

# IRTF 2013 Activity Report

The present note provides a short overview and highlights of the activities of the different IRTF's Research Groups (RG) that held during 2013.

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## The IRTF Current Status

- Active Research Groups:
  - ICCRG - Internet Congestion Control Research Group
  - ICNRG - Information-Centric Networking Research Group
  - SDNRG - Software Defined Networking Research Group
  - NMRG - Network Management Research Group
- Research Groups with little activity:
  - DTNRG - Delay-Tolerant Networking Research Group
  - CFRG - Crypto Forum Research Group
  - NCRG - Network Complexity Research Group
  - RRG - Routing Research Group
- Research Groups closing:
  - ASRG - Anti-Spam Research Group
  - SAMRG - Scalable Adaptive Multicast Research Group
- Proposed Research Groups:
  - NWCRG - Network Coding Research Group (Proposed)

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## ANRP - Applied Networking Research Prizes 2013:

The following Applied Networking Prizes have been awarded during the last year:

- At IETF-88, to Idilio Drago for characterizing traffic and workloads of the Dropbox cloud storage system:
  - Idilio Drago, Marco Mellia, Maurizio M. Munafo, Anna Sperotto, Ramin Sadre and Aiko Pras. *Inside Dropbox: Understanding Personal Cloud Storage Services*. Proc. ACM Internet Measurement Conference (IMC), November 2012, Boston, MA, USA.
- At IETF-87, to Te-Yuan Huang for insights into the difficulties of rate adaptation for streaming video:
  - Te-Yuan Huang, Nikhil Handigol, Brandon Heller, Nick McKeown and Ramesh Johari. *Confused, Timid, and Unstable: Picking a Video Streaming Rate is Hard*. Proc. ACM Internet Measurement Conference (IMC), November 2012, Boston, MA, USA.
- At IETF-87, to Laurent Vanbever for proposing a framework to allow seamless BGP reconfigurations:
  - Stefano Vissicchio, Laurent Vanbever, Cristel Pelsser, Luca Cittadini, Pierre Francois and Olivier Bonaventure. *Improving Network Agility with Seamless BGP Reconfigurations*. Proc. IEEE/ACM Transactions on Networking (TON), Volume 21, Issue 3, June 2013, pp 990-1002.

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## DTNRG Activity

The DTN RG is reducing its activity and met only once during 2013. The main topics related to security in the bundle protocol, increase DTN reliability using network coding, and initial discussion on how ICN fits into DTN networks. Despite the amount of research work in routing in DTNs, only two protocols are actually implemented, ProPHET and dLife.

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## ICCRG Activity

The ICC RG focuses its recent activity around the big issue called bufferbloat (i.e., excess of buffering creating long end-to-end delay). Several congestion control schemes are under discussion and compared in various contexts. The group is also starting to look in more details congestion control in the context of Multipath TCP.

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## ICNRG Activity

The ICN RG is one of the most active RGs. Work carried out in the last year was initially focused on creating a basic set of documents providing baseline scenarios, framework, research challenges. During the different meetings several simulation tools have been presented, as well as continuous updates on existing implementations. Recently the group has started to look at streaming over ICN (which included a live demo) as well as congestion fairness issues related to the ICN caching system.

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## SDNRG Activity

The SDN RG can be considered the most attended and fast pacing RG during the last year. So far, SDN RG meetings provided an interesting venue for anybody working on this field, hence, the different presentations and discussion slots were more oriented on allowing to show-case the different activities going on all over the world (from both industry and academy). While this trend is still continuing, the group realised that it exists a plethora of different terms used to name similar entities/functions/object and also that the definition of software defined networks is rather fuzzy and may vary among the different initiatives (with the exception of the common principle of separating the control-plane from the data-plane). For such a reason discussion is leading to create a document that will define the terminology to be used, so to have a more direct understanding of the difference among the various presented works.

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## CFRG Activity

The CF RG met only twice during the last year. The current activity is mostly focused on advancing the current set of RG items in order to push them toward RFC publication. Such sets of documents, and the discussions during the two meetings, concern mainly the use of hash-based algorithms

and the use of ciphers in the Internet. The group has also started to look into the use of DTLS in constrained environments.

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## NCRG Activity

The activity of the NC RG has mainly focused, during the whole year, on the definition of a complexity framework. The main idea so define in a reasonable way what complexity means and how it can be measured (what are the metrics?), and explore what are the trade-offs in order to reduce, or at least manage in a reasonable way, such a complexity.

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## NMRG Activity

The NM RG is still quite active. During the year the group had an important activity on everything related to IPFIX, however they are also broadening their scope, in particular in the context of ICN and SDN. Indeed, while ICN and SDN are considered *new* paradigms, they still need some form of network management. The meeting held during the 87th IETF had a particular and interesting form, since it was organised as a small workshop around the IPFIX topic, so attracting number of academics.

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## NWCRG Activity

The proposed NWC RG, soon to become a full RG, has spent the year mostly covering what is the state of the art in network coding. Indeed, research wise network coding has been around for quite few years, yet only recently seems that industrial and commercial applications are raising a renewed interest. In their last meeting the RG started discussion on a unified taxonomy aiming at identify and establish initial, commonly accepted terminology and understanding of Network Coding principles and utility

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## RRG Activity

The RRG has not met at all this year, hence no real activity can be reported. Nonetheless, discussion are ongoing on the mailing list on rebooting this group.