GÉANT Telemetry, Past and Future

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Rick Havern
Head of Network Engineering

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Past and Current Techniques, at speed

- SNMP v2

- SNMP traps

- Netflow v5 -> v9 -> IPFIX

- Syslog -> Splunk

Why Change?

- SNMP doesn't really scale well, pull model
  - 5 minute polling cycles are typical, we are smoothing a lot of peaks
  - Microbursts are completely missed
  - Each management tool needs to poll the entire network, we are beating up the network device CPUs on a secondary function
  - GÉANT needs multiple servers to be able to finish the polling cycle in 5 minutes, adds complexity and fragility
  - Limited security
  - Unreliable transport

GÉANT

What is GÉANT doing

- Upgraded to Junos 18.4 in the lab to get full streaming telemetry (ST) support
  - 18.4 is the first support for OpenConfig and gRPC on the MX480/960 routers, which are the majority of the GÉANT estate
- Discussion with Software Development (SWD) how to consume this new class of data
- SWD wrote a parser to consume this data into an existing poller project, designed to store data in a time series database for any tool to consume; uses Influx and Grafana
  - At scale, planning to use Telegraf to decode protobuf streams
- Proceeding to upgrade production network to 18.4 after several false starts and zero day bugs popping up

What is Juniper doing

- OpenNTI was their previous tool, now abandoned in favor of…
- HealthBot is now the direction Juniper is taking, as it integrates with NorthStar, Juniper's PCE controller
- Junos 19.2R1, gNMI services for streaming Packet Forwarding Engine statistics is supported on MX960
- Junos 19.3R1, gRPC service for exporting statistics is supported on MX Series routers hosting MPC10E-10C-MRATE
  - GÉANT is going to use these in the western ring to implement 800G core links, likely next Junos target

Thank you

Any questions?

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