Operations, Administration and Maintenance (OAM) features for RAW

G. Papadopoulos, G. Mirsky and F. Theoleyre

detnet WG : IETF 108 : 27/07/2020

OAM features

- OAM for raw (https://tools.ietf.org/html/draft-theoleyre-raw-oam-support-01)
  - Discussion @ietf108 split the draft
    1. What is specific to RAW (version 2 & 3)
    2. The rest of the document a novel draft for detnet?

- Specific challenges for RAW technologies
  - https://tools.ietf.org/html/draft-theoleyre-raw-oam-support-03
  - Discussion on Thursday (RAW)
    - Over wireless links
    - Over fault-tolerant networks

Structure

- Operation
- Administration
- Maintenance

Operation

Objective: keep the network up and running

- Connectivity Verification
  - Connectivity for ***any*** flow
  - Connectivity for a ***specific*** flow
- Route Tracing (ping and traceroute : common tools for diagnostic)
  - Resources are reserved per flow
  - To define route tracing tools able to track the route for a specific flow.
- Fault Verification / Detection
  - Fault-tolerant networks mechanisms to detect and identify faults
  - Collect large amount of statistics, and/or aggregated metrics to understand the cause
- Challenge: OAM tools must not disturb data flows
  - … using resources that have been reserved for data packets

Administration

- Objective: keeping track of resources and how they are used

- Metrics to collect
  - Challenge: do not disturb data packets
    - Piggybacking? Flags?
  - Queueing delay, packet loss, bandwidth, distribution of arrivals, etc.
- Granularity: it depends on the *fault* to detect/identify
  - Per circuit, per device, per radio channel (raw)
- Worst-case metrics
  - Distributions rather than the average values, since AVG may not be representative
  - Example: maximum burst of arrivals, minimum inter-packet time, etc.

Maintenance

- Objective: facilitating upgrades and repairs

- Multipath
  - fault-tolerance through independent paths (i.e., Availability)
  - Replication / elimination
    - Deciding when packets should be replicated along the path
  - Logging (which path for which packet)
- Resource Reservation
  - Reserve enough resource even when the conditions change (e.g., failure)
- Soft transition (soft-reconfiguration)
  - Stay consistent when the infrastructure is reconfigured (enough resources, consistent paths)

 all these features are common with RAW (to our mind)

Next steps & Discussion

- Volunteers to CONTRIBUTE are welcome.
- Position in the WG?