Recursive Monitoring Language in Network Function Virtualization (NFV) Infrastructure
draft-cai-nfvrg-recursive-monitor-00

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Motivation

• provide an automatic way to decompose/aggregate monitoring data in different infrastructure layers

• provide a way for developers and operators to easily access monitoring data collected from resources in a software-defined telecom infrastructure that contains a hierarchy of abstraction levels
  – several NFVRG drafts describe such infrastructure
Example – e2e delay
Example – aggregated CPU usage
Datalog – brief intro

• Subset of Prolog

• A program consists of declarative rules and a query
  – Rules: h <= p1, p2, ..., pn
    • p(x1, ..., xi, ..., xn)" are either predicates applied to arguments "xi" (variables and constants), or function symbols applied to arguments
  – Queries: q (m, y1, ..., yn)“
    • "q" is a predicate, contains arguments "m" (a function) and "yi" (arguments for that function)
Simple NF-FG representation

• sub(x, y): 'y' is an element of the directly descend sub-layer of 'x';
• link(x, y): direct link between elements 'x' and 'y';
• node(z): node in NF-FG
• The NF-FG representation is “ground facts” for Datalog
Requirements for a query engine

• MUST provide the capability to parse and interpret the query scripts which are written with the language
• MUST be able to retrieve the NF-FG created by NFV infrastructure and translate them into Datalog based ground facts
• MUST be able to query the database in which the monitoring results of primitive metric are stored
• An interface between query engine and the users of the language (e.g., developer or network service operator) MUST be defined to exchange the query scripts and query results.
Example – e2e delay

Ground rules

Rule template(s)

Query

query(e2e_delay, NF1, NF2)

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UNIFY presentation template
Example – e2e delay

Ground rules

Rule template(s)

Query
Conclusion

• We presented a proposal on using a Datalog-derived language for automatically aggregating monitoring data in NFV environments

• Next steps:
  – Receive feedback from the community
  – Provide additional templates
  – Enhance the NF-FG description to align with NFVRG drafts evolution