

Side Meeting of Network-wide Protocol Monitoring

Yunan Gu, Shunwan Zhuang, **Zhenbin (Robin) Li**

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Here's thing

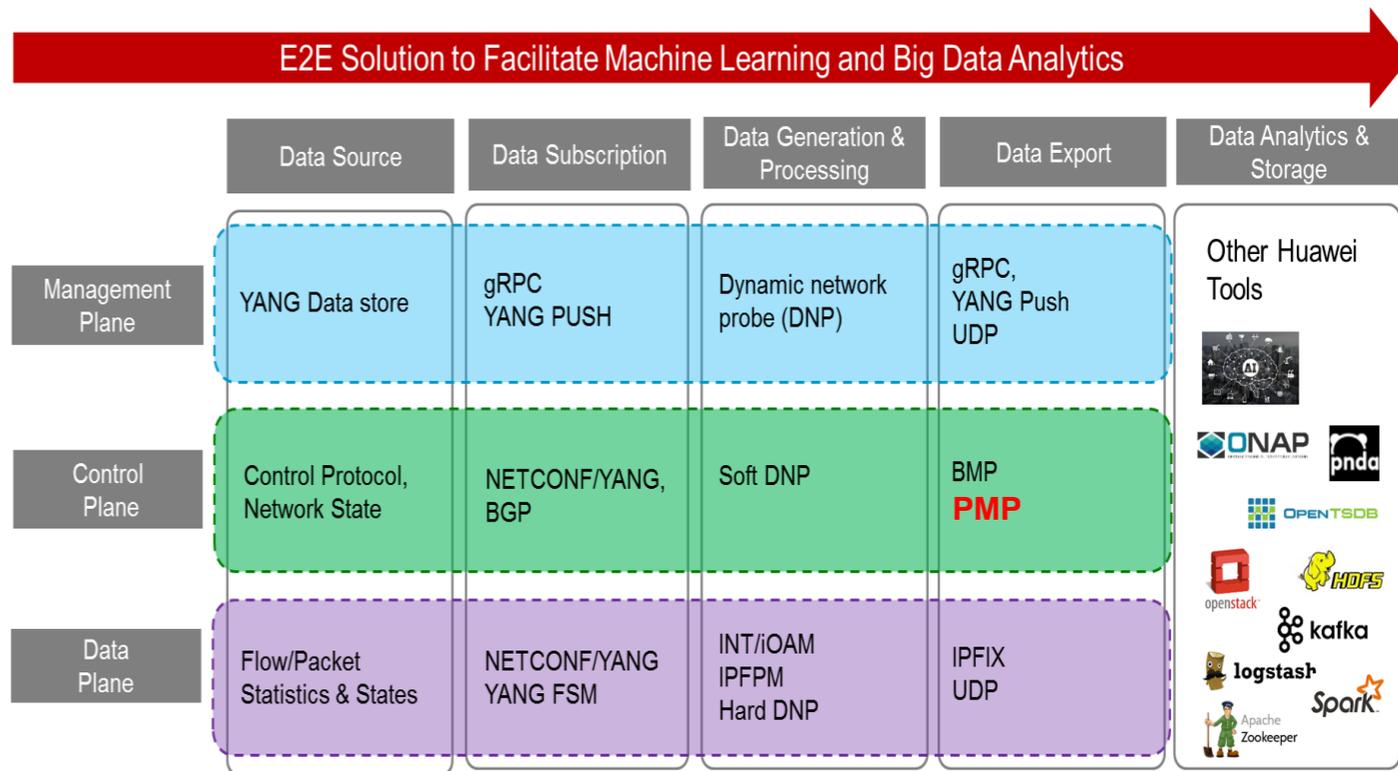
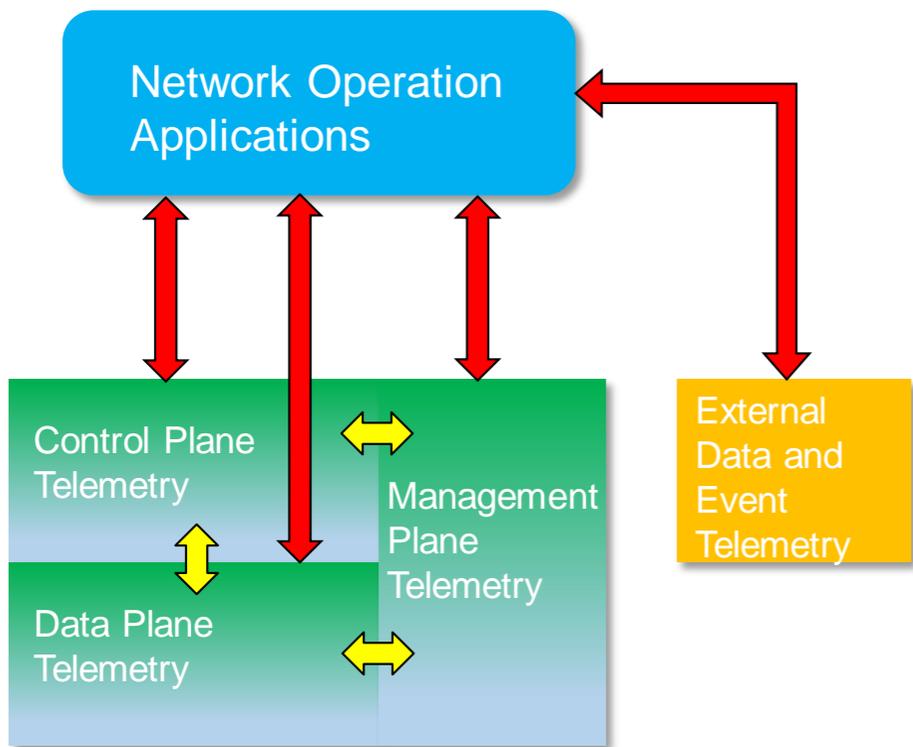
- @IETF 102
 - We submitted draft-gu-network-monitoring-protocol-00
 - Proposed a protocol (NMP) to monitor IGP (protocol PDU, statistics, adjacency states...) for network troubleshooting
 - Received a lot of discussion in the mailing list and presentations in GROW WG, OPSAWG.
- After IETF 102
 - Identified the use cases and conducted the requirements/gaps, investigated existing control plane telemetry tools and methods
 - We proposed the control plane telemetry framework for network troubleshooting and network planning purposes, instead of proposing a protocol
- @IETF 103
 - Organized a side meeting on Tuesday night for the control plane telemetry to discuss the problems, use cases, requirements, existing tools, and potential solutions
- Now
 - Wrap up the discussion and continue the work

