LMAP/WT-304 : Extending the Information Model for User Traffic Avoidance

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Agenda

- Consider extensions for avoidance of user traffic including retry behaviour and reporting
- Should these be in the IETF Information Model or deployment (BBF) specific?
- User Traffic
  - User traffic threshold specification
  - Integration in the Information Model
- Retry Behaviour
  - Retry specification
  - Collision behaviour
  - Integration in the Information Model
- Cross Traffic Reporting
  - Level of detail

Initial Discussion

- Schedules currently state when to run tasks
  - No specification of whether a task should run in presence of cross-traffic
  - Only that cross-traffic can be reported in the results
- Specifying that tasks should not run seems obvious and not optional
  - Must consider impact on user experience as well as being able to use measurement results
- Should such specification be in IETF Information Model (rather than domain/device specific)?
  - For:
    - Most devices are likely to require some form of user activity collision control
    - Enables single controller to easily operate different types of devices
    - Help other domains (outside BBF)
  - Against:
    - Not all devices need to behave exactly the same way – results are still comparable with cross-traffic reporting
    - Different domains need different capabilities (e.g. WAN interface)
    - Keep LMAP Information Model simple

USER TRAFFIC AVOIDANCE

User Traffic Avoidance

- Crude Model
  - Threshold average bitrate over WAN for defined period
  - Problems:
    - Is it always WAN interface?
    - Distinction of upstream and downstream (e.g. detect particular types of traffic and test impact)
    - What if user is only momentarily dormant?

"Don't test if combined traffic on WAN interface is >32kbps in last 5 seconds"

User Traffic Avoidance

- Complex Model
  - Specify multiple rules, each including:
    - Which interface (or interface list)
      - Full set of BBF byte counters?
    - Which direction (or combined)
    - Threshold and measurement period
    - Percentile
    - Dormancy period

Is OR always sufficient?

"Don't test if any of the following:

- Downstream traffic on WAN interface is >32kbps for the maximum 30 seconds during the last 5 minutes
- Upstream traffic on WAN interface is >32kbps for the maximum 5 seconds during the last 5 minutes
- Combined traffic on any interface is >256kbps for the 90th percentile 20 seconds during the last 5 minutes"

User Traffic Avoidance

- Integration with Information Model
  - In task code/parameters
    - Implies task needs to be long-lived to monitor cross-traffic before measurement (or other load)
  - Common configuration?
    - Not desirable as different tasks may desire to not avoid cross traffic or impact user experience differently
  - Task Configuration? (always the same for that task)
  - Scheduled Task? (can be different for the same task in different schedules)
    - Are schedules already too complex?
  - Defined as separate user traffic rule objects with references (to avoid repetition)?

RETRY BEHAVIOUR

Retry Behaviour

- If a task avoids cross-traffic what happens?
  - Nothing (easy!)
  - Task retries after some interval
    - Randomness?
    - Related to dormancy period?
    - Need to avoid/deal with collisions with other schedules or retrying tasks
      - Don’t currently have mutex mechanism for scheduled tasks
        - Should we?
      - Retries at lower level of priority?
      - What happens if retrying task is running when scheduled task is due?
        - Delay on mutex?
  - Task runs as soon as cross-traffic level drops below threshold
- Should retry behaviour be configurable?

Retry Behaviour

- Retry Configuration
  - Single behaviour, per task configuration or per scheduled task?
  - Retry after time delay:
    - Retry delay and randomness?
  - Run as soon as cross-traffic declines
    - Priority for multiple queued tasks?

CROSS TRAFFIC REPORTING

Cross Traffic Reporting

- Currently define optional parameter to report bulk WAN cross-traffic
- Each task is free to define more granular reporting (e.g. over time, direction, interfaces)
- Do we need/want to standardise how cross-traffic is reported
  - IETF or BBF?