An Update of Operators Requirements on Network Management Protocols and Modelling

draft-boucadair-nmop-rfc3535-20years-later

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NMOP Work Item

The current topics of focus for the working group are:

- NETCONF/YANG Push integration with Apache Kafka & time series databases
- Anomaly detection and incident management
- Issues related to deployment/usage of YANG topology modules (e.g., to model a Digital Map)
- Consider/plan an approach for updating RFC 3535-bis (**collecting updated operator requirements for IETF network management solutions**)

Excerpt from the NMOP Charter

Some History

Presented in IETF#120, 07/2024

What's Next?

- The WG coordinates with the IAB to organize NEMOPS Workshop with the hope to collect inputs from ***a wider operators' community*** (not only those participating to the IETF)
  - A workshop report will be published by the IAB
  - That report ***does not reflect IETF consensus***
- Options for discussion
  - **#1**: *Submit nmop-rfc3535-20years-later as an individual contribution to NEMOPS*
  - **#2**: *Maintain an NMOP document that reflects the WG consensus and build IETF consensus on specific key/engineering items*
- #1 seems reasonable for the long-term transformations
- However,
  - #2 seems more appropriate for IETF-specific adjustments (e.g., new YANG publication process, guidance about device models in the IETF)
  - The document can be adopted with the assumption that it might not be published as an RFC

OPSAREA IETF#122

NEMOPS Workshop
Call for Action

IAB

- Feedback on the outcome of the workshop at nemops-interest@iab.org
- The Program Committee is working on the workshop reports: https://datatracker.ietf.org/doc/draft-iab-nemops-workshop-report/
  - Send feedback or GitHub PR: https://github.com/intarchboard/draft-iab-nemops-workshop-report
- Reminder: workshop is not the end, it is just a trigger for further discussion!
- New requirements being finalized in NMOPS WG
- Time for some process experimentations…

NEMOPS

draft-boucadair-nmop-rfc3535-20years-later

00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08

Nov 2023 | Feb 2024 | Mar 2024 | Jun 2024 | Jul 2024 | Oct 2024 | Nov 2024 | Mar 2025 | May 2025

2024-02-02 Cindy Morgan ✉ Charter approved, group active

NMOP

Update IAB Workshop.md

boucadair authored on May 24, 2024

First commit to drafting NEMOPS CFP

Previous Next

This **SHOULD NOT** Be …

- a remake of NEMOPS Workshop
- a mirror of items that are already covered by advanced specifications
- a collection of random items without clear justification

What's in Then?

- A consolidated list of ***new requirements*** together with operators' ***prioritization*** of that list (strong, nice-to-have)
  - *draft-iab-nemops-workshop-report* ***does not update*** *RFC3535 requirements*

- A collaborative effort that involves all interested parties to build ***a very few set of actionable items*** that will be the focus of immediate work in the IETF
  - Actionable by the IETF as a whole, including WGs, ADs, etc.

But …

"..portions of the industry may not be participating in NMOP and thus the resulting document could be heavily skewed toward an IETF specific viewpoint."

- Remember that RFC3535 only reflected the consensus of the very few operators present in the room

- A ***more inclusive approach*** is followed here:
  - Capture requirements from operators participating in NMOP
  - Extract requirements from ***all papers*** submitted to NEMOPS
  - Extract requirements ***voiced in other venues*** (outreach events/surveys) than the IETF
  - Public disclosure of all operators' assessments

