Operations, Administration and Maintenance (OAM) features for RAW

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OAM features

  • 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
  • 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?