ICNRG @ IETF-104
Prague

Information-Centric Networking Research Group
Friday, March 29th, 2019

Chairs' Slides

Dirk Kutscher
Börje Ohlman
Dave Oran

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ICNRG Administrativia

- IRTF RG on Information-Centric Networking
- Mailing list: icnrg@irtf.org
- Web: http://irtf.org/icnrg
- Wiki: http://trac.tools.ietf.org/group/irtf/trac/wiki/icnrg

- Chairs
  - Dirk Kutscher (University of Emden)
  - Börje Ohlman (Ericsson Research)
  - Dave Oran (Network Systems Research & Design)

- This meeting
  - Notes taker: Marie-Jose Montpetit
  - Etherpad: https://etherpad.tools.ietf.org/p/notes-ietf-104-icnrg
  - Meeting
    Materials: https://datatracker.ietf.org/meeting/104/session/icnrg

Agenda

- Chairs Intro: Agenda Bashing, Minutes taker, Bluesheets, Status (5 min)
  - Summary of Sunday Interim
  - ACM ICN 2019 Announcements
- **HopAuth (Hop-by-Hop Authentication with Suspension Chain Model)** (15 mins)
- **ICNLowPAN** Update - Cenk Gündoğan (15 mins)
- **Enabling ICN in 3GPP's 5G NextGen Core Architecture Update** - Debashish Purkayastha (15 Mins)
- **Finalizing the Terminology Draft** - Bastiaan Wissingh (10 mins)
- **QoS Treatments - Anil Jangam** [remote] (20 mins)
- **Refresher on Flow Classification** [tentative] - Dave Oran (15 mins)
- **QoS for Constrained Environments** - Cenk Gündoğan (15 mins)
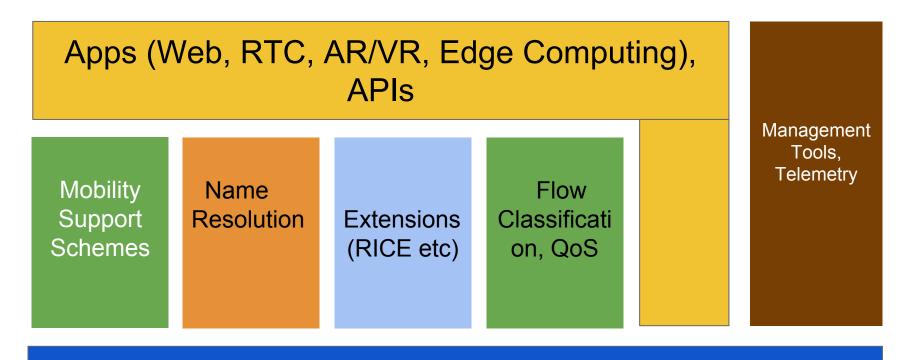- **EU Open Call for Next Gen Internet** https://www.ngi.eu/ (5 mins)

Recent Interims

- IETF-104 (last Sunday)
  - https://datatracker.ietf.org/meeting/interim-2019-icnrg-02/session/icnrg

Sunday Interim

- **A keyword-based naming for in-network computing** - Onur Ascigil
- **Pub-Sub with ICN** - Thomas Schmidt
- **Efficient Blockchain access via ICN** - Niels van Adrichem
- **Finalizing Disaster Draft** - Jan Seedorf
- **NRS Documents Update** - Jungha Hong
- **NDN Tools Overview, Status, and future plans** - Jeff Thompson
- **NFN Update** - Christian Tschudin
- **Broadcast-only communication models** - Christian Tschudi
- **Summary of Berkeley CFN workshop** - Cedric Westphal
- **Discussion of management tools** -- CCNInfo - Hitoshi Asaeda

ICNRG Specs in a Nutshell

Apps (Web, RTC, AR/VR, Edge Computing), APIs

Management Tools, Telemetry

Mobility Support Schemes

Name Resolution

Extensions (RICE etc)

Flow Classification, QoS

Core Protocol Specs

Underlays, Embeddings, Convergence Layers

RG Drafts -- Specs

- **Update on CCNx protocol documents** -
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-ccnxmessages/
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-ccnxsemantics/
  - In RFC Edit State!

- **File-Like ICN Collection (FLIC)**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-flic/
  - Describes a bare bones "index table"-approach for organizing a set of ICN data objects into a large, File-Like ICN Collection (FLIC)
  - Orphaned due to Chris Wood's new non-ICN focus. Need people to step up if this is to move forward
  - Currently expired...

Recently Finished Drafts (1/2)

- **Research Directions for Using ICN in Disaster Scenarios**

    - https://datatracker.ietf.org/doc/draft-irtf-icnrg-disaster/
    - Outlines some research directions for ICN wrt applying ICN approaches for coping with natural or human-generated, large-scale disasters
    - IRSG Review completed and revised draft produced
    - Just sent for final IRSG Poll

Recently Finished Drafts (2/2)

- **Deployment Considerations for ICN**

    - https://datatracker.ietf.org/doc/draft-irtf-icnrg-deployment-guidelines/
    - Provides a number of deployment considerations in the interest of helping the ICN community move forward to the next step of live deployments
    - IRSG Reviews completed and revised draft produced
    - Sent to IRTF chair for final IRSG publication poll

Recently Adopted RG Drafts (1/2)

