



## ICCRG Meeting

12/13 Feb 2007, Marina Del Rey, CA USA

# Today's Agenda

09:15 - 09:30 Michael Welzl: The current state of ICCRG

09:30 - 10:00 Keshav: What is congestion and what is congestion control

10:00 - 10:45 Jeremy Mineweaaser:  
Congestion control in the Global  
Information Grid (GIG)

*10:45 - 11:00 Break*

# Tomorrow's Agenda

- *08:30 - 09:00 Light breakfast*
- 09:00 - 09:45 Ted Faber and Eric Coe: CC with Explicit Feedback
- 09:45 - 10:30 Tom Phelan: DCCP, TFRC and Open Problems in Congestion Control for Media Applications
- *10:30 - 10:45 Break*
- 10:45 - 11:30 Doan B. Hoang: FICC-DiffServ: using CC as a QoS element
- 11:30 - 12:15 Bob Briscoe: Flow Rate Fairness: Dismantling a Religion
- **12:15 - 13:00 Open discussion: Next steps: meetings, docs, etc**



**Let's discuss  
this now**

# Next meetings (tentative)

- At 69th IETF - Chicago, July 22 – 27  
(organized by Wes Eddy)
- At Pfldnet 2008, February, Manchester GB  
(organized by Michael Welzl)
- Other suggestions?

# The current state of ICCRG

With a glance at the future!

# ICCRG Charter

- AIMD in standard TCP is showing limits in several areas, there are many proposals for high-speed CC
- Key goal: move towards consensus on viable long-term solutions and appropriate cost/benefit tradeoff
- Unclear: single proposed solution or synthesis of ideas
- Opportunity to go further than the simplest incremental modifications, but such larger changes have costs
  - critical to the relevance of recommendations from ICCRG will be that any proposed solutions are economically viable
  - If router modifications are proposed, collecting them and the tradeoff underlying them would be an important service

# ICCRG Charter /2

- There are many different aspects that ICCRG should consider; examples:
  - Real-time media applications
  - Impact of VoIP and IPTV
  - Interactions with
    - QoS
    - Traffic Engineering
    - Lower-layer technologies, e.g. optical-burst-switching
  - Interactions between DoS attacks targeted at bandwidth exhaustion, countermeasures, and CC architecture

# ICCRG Charter /3

- “As a starting point to achieve focus for the group, ICCRG will produce an RFC describing the nature of the emerging congestion control problems that any future congestion control architecture must face.”



**Volunteers?**

- Eventual goal: produce a recommendation to the IETF on a solution that would be appropriate for Internet-scale deployment

- Possible that more than one solution will be recommended

- Produce IETF AD-sponsored RFCs detailing good practice for how real-time applications might best operate in a best-effort Internet

# Current state

- First part of the charter was considered
  - Rest was ignored?
- Discussions about...
  - Survey of high-speed protocols
    - Addressed with CC bibliography in group Wiki
  - Definition of congestion control
    - Addressed by Keshav after this talk
- One RG item: overview of CC related RFCs
  - Complementary to TCP Roadmap

# draft-irtf-iccrg-cc-rfcs-00.txt

- Comments from Rex Buddenberg, Mitchell Erblich, Lachlan Andrew:
  - Give information beyond what's in the RFCs themselves; for instance, contextual information about the actual usage (or lack) of certain mechanisms that have been specified would be interesting  
*(will do - your input would help us a lot!)*
  - While we saw a manageability need to leave out QoS, in real congestion control systems that the group evaluates, we will certainly have to consider integration with QoS systems  
*(plan: write a longer introduction about relationship between CC and QoS, but no survey of QoS RFCs)*
  - In many cases, MAC layer issues are concerns as well. Dealing with non-congestion loss reasonably may be a side issue.  
*(plan to address this accordingly)*

# More feedback...

- Unicast is just a special case of multicast, and that the research focus should be on multicast CC techniques  
*(We disagree – opinions?)*
- Positive comments; “I knew most of what was in the draft, but still found a couple interesting RFCs that I hadn't known about before.”  
*(we consider this a success)*
- While we still should avoid re-writing the TCP roadmap RFC, our section of TCP might include a tad more. For instance, it might be helpful to at least chart the evolution of RFC 2001  $\Rightarrow$  RFC 2581, and note things that people have identified for possible inclusion in the 2581bis update document  
*(will do)*

# To conclude, our wish list...

- Exploit charter's breadth
  - Investigate if CC research that has not yet been brought to IETF would be ready for it
- As part of this exercise, identify open issues in the IETF (e.g. reaction to corruption in DCCP spec)
  - **Short term goal, next 3 months**  
**...your input is appreciated!**
- Support the move to high-speed TCPs
  - Maybe agree on a “framework“ to make them interoperate
  - Or agree to disagree :-)

# Have fun!

**and...**

1. please stick with your time slots  
(breaks / lunches should not shift due to the webcast system)
2. send me your slides

# Discussion – open IETF CC issues

- Reaction to corruption (*DCCP spec asking*)
  - Note: corruption and congestion can be heavily correlated on short time-scales, and links can have strange properties (e.g. HSDPA, 802.11B)
- TCP over IETF mobility / ad hoc protocols (example: *draft-schuetz-tcpm-tcp-rlci*)
  - Can we show that the problem space is equal to another one, e.g. load changing on a single path?
- Evaluation of (implicit and explicit) feedback signals
  - Interactions with QoS, Traffic Engineering (real-time), IPSec, lower layers, congestion = f(bytes or packets?)
- Pseudowires
  - E.g., some consume bandwidth independent of the payload (*Pseudowire WG charter mentions CC, but drafts and RFCs restrict use to dedicated paths because proper CC unknown*)
- *BOF on pre-congestion notification (WG soon there)*
- Precedence for elastic traffic (related to MLPP docs, there may be a BOF soon)
- Misbehavior of senders and receivers (*TCPM discussions*), Denial-of-Service
- What is effective for media streams (*RTP profiles*)
- UDP based application layer protocols (*IRIS, SYSLOG – Sally Floyd’s congestion control recommendation RFC is too unspecific for these groups*)
- Congestion control at the application layer (*SIP overload, ETSI GOCAP*)