External Transaction ID for Configuration Tracing

draft-quilbeuf-opsawg-configuration-tracing-02

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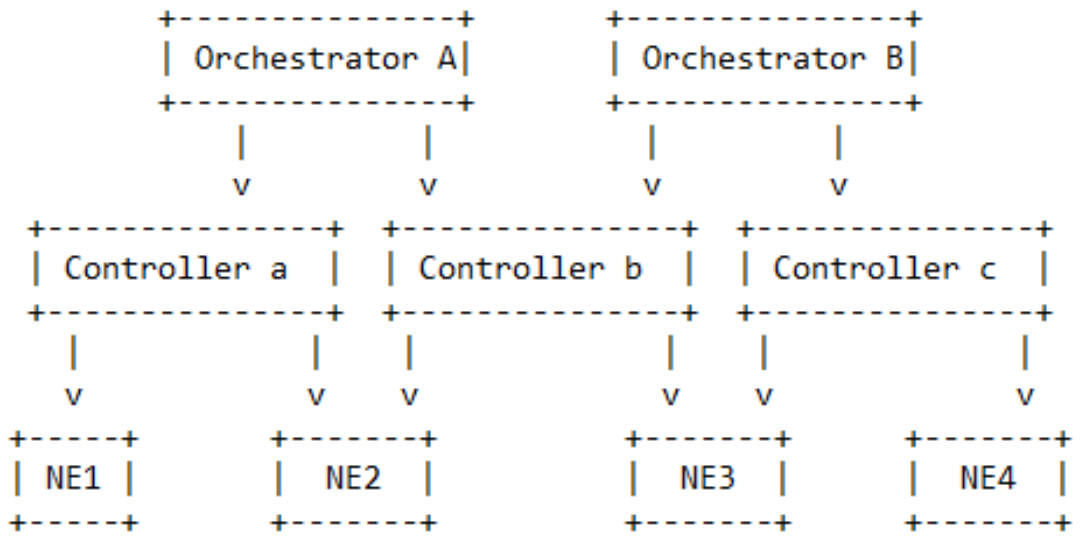
IETF 117, NETCONF

Motivation: Tracing Configuration

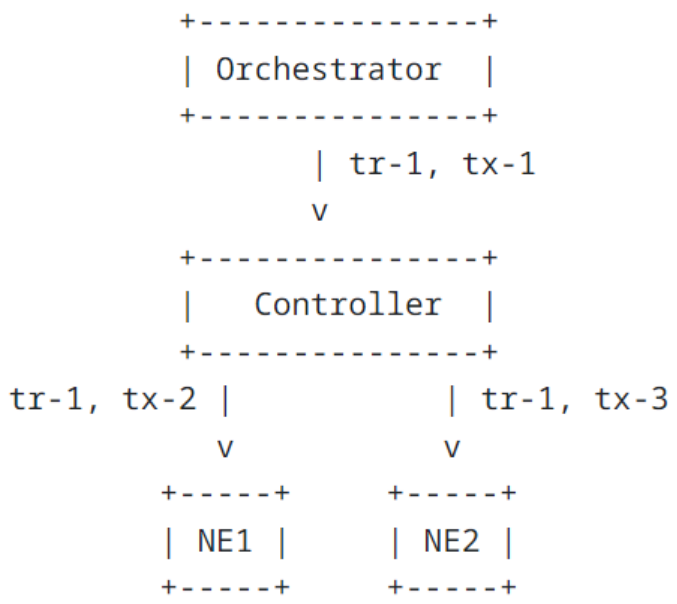


Something wrong with last change of configuration on NE2.
Where does the change comes from?

Use cases:

- **Configuration Mistake** *"Which service request, if any, caused the mistake?"*
- **Concurrent NMS modification** *"Both NMS assume that they are in charge of the NE and regularly overwrite each other configuration."*
- **Conflicting Intents** *"Conflicting configuration changes are cause by two conflicting service requests."*

Changes: switch to W3 Trace-Parent

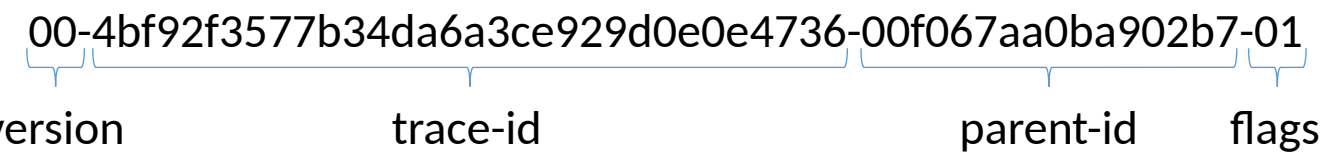



```
module: ietf-external-transaction-id
  +--ro external-transactions-id
     +--ro configuration-change* [local-commit-id]
        +--ro local-commit-id    string
        +--ro timestamp?         yang:date-and-time
        +--ro trace-parent
        |  +--ro version?       hex-digits
        |  +--ro trace-id?      hex-digits
        |  +--ro parent-id?     hex-digits
        |  +--ro trace-flags?   hex-digits
        +--ro client-id?         string
```

Modelled trace-parent, most important part is trace-id, which is the same for every transaction in the configuration chain.

For example in the Controller, the same local-commit-id will be mapped to “tr-1”, indicating that it was created by transaction “tx-1” and resulted in transactions “tx-2” and “tx-3”.

