An Update of Operators Requirements on Network Management Protocols and Modelling

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

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Why This I-D? (A Reminder)

- RFC 3535 was instrumental in structuring and guiding network management effort within the IETF
  - Catalyst for NETCONF/YANG

- More than 20 years after RFC 3535
  - Despite
    - Many protocols were specified (NETCONF/RESTCONF/COMI)
    - YANG is more and more perceived as a transport independent modeling language
    - Network automation is a trivial enabler in operations
  - There is a need for
    - Deployment reality check
    - Refreshing the deployment assumptions
    - Checking whether new requirements on network management operations are emerging from the operators
    - Assessing whether there are blocking points

Main Changes Since IETF#119

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NEW

Work Item/Milestone

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

Milestones

Search

Date	Milestone	Associated documents
Dec 2025	Submit NMOP Terminology to the IESG	
Dec 2025	Submit Network Incident Management to the IESG	
Dec 2025	Submit Network Anomaly Management to the IESG	
Sep 2025	Submit Architecture for YANG-Push to Message Broker Integration to the IESG	
Sep 2024	Adopt a document on updated operators requirements	
Sep 2024	Adopt a document on network anomaly management	

What's Next?

- The WG coordinates with the IAB to organize NEMOPS Workshop with the hope to collect inputs from ***a wider operators' community*** (noy 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 draft-boucadair-nmop-rfc3535-20years-later as an individual contribution to NEMOPS*
  - **#2**: *Maintain an NMOP document that reflects the WG consensus*

- #1 seems reasonable for the long-term transformations
- However, #2 seems more appropriate for IETF-specific adjustments (e.g., new YANG publication process)
- How should we proceed? #1, #2, or both?

Appendix

Sample Observations

- The current YANG device models ecosystem is ***fragmented***
  - IETF, OpenConfig, ONF, etc.
- Unlike service and network models, IETF-defined device models ***are not widely implemented***
- It is takes ***too long to produce device models*** in the IETF; with many functions not even available: many specs were abandoned
- The rule seems even to be the ***prevalence of proprietary YANG Modules, CLI, and limited abstraction***
- Many NETCONF-related tools are (being) specified by the IETF, but these tools are ***not widely supported*** (e.g., Push vs. gNMI)
- ***Lack of agile process*** for (the maintenance of) YANG modules
- ***Integration complexity***
- YANG-formatted ***data manipulation***
- Some networks have specific network management requirements such as the need for ***asynchronous operations*** or constraints on data compactness
- ***Translation and mapping*** between service/network and device models
- ***Inconsistent data structures*** in network protocols for data export
- Etc.

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)