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."

  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 Erblichs, 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*)