Firmware Updates for Internet of Things Devices (SUIT)

Hackathon @ IETF#101
Hackathon Group
Our Goal

- **Input to the recently formed SUIT WG**
- **Creating signed manifest**
  - Encoded in CBOR
  - COSE signed with ECDSA.
- **Manifest & firmware transport to IoT board via UART.**
- **Bootloader verifies received manifest and installs new firmware.**
Who participated?

• Markus Gueller (Infineon) *
• Max Groening (Texas Instruments) *
• Hannes Tschofenig (Arm)
• Brendan Moran (Arm) – remote *
• Jaime Jiménez (Ericsson)
• Alexander Pelov (Acklio)

*: New participants
What was accomplished?

• Got development environments working (online IDE, desktop IDE, CLI) on different OSs.
• Running code:
  – Code for manifest generation (in Python) working.
  – Pseudo-bootloader running on IoT board
  – UART communication to load firmware working
• Keys and example manifests created.
• Code for manifest verification (C) in progress.
• LoRa-based firmware update in progress.
• Walkthrough on Etherpad and formatted version.
Lessons Learned

• Low level IoT development is hard:
  – Setup of development environment & Python took some time.
  – UART communication setup
  – Debugging is more complex

• COSE C library was difficult to use for embedded environment.
  – We needed a C implementation that uses the embedded crypto (instead of OpenSSL).

• Basic manifest functionality worked fine.