T2TRG: Thing-to-Thing Research Group

IETF 100
November 14, 2017, Singapore

Chairs: Carsten Bormann & Ari Keränen
Note Well

• You may be recorded

• The IPR guidelines of the IETF apply: see http://irtf.org/ipr for details.
Administrivia (I)

• Pink Sheet

• Note-Takers

• Off-site (Jabber, Hangout?)
  
  • `xmpp:t2trg@jabber.ietf.org?join`

• Mailing List: `t2trg@irtf.org` — subscribe at:
  `https://www.ietf.org/mailman/listinfo/t2trg`

• Repo: `https://github.com/t2trg/2017-ietf100`
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T2TRG scope & goals

• Open research issues in turning a true "Internet of Things" into reality
  • Internet where low-resource nodes ("things", "constrained nodes") can communicate among themselves and with the wider Internet
  • Focus on issues with opportunities for IETF standardization
  • Start at the IP adaptation layer
  • End at the application layer with architectures and APIs for communicating and making data and management functions, including security
Next meetings

- Regular WISHI calls (~ monthly)
- WISHI Hackathon follow-up call (November 27th)
- Regular WebEx with OCF (~ monthly, starting CW 49)
- W3C WoT?
- NDSS Workshop: DISS (Decentralized IoT Security and Standards), Feb 18 (submit Dec 1)
- 2018 planning started
  - London IETF 101: More Hackathon?
  - F2F with OCF? (e.g., April/Malaga Plugfest?)
  - Montreal IETF 102
RG Doc Status

• “State-of-the-Art and Challenges for the IoT Security” getting ready to publish

• “RESTful Design for IoT” adopted

  • New text on hypermedia driven applications
  
  • More on system design and hypermedia controls
  
  • Design patterns: calling procedures, collections, conversions, event as state, server push
T2TRG Berlin Meeting

September 23-24th, Berlin, Germany
(Ad-hoc:) What is the IoT?

• An IoT “Thing” is a node on the Internet that has a foot in the **physical world** (and not just for talking to humans), often with a narrow purpose

• **Constrainedness** is often a property of “Things”, but certainly not always (design for scale)

• Scalability to a large number of “Things” implies **frugality** in cost, power usage and other resources (scaling down)
Coexistence

• Many “IoT networks” will share
  – Spectrum (e.g., 2.4 GHz, but also sub-GHz)
  – IP networks
• So far, people have been trying to
  get the car going on the empty road
• How is the more crowded landscape going to look like?
• What can we do to avoid one network taking out the next?
• Will there be collaborative spectrum management for IoT?
• draft-feeney-t2trg-inter-network:
  “Inter-network Coexistence in the Internet of Things”
Other topics

• REST IoT practices (draft-irtf-t2trg-rest-iot)
• Edge computing, Decentralized Infrastructures for IoT
• SOFIE: Securely and Openly Federating IoT
• SWORN: Secure Wakeup/Radio Nudging
• The need for “compliance”
  (e.g., to IEEE 802.15.4, to RFC 6775 6LoWPAN-ND)
• APIs for constrained CoAP implementations
• Asymmetric crypto for constrained nodes
• Slipmux: One UART to bind them all
OCF T2TRG joint meeting

November 10th, Singapore
OCF T2TRG meeting topics

- IETF/IRTF & OCF status updates
- Security: OSCORE, MUD, ACE
- RESTful Interaction: links and collections, atomic measurements
- Ubiquitous connectivity and discovery: mesh networks, RD usage, cloud, NAT traversal
- Dependent IETF work: CoAP TCP, pub/sub (& YANG push), protocol negotiation
- OneIoTa model reviews
Action Items 1/2

- Setting up monthly calls; topic per call
- OCF review of Resource Directory draft
- Design patterns for cloud rendezvous
- Operational guidelines for TCP with TURN
- OnelIoTa model notifications for reviews
Action Items 2/2

• Deep-dive on how to use ACE for constrained OCF devices
• Modifying link collections; PATCH format(s)
• OSCORE tunnelling to prevent traffic analysis
• Resource read forbidden by definition / forbidden by policy
• Atomic measurements and CoRAL / HSML; bundling
• Re-rendezvous when server knows something broken
• Publish dependent work items at the IETF
WISHI Hackathon

November 12th, Singapore
WISHI Hackathon

- `iot.schema.org`, IPSO smart objects, OCF models
  - How to enrich with semantics; translation & interwork
- Relevant resources: QUDT, SOSA, SSN
- Glue ontology needed? W3C WoT TD role
- Next call: Monday, November 27th
  - Practical experiment: define one IPSO Smart Object with QUDT vocabulary, and `iot.schema.org` & OCF definitions
  - Design patterns for metadata
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