

IRTF Open Meeting

Lars Eggert

IETF-81, Quebec City, Canada

July 27, 2011

Note Well

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Administrativa

- Today's slides
 - <https://datatracker.ietf.org/meeting/81/materials.html#wg-IRTF>
- Audio streaming
 - <http://www.ietf.org/audio/ietf81/>
- Jabber chat
 - <xmpp:irtf@jabber.ietf.org?join>
- Mailing lists
 - <http://irtf.org/mailman/listinfo/irtf-announce>
 - <http://irtf.org/mailman/listinfo/irtf-discuss>

Agenda

9:00 **State of the IRTF**

IRTF & RG Chairs

Applied Networking Prize (ANRP) awards

9:20 GreenTE: Power-Aware Traffic Engineering

Beichuan Zhang

9:50 A Technique for Reducing BGP Update Announcements through Path Exploration Damping

Mattia Rossi

New IRTF research group proposals

10:20 Network Complexity

Michael Behringer

10:40 Information-Centric Networking

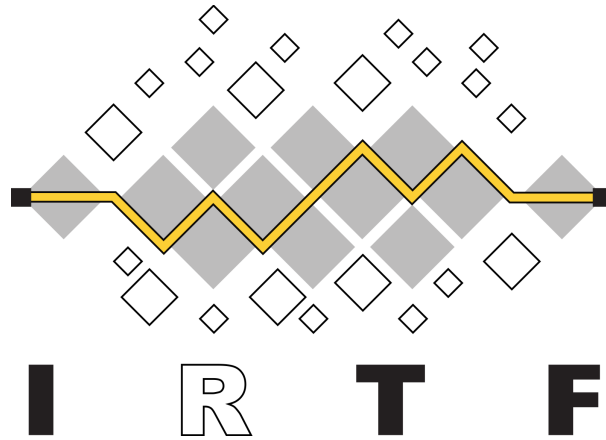
Dirk Kutscher

11:00 Learning-Capable Communication Networks

Dimitri Papadimitriou

(if time) Energy Efficient Communication

Rolf Winter



State of the IRTF

IRTF Meetings this Week

Seven RGs are meeting this week

- Delay-Tolerant Networking
- Peer-to-Peer
- Network Management
- IP Mobility Optimizations
- Host Identity Protocol
- Scalable Adaptive Multicast
- Virtual Networks