- **CCNinfo: Discovering Content and Network Information in Content-Centric Networks**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-ccninfo/
  - Discovering topology and other properties in ICN networks
  - Relatively powerful tool (more than just traceroute)
  - Recently adopted -- was presented/discussed at Sunday Interim
- **ICN Adaptation to LowPAN Networks (ICN LoWPAN)**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-icnlowpan/
  - Convergence layer for CCNx and NDN over IEEE 802.15.4 LoWPAN networks
  - New frame format to adapt CCNx/NDN packets to the small IEEE 802.15.4 MTU size with semantic and syntactic changes to TLV-based headers
  - Stateful and stateless compression
  - Version 04 submitted -- update on the agenda today

Recently Adopted RG Drafts (2/2)

- **Requirements for Name Resolution Service in ICN**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-nrs-requirements/
  - Discusses motivation and requirements for name resolution in ICN
  - Recently updated (01), was presented on Sunday

- **Architectural Considerations of ICN using Name Resolution Service**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-nrsarch-considerations/
  - Discusses architectural considerations and implications of NRS in ICN
  - Recently updated (01), was presented on Sunday
  - Looking for discussion with people who are doing something with NRS

Other RG Drafts

- **ICN CCN/NDN Terminology**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-terminology/
  - Overview of the terminology and definitions that have been used in describing concepts in CCN&NDN
  - Version 03 submitted before IETF-104, almost there
  - Bastiaan to present today
- **Native Deployment of ICN in LTE, 4G Mobile Networks**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-icn-lte-4g/
  - Allow ICN to be enabled natively over the current LTE stack comprising of PDCP/RLC/MAC/PHY or in a dual stack mode (along with IP) help optimize the mobile networks by leveraging the inherent benefits of ICN
  - Recently updated (03) (ICN in mobile backhaul, ICNoIP, hICN)
- **Design Considerations for Applying ICN to IoT**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-icniot/
  - How IoT can leverage ICN features
  - No recent change (02)

Other Drafts (1/2)

- **MAP-Me : Managing Anchorless Mobility in Content Centric Networking**
  - https://datatracker.ietf.org/doc/draft-irtf-icnrg-mapme/
  - an anchor-less solution to manage micro-mobility of content producers via a name-based CCN/NDN data plane, with support for latency-sensitive apps
  - Individual submission -- needs to be renamed
  - IPR declaration for Cisco patent submitted
  - Not recently updated (02)
- **ICN Ping and Traceroute**
  - https://datatracker.ietf.org/doc/draft-mastorakis-icnrg-icnping/
  - https://datatracker.ietf.org/doc/draft-mastorakis-icnrg-icntraceroute/
  - Basic testing and path discovery (simpler than CCNInfo)
  - Updated in February (04)
- **Flow Classification in Information Centric Networking**
  - https://datatracker.ietf.org/doc/draft-moiseenko-icnrg-flowclass/
  - Encoding equivalence classes in ICN
  - Two schemes with different properties
  - Updated in January (03) - Refresher talk tentatively for today (if time available)

Other Drafts (2/2)

- **Internet Protocol Tunneling over Content Centric Mobile Networks**
  - https://datatracker.ietf.org/doc/draft-white-icnrg-ipoc/
  - Tunneling IP over CCN
  - Providing ICN-based mobility plane to IP without current GTP
  - Wanted to adopt it -- waiting for input from authors

- **Enabling ICN in 3GPP's 5G NextGen Core Architecture**
  - https://datatracker.ietf.org/doc/draft-ravi-icnrg-5gc-icn/
  - Describing 5G Core NextGen Architecture
  - Proposing extensions of user/control plane mechanisms to support ICN
  - Discussing service scenarios and use cases
  - Presented today

- **DMS: Dynamic Inter- and Intra-Domain Mobility Support Framework for Information Centric Networking -- Expired**
  - https://datatracker.ietf.org/doc/draft-azgin-icnrg-mobility/
  - ICN mobility framework for consumer and producer mobility
  - Network-driven mobility support

New Work (1/2)

- **QoS Treatments in ICN using Disaggregated Name Components**
  - https://datatracker.ietf.org/doc/draft-anilj-icnrg-dnc-qos-icn/
  - Mechanisms to classify and provide associated "name-based" extensions to identify QoS
  - Within the framework of ICN's core design principles
  - Presented today

- **RICE: Remote Method Invocation in ICN**
  - https://datatracker.ietf.org/doc/draft-kutscher-icnrg-rice/
  - General purpose, ICN-idiomatic RMI protocol
  - Proposed as basis for NFN-like systems, in-network computing etc.
  - Was presented at IETF-103

New Work (2/2)

- **AR/VR and ICN**
  - https://datatracker.ietf.org/doc/draft-westphal-icnrg-arvr-icn/
  - Use cases and ICN support for AR/VR
  - Was presented at IETF-102
  - Expired

More Drafts (Datatracker)

[draft-dinh-icnrg-sdnnfvicn-00](#) **Considerations for Using SDN/NFV in ICN**
[draft-hong-icnrg-ccnx-nrs-02](#) **CCNx Extension for Name Resolution Service**
[draft-mendes-icnrg-dabber-01](#) **Information-centric Routing for Opportunistic Wireless Networks**
[draft-wang-icnrg-icn-edge-01](#) **Consideration on Applying ICN to Edge Computing**
[draft-zhang-icnrg-hn-09](#) **Uniform information with a hybrid naming (hn) scheme**

Now - time for today's presentations

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Wrap-Up

- Future ICNRG meetings
  - IETF-105 in Montreal: usual Sunday / regular meetings
  - Sponsorship opportunities!

- AOB?