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 Mineweaser: Congestion control in the Global Information Grid (GIG)
10:45 - 11:00 Break
11:00 - 11:45 K. K. Ramakrishnan: LT-TCP: Loss Tolerant TCP
11:45 - 12:15 Lachlan Andrew: Rate control with packet corruption
12:15 - 13:45 Lunch
13:45 - 15:15 Lars Eggert: Experimental Congestion Control Proposals and IETF/IAB/ICCRG
15:15 - 15:30 Break
15:30 - 18:00 Discussion: What should the ICCRG be doing?
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.”

• 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
• 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 ⇒ 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*)