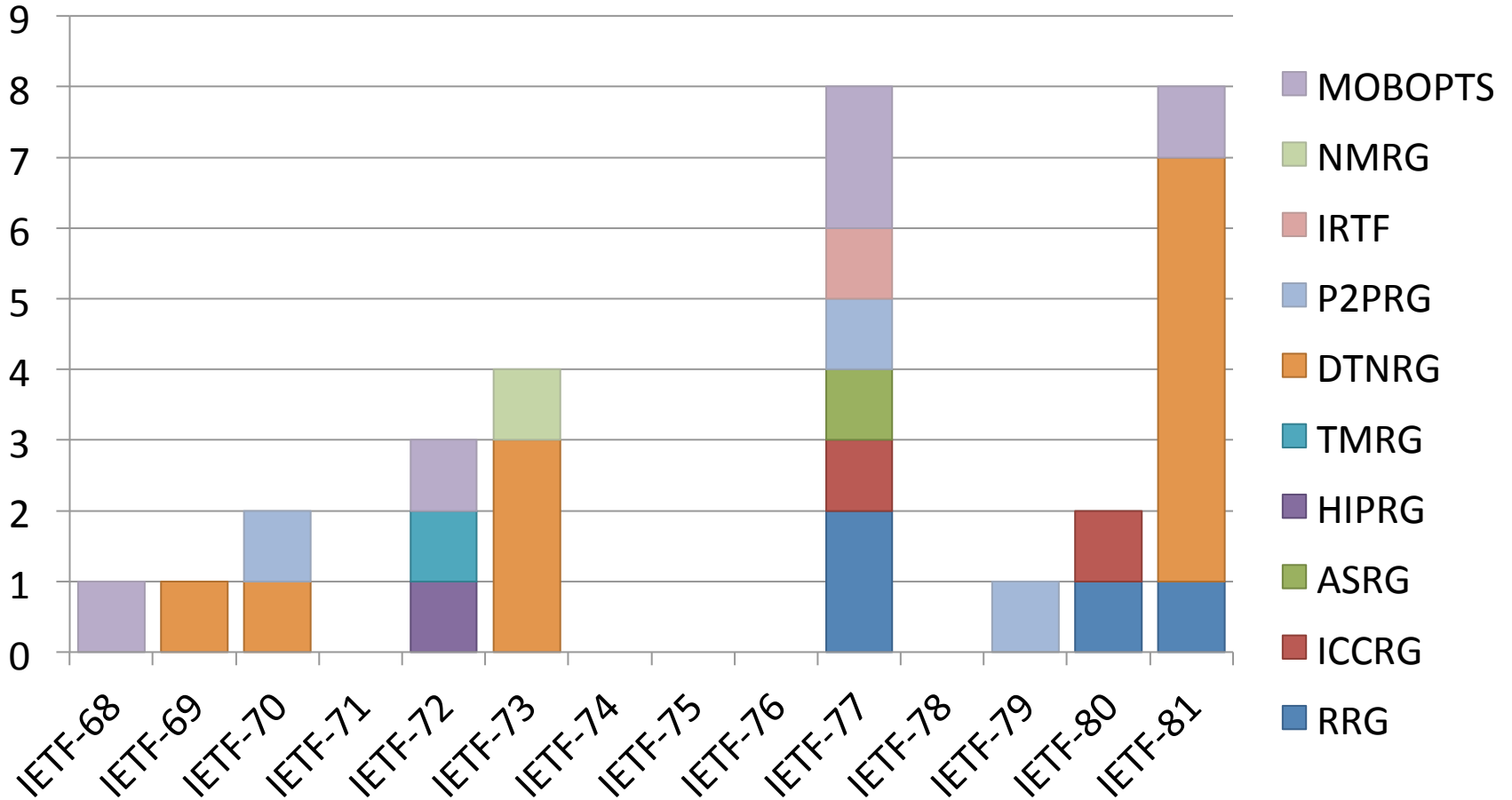
Other IRTF-related meetings

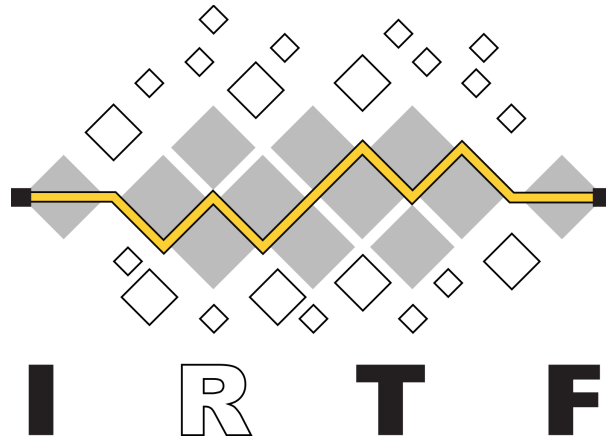
- **IRTF Open Meeting**
Wednesday, 9:00am
- reviewing the CFRG with
the IAB on Thursday

IRTF RFC Publications since IETF-80

- **RRG**
 - RFC 6227: Design Goals for Scalable Internet Routing
- **MOBOPTS**
 - RFC 6252: A Framework of Media-Independent Pre-Authentication (MPA) for Inter-Domain Handover Optimization
- **DTNRG**
 - RFC 6258: Delay-Tolerant Networking Metadata Extension Block
 - RFC 6255: Delay-Tolerant Networking Bundle Protocol IANA Registries
 - RFC 6256: Using Self-Delimiting Numeric Values in Protocols
 - RFC 6260: Compressed Bundle Header Encoding (CBHE)
 - RFC 6259: Delay-Tolerant Networking Previous-Hop Insertion Block
 - RFC 6257: Bundle Security Protocol Specification

IRTF RFC Publications over Time





Research Group Status

Research Group Status

- **Active**
 - CFRG, DTNRG, ICCRG, NMRG, SAMRG
- **Closing**
 - TMRG (merging into ICCRG)
- **Re-charting (or closing)**
 - ASRG, HIPRG, MOBOPTS, RRG
- **Little activity**
 - VNRG, P2PRG

Anti-Spam (ASRG)

- What has it been doing lately?
 - Draft-irtf-asrg-bcp-blacklists-09, to be RFC
- What should it be doing?
 - IPv6 abuse management experiments, e.g., BL/WL design, transition strategies, character of mail sources
 - Taxonomies of abuse/anti-abuse techniques
 - Etc
- What is it doing? Precious little
- Why not?
 - Lack of vendor interest and support?
 - Trade secrets?
 - Difference in large and small scale mail systems?
 - Work happening at MAAWG and other places?
 - ???