Attendees of Side Meeting and Individual Discussion

- Attendees:
 - Adrian Farrel, Daniel King, Robert Wilton, Rahmen Reshad, Chris Bowers, Wim Henderickx, Zhenqiang Li, Chris Morrow, Rob Shakir, Hariharan Ananthakrishnan, Igor Gashinsky, Ignas Bagdonas, Stephane Litkowski, James Guichard, Zhenbin Li/Tianran Zhou, Yunan Gu, Shunwan Zhuang, Guangying Zheng
- Individual Discussion and solicit feedback from:
 - Benoit, Paolo, Acee, Jeff

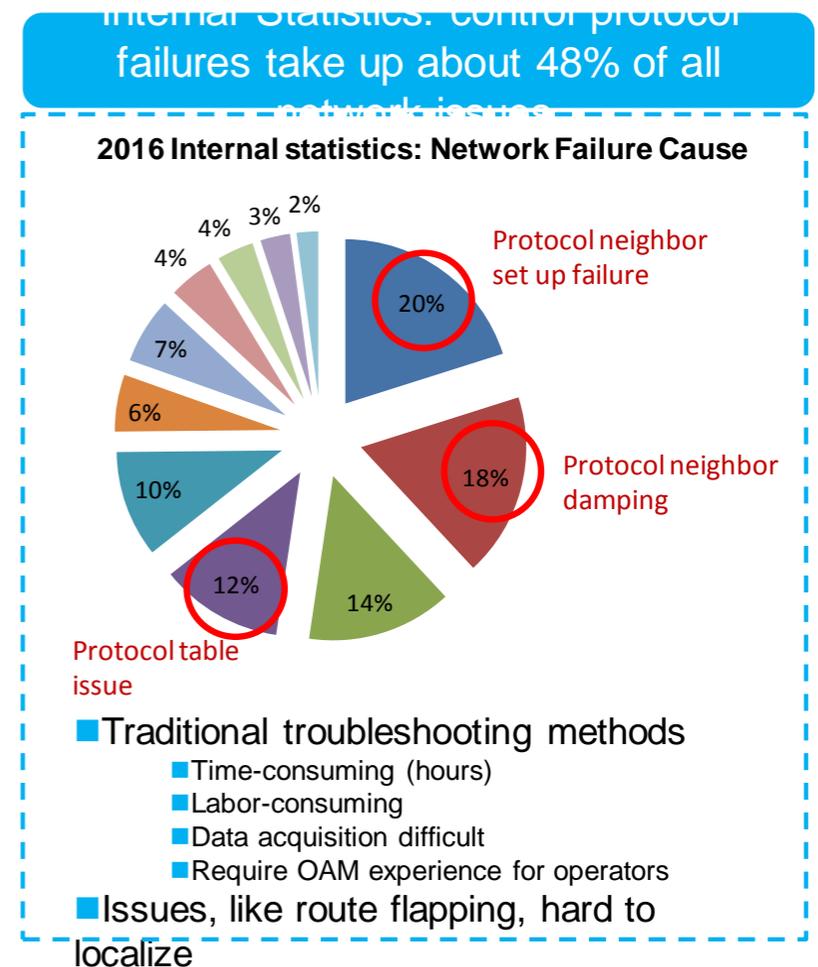
Thanks for your time and valuable feedback.

Network Telemetry Framework (NTF)



What are the problems?

- Network troubleshooting:
 - **48% of network problems are caused by bugs in protocol implementation or misconfiguration**
 - **Impact services**
- Network planning
 - **Real time applications from 5G networks + Web require real time TE optimization of the network (see SR-Routing, TE in LSR)**
 - Lacks route-traffic correlation insight



It's all about the use cases...

- Network troubleshooting use cases:
 - Use case 1: Route Loop
 - Use case 2: Route Oscillation
 - Use case 3: LSDB Synchronization Failure
 - Use case 4: TE Tunnel Failure
- Network planning use cases:
 - Use case 5: Route path optimization
 - Use case 6: Route policy validation
- More to be identified...

General Requirements from above use cases

1. A "tunnel" for the control plane data export:

- There should be a valid way (or ways) of exporting the required control plane data
- The export performance (e.g., control plane snapshot) should be able to meet per application requirements

2. Adequate protocol data collection:

- Both the data type coverage and the network coverage should be adequate
- The data type coverage:
 - Protocol PDUs (LSP, LSA, Hello, Open, Update...)
 - Network-wide RIBs
 - Policy
 - Correlated record of policy and route
 - And so on
- The network coverage:
 - Refers to the devices providing such information (network-wide)

Side meeting Discussion Wrap Up

- Discussion summary
 - Use cases identified real problems in live networks
 - Operators use a variety of existing tools from vendors to extract the data they need
 - Rough consensus
 - There are missing models, and that the models that already exist are not complete
 - Streaming telemetry as the potential generic solution for new data type collection per new applications
 - Standard work lags behind operation application and open source will be much helpful.

Possible Work to Do Next

- More use cases to be identified that are currently hard to detect/localize
- Requirements on new data type collection from use cases
- YANG Models Standardization through IETF and Open Source