannes Tschofenig)**

What are the limitations given the state of current deployment?

Potentially 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**

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**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.

Potentially 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)

**15:00 – 15:30: Coffee**

**15:30 – 17:00: What can we do? (Discussion Lead: Bernard Aboba)**

The following slides were shown during this session:

- [One Rule to Control Them All](#) (Michael Welzl)
- [Towards Adaptive Congestion Management for Interactive Real-Time Communications](#) (Dirk Kutscher)
- [The Internet is Broken, and How to Fix It](#) (Jim Gettys)

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?

Potential topics for discussion

- AQM/ECN/CoDel
- QoS (DiffServ, IntServ)
- Congestion indications: delay, loss, ECN
- Response to congestion indications (adjustment of quality/resolution/frame rate, FEC, re-transmission)
- Competition between RTP and SCTP/TCP
- Single versus multiple rate controllers
- Receiver vs. Sender side control
- Multiplexing
- TFRC

# Congestion Control Workshop Agenda and Materials

- Loss Detection
- API considerations

## 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)

**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 Self-organized Dinner(s)**