Crypto Forum RG (CFRG)

- Bridge between Theory and Practice
- New Work
 - Reviewing new IETF uses of MD5
- Review
 - draft-krovetz-ocb-02
 - draft-mcgrew-iv-gen-00
 - draft-pornin-deterministic-dsa-00
- Interest in New Work
 - Group Encryption
 - Validation and Assurance

Delay-Tolerant Networking RG

- Kevin Fall, Stephen Farrell, Jörg Ott

- RFCs Published since Prague

- | | |
|---|----------|
| ■ IANA Registries (blk type, ver, proc. flags, BSR, cust) | RFC6255 |
| ■ Self-Delimiting Numeric Values in Protocols | RFC 6256 |
| ■ Bundle Security Specification | RFC 6257 |
| ■ Meta-data extension block | RFC 6258 |
| ■ Previous-hop Insertion Block | RFC 6259 |
| ■ Compressed Bundle Header Encoding | RFC 6260 |

- Close to finishing
 - draft-irtf-dtnrg-prophet-09



Host Identity Protocol (HIPRG)

- Scope:
 - Study possible impact of wide adoption of HIP architecture
 - Work on topics not yet ready for the HIP WG
- Current RG drafts
 - HIP Experiment Report (IRSG Poll)
 - HIP DHT Interface (IRSG Poll)
 - Host Identifier Revocation
 - HIP Proxies
 - RFID communications using (modified) HIP
- Thursday morning meeting topics
 - HIP and transport evolution
 - HIP implementation reports
 - HIP and femtocells
 - Rechartering discussion

Internet Congestion Control (ICCRG)

- Organizing the existing congestion control related RFCs (RFC 5783)
- Identifying open issues in Internet congestion control (RFC 6077)
- ICCRG design team to look beyond TCP for capacity sharing
- Charter recently expanded to look into transport layer architecture and general IP networks such as a multi-tenant, heterogeneous datacenter

IP Mobility Optimizations (MOBOPTS)

- There is not much **research** happening with MobileIPv6 optimizations
- There are other interesting areas of research
 - Alternative mobility mechanisms (MP-TCP, LISP, HIP, foo...)
 - Issues and solutions related to using IETF protocol in wireless networks
 - Investigate privacy issues in mobile networks
 - Investigate mobile device policy management for functions such as network discovery, congestion reporting and flow management
 - provide a general forum for discussing mobility studies in a larger sense such as vehicular networks, personal area networks, 4G performance studies, testbed evaluations etc
- We are trying to find if there is sufficient interest in the research community to sustain work in this RG
 - We will try to reach out to academic researchers at conferences
 - Try to bring them over to the IETF

Network Management (NMRG)

- Recent topics
 - Network visualization
 - SNMP trace analysis definitions
 - Using NetFlow/IPFIX data for understanding network and applications behavior
- Future topics
 - Network-wide configuration
 - Management in constrained networks
 - Internet-scale measurements
 - Impact of self-management practices over Internet management protocols
 - Autonomic management

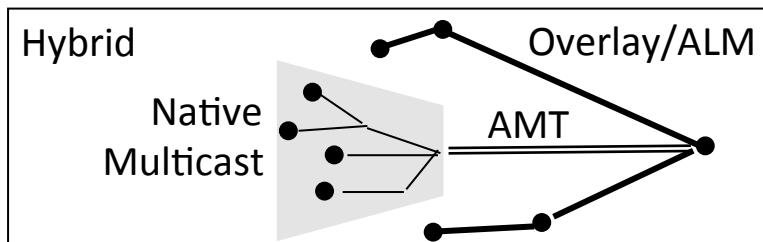
Peer-to-Peer RG (P2PRG)

- Publications since re-chartering
 - RFC 6029, RFC 5765
 - Three drafts getting ready to publish
 - Five meetings at IETF
- Current RG activities focused on P2P traffic localization
 - Surveys, experiment reports and research
- New activities on P2P streaming and P2P simulation tools
 - Two new drafts in preparation

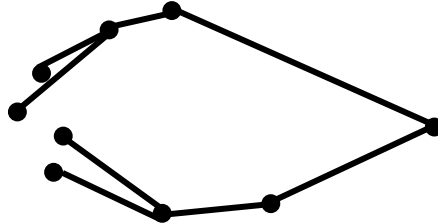
Routing (RRG)

