COnstrained MANagement (COMAN)

Management of Networks with Constrained Devices

draft-ersue-opsawg-coman-probstate-reqs
draft-ersue-opsawg-coman-use-cases

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Constrained MANagement

• COMAN activity started in Paris (March 2012) after a discussion in OPS directorate with kind support of OPS AD Benoit Claise.

• Good progress after Paris:
  – provided draft-ersue-constrained-mgmt with a problem statement, topology options, requirements on networks with constrained devices and use cases,
  – terminology on device classes put into LWIG terminology document.

• However COMAN activity did not fly as expected:
  – group of people were meeting during IETF for lunch but . . .
  – insufficient resources for further work on the way to a BoF,
  – gap analysis couldn't be done as planned.

• Finally in Berlin (July 2013) agreed to publish what we have so far:
  – as reference for current active work (e.g. MANET mgmt, Restconf)
  – as input and guideline for future work.

• Draft now divided into two pieces:
  – the problem statement and requirements,
  – use cases.
The draft covers basically:

- Description of the characteristics of networks in focus,
- Constrained device deployment options,
- Management topology options,
- Discussion of the constrainedness of a network and how it influences the management of devices,
- Problem statement on the issue of the management of constrained devices and the networks with constrained devices.
Requirements on the management of networks with constrained devices for following topic areas:
- Management Architecture/System
- Management protocols and data model
- Configuration management
- Monitoring functionality
- Self-management
- Security and Access Control
- Energy Management
- SW Distribution
- Traffic management
- Transport Layer
- Implementation Requirements

Each requirement definition provides a description, the information on the source, the requirement type (functional or non-functional), the corresponding device types as well as the priority of a requirement.
• COMAN use cases draft discusses diverse use cases for the management of networks with constrained devices from the network as well as from the application point of view.
  – The use case first describes the expected network and management topology.
  – For each application scenario, the characteristics are briefly described followed by a discussion on:
    • how network management can be provided,
    • who is likely going to be responsible for it, and
    • on which time-scale management operations are likely to be carried out.
Following are the use cases discussed in the document:

- Environmental Monitoring
- Medical Applications
- Industrial Applications
- Home Automation
- Building Automation
- Energy Management
- Transport Applications
- Infrastructure Monitoring
- Community Network Applications
- Mobile Applications
- Automated Metering Infrastructure (AMI)
- MANET Concept of Operations (CONOPS) in Military
Related work

- MANET management
- The work in LWIG WG but especially LWIG terminology draft ([draft-ietf-lwig-terminology](https://datatracker.ietf.org/doc/draft-ietf-lwig-terminology))
- Proposed new work in Core WG on REST-based access to MIBs (CoAp Management Interfaces, [draft-vanderstok-core-comi](https://datatracker.ietf.org/doc/draft-vanderstok-core-comi)).
- RESTCONF v2 providing RESTful configuration management e.g. usable in MANET-like environments ([draft-bierman-netconf-restconf](https://datatracker.ietf.org/doc/draft-bierman-netconf-restconf)).
- MIB work in IPv6 over Networks of Resource-constrained Nodes ([draft-schoenw-6lo-lowpan-mib](https://datatracker.ietf.org/doc/draft-schoenw-6lo-lowpan-mib)).
- MIB work in IPv6 over the TSCH mode of IEEE 802.15.4e (6tisch).
The way forward

• In Berlin, COMAN lunch participants agreed that it would be valuable if the use cases and requirements from the original coman draft get published.
  – The document was too long, so it should be divided into two parts.
• The aim is to have these documents available:
  – as reference on use cases and requirements as possible objectives in different environments,
  – as reference to be used in current active work (e.g. CoAp Management Interface, Restconf) and
  – as input and guideline for future work.

• Proposal:
  – Adopt the two drafts in OPSAWG and publish after review and revision as Informational RFC.
  – Aimed target: IETF #89
Many thanks to the Contributors and reviewers on Coman maillist

• Following persons made significant contributions to this document:
  – Ulrich Herberg (Fujitsu Laboratories of America) contributed the Section 3.9 on Community Network Applications.
  – Peter van der Stok contributed to Section 3.5 on Building Automation.
  – Zhen Cao contributed to Section 3.10 on Mobile Applications.
  – Gilman Tolle contributed the Section 3.11 on Automated Metering Infrastructure.
  – James Nguyen and Ulrich Herberg contributed the Section 3.12 on MANET Concept of Operations (CONOPS) in Military.