- All data is publicly available: Source

Sample Requirements from outside IETF

Outreach Key Points

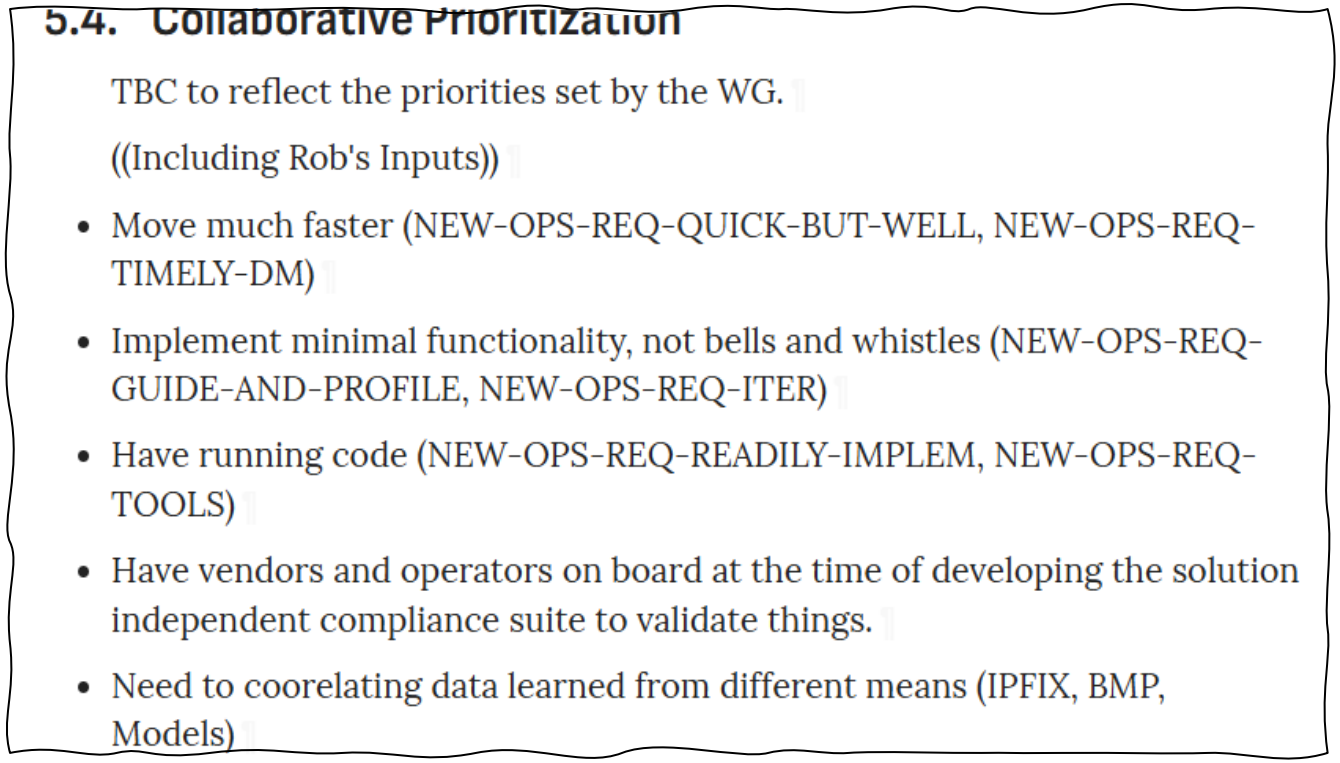
- (**NEW-OPS-REQ-TOOLS**) In network deployments, operations are typically at the bottom of the ladder. It's the most squeezed for time and resources. Network engineers are not typically seasoned developers. Development of needed in-house tools often takes years to develop. There is a need for tools that are easy to use and just work.
- There is debate fatigue. The protocol/model debate is a recurring conversation. The problem isn't going away.
- (**NEW-OPS-REQ-BRIDGE** and **NEW-OPS-REQ-GLUE**) It was suggested that other domains (e.g., K8N/automation) are years ahead of the current network engineering stack.
- (**NEW-OPS-REQ-TOOLS**) Support for multiple friendly, stable and feature rich libraries for programming languages is needed. Many DevOp routines use shell scripts, others use a high-level programming language. In any case, on the client-side, multiple programming languages are used.
- Screen scraping is both necessary and evil. This most often occurs when interacting with a device having only a CLI.
- (**NEW-OPS-REQ-INTEGRATION** and **NEW-OPS-REQ-LOSSLESS**)In some network deployments, the focus is solely on service-level models, such that device-level protocols and device-level models are unimportant. This assumes the existence of a device adaptation layer to transcode service-level models to device-level models and conform to the device-specific protocol.
- (**NEW-OPS-REQ-STRENGTHEN-DM**) There is a need for solutions to not hide vendor-specific knobs. Currently vendors compete by differentiating their offerings in unique ways. The reason why an Operator may choose a particular vendor is because of its differentiating features. Whilst standard models enable conformance, they must not hide the vendor-specific knobs. YANG deviations are a partial solution to not hiding vendor knobs.
- (**NEW-OPS-REQ-GUIDE-AND-PROFILE**) It was emphasized that streaming telemetry requires picking a model, and sticking with it. It is quite a commitment and the current environment makes the decision harder.
- (**NEW-OPS-REQ-EASE-EXPOSURE**) It was noted that IETF focus should be on defining abstract/service-level data models, since it is the only thing the community may ever agree on.
- (**NEW-OPS-REQ-GUIDE-AND-PROFILE**) There was a point about navigating non device-specific models being difficult. If understood correctly, the Network Engineer knows the CLI command, but has trouble grepping for it in YANG modules defined by SDOs.
- (**NEW-OPS-REQ-DM-RATIONALIZE**) There was a wish that IETF and OpenConfig models would merge.

Candidate Direction of Work

- ***Rationalize device models*** space and avoid redundant efforts
  - Clear guidance for the development of device models in the IETF
- More ***agile process*** for developing YANG modules
- ***More Profiling***
  - E.g., A profile with a set of recommendations about core/key NETCONF/RESTCONF features with the appropriate justification will help the emergence of more implementations that meet the operators' needs
  - YANG profiles
- ***Reassess the value of some IETF proposals*** vs. competing/emerging solutions would be useful (e.g., gRPC vs. YANG-Push)

Next Steps

- Update the new operators requirements list with more assessments form other operators
- Update



5.4. Collaborative Prioritization

TBC to reflect the priorities set by the WG.

((Including Rob's Inputs))

- Move much faster (NEW-OPS-REQ-QUICK-BUT-WELL, NEW-OPS-REQ-TIMELY-DM)
- Implement minimal functionality, not bells and whistles (NEW-OPS-REQ-GUIDE-AND-PROFILE, NEW-OPS-REQ-ITER)
- Have running code (NEW-OPS-REQ-READILY-IMPLEM, NEW-OPS-REQ-TOOLS)
- Have vendors and operators on board at the time of developing the solution independent compliance suite to validate things.
- Need to coorelating data learned from different means (IPFIX, BMP, Models)