Scalable Adaptive Multicast (SAMRG)

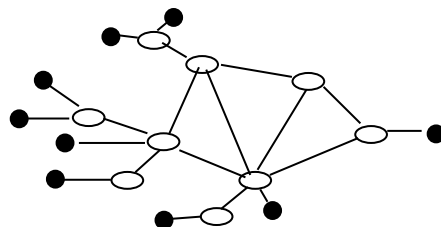
- Problem Space
 - Uniformly accessible group communication service
 - Heterogeneous instantiations: multicast over diverse networks
 - Transparent service interface



ALM



Network



- Chairs
 - John Buford and Thomas Schmidt
- Current activities & efforts in SAM RG
 - Common API for transparent hybrid multicast
 - ALM extensions to RELOAD
 - RELOAD-based group coordination
 - Streaming media delivery
 - Experimental implementations of hybrid multicast systems & tesbed
 - Currently considered: IP multicast, ALM in P2P overlays, XCAST, AMT
- Interim meetings to foster collaboration with research community
 - Co-located with IEEE CCNC 2011 Special Session on Scalable Adaptive Multicast in Peer-to-Peer Overlays (Jan 2011)
 - Co-located with IEEE Globecom 2010+11 WS on Pervasive Group Communication – PerGroup (Dec. 2010/11)

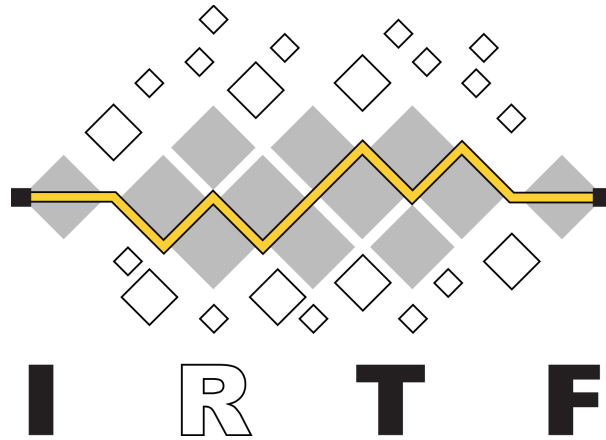
Transport Modeling RG (TMRG)

- Developing test suite to evaluate transport layer mechanisms
 - Initial draft test suite ~3 years old
 - ns2 implementation progressing
 - Refining draft as implementation raises issues

Virtual Networks (VNRG)

Proposals for New Research Groups

- the four topics on the agenda later, plus:
 - Datacenter Networking
 - Internet Economics
 - Cross Application/Network Optimization
 - Internet of Things
- please check the archives of the irtf-discuss list for pointers to these activities
 - <http://www.irtf.org/mail-archive/web/irtf-discuss/>



Applied Networking Research Prize Awards & Presentations

Applied Networking Research Prize

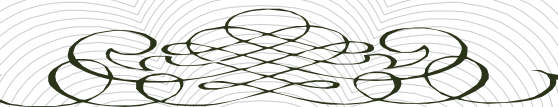
- First time for IETF-81
- Jointly with ISOC
- Two dozen nominations
- IETF/IRTF selection committee
- Two prize winners
 - attendance & more
- Planning a yearly cycle in 2012

“...awarded for recent results in applied networking research that are relevant for transitioning into shipping Internet products and related standardization efforts...”

Nomination period for IETF-82 starts August 1!

<http://irtf.org/anrp>

Applied Networking Research Prize



Presented to

Mattia Rossi



Geoff Huston, Mattia Rossi and Grenville Armitage. **A Technique for Reducing BGP Update Announcements through Path Exploration Damping.** *IEEE Journal on Selected Areas in Communications (JSAC)*, Vol. 28, No. 8, pp. 1271–1286, October 2010.

Mat Ford, Internet Society

Lars Eggert, IRTF Chair

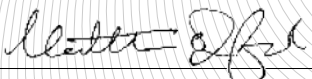
Applied Networking Research Prize



Presented to
Beichuan Zhang



Mingui Zhang, Cheng Yi, Bin Liu and Beichuan Zhang. **GreenTE: Power-Aware Traffic Engineering**. *Proc. IEEE International Conference on Network Protocols (ICNP)*, pp. 21–30, October 2010.



Mat Ford, Internet Society



Lars Eggert, IRTF Chair