

Operations, Administration and Maintenance (OAM) features for RAW

draft-theoleyre-raw-oam-support-01

G. Papadopoulos and F. Theoleyre

OAM features

- Predictable and Available communications
 - Over wireless links
 - Over fault-tolerant networks
- Specific challenges for RAW technologies
 - Wireless → limited bandwidth
 - Dedicated resources for control?
 - Be proactive
 - Before the fault occurs
 - Energy efficiency for low-power devices

Structure

- Operation
- Administration
- Maintenance

Operation

Objective: keep the network up and running

- Connectivity Verification: ping packets but with labels
 - Test the connectivity for a given flow / circuit
- Route Tracing (ping and traceroute : common tools for diagnostic)
 - To be predictable, resources are reserved per flow in RAW
 - To define route tracing tools able to track the route for a specific flow.
- Fault Verification / Detection
 - RAW expects to operate in fault-tolerant networks → mechanisms to detect faults
 - Collect large amount of statistics, and/or aggregated metrics to understand the cause

Administration

- Objective: keeping track of resources and how they are used
- Metrics to collect
 - Packet losses, RSSI, Latency (end-to-end vs. buffering)
- Granularity: it depends on the *fault* to detect/identify
 - Per circuit, per device, per radio channel
- Worst-case metrics
 - RAW aims for real-time communications over heterogeneous architecture
 - Distributions rather than the average values
 - Example: maximum burst of packet losses, maximum duration of bursty interfering signal

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
- Resource Reservation
 - Reserve enough resource even when the conditions change
- Soft transition (soft-reconfiguration)
 - Stay consistent when the infrastructure is reconfigured (enough resources, consistent paths)

Next steps & Discussion

- More items to include that we are missing?
- Volunteers to REVIEW the draft.
- Specialists in OAM are welcome.

- Position in the WG? / Adopt as WG document?