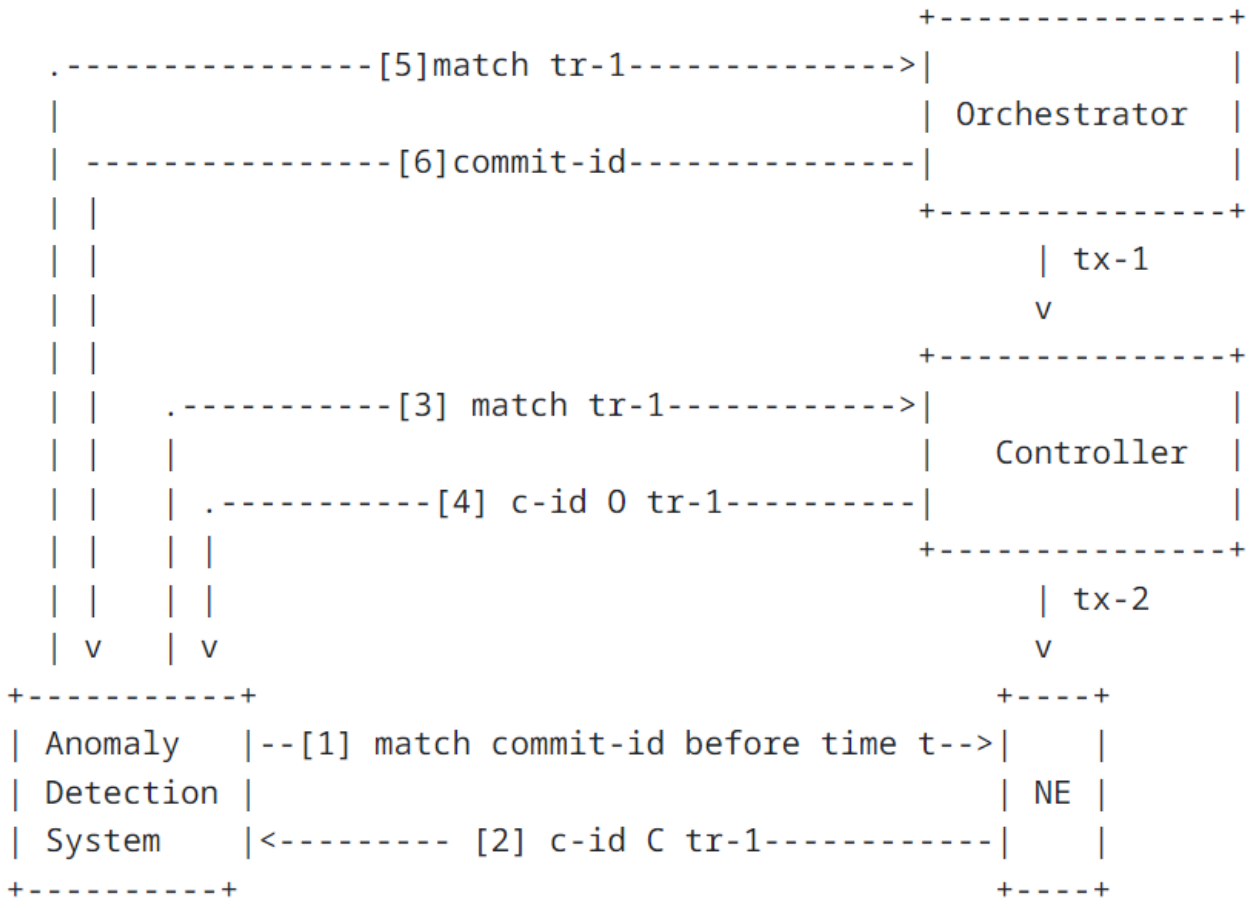
New: Modeling W3C Trace-parent




```
grouping trace-parent-g {
  description
    "Trace parent frow the W3C trace-context recommandation.
     Follows the format version 00.";
  leaf version {
    type hex-digits {
      length "2";
    }
    must "../version = '00'";
    description
      "Version of the trace context. Must be 00 to match the
       format described in this module.";
  }
  leaf trace-id {
    type hex-digits {
      length "32";
    }
    must "../trace-id != '00000000000000000000000000000000'";
    description
      "Trace ID that is common for every transaction that is
       part of the configuration chain. This value can be used
       to match a local commit id to a commit local to another
       system.";
  }
```

```
  leaf parent-id {
    type hex-digits {
      length "16";
    }
    description
      "ID of the request (client-side) that lead to configuring
       the server hosting this module.";
  }
  leaf trace-flags {
    type hex-digits {
      length "2";
    }
    description
      "Flags enabled for this trace. See W3C reference for the
       details about flags.";
  }
```

Configuration Tracing



1. Find the “bad” local-commit-id in the NE
2. Retrieve the corresponding trace-id “tr-1” and client id (Controller here)
3. Look for the local-commit-id of Controller that has “tr-1” as trace-id
4. Get the corresponding client id (Orchestrator here)
5. Look for the local-commit-id of Orchestrator that has “tr-1” as trace-id
6. Retrieve that local-commit-id, which might refer to service request for instance.

Recursive process: as long as a client-id is present, one can go a level upper in the hierarchy.

Open questions/items to consider

- Where to get client ID from: tracestate, trace Baggage?
- Should we make a more general solution (i.e. follow https://github.com/open-telemetry/opentelemetry-proto/blob/main/opentelemetry/proto/trace/v1/trace.proto) and only specify what is missing (i.e. client-id, local-commit-id)?

- ~~Risk of collision between southbound transaction-ids from different southbound elements~~
  - Trace-id should be unique

- ~~Is NETCONF the right scope? Should we include RESTCONF as well? Other configuration protocols?~~
  - RESTCONF supported as stated in draft-rogaglia-netconf-restconf-trace-ctx-headers-00

Conclusion

- Is our solution a good approach?
- We would like this draft to be adopted by NETCONF WG

Draft repo is at
https://github.com/JeanQuilbeufHuawei/draft-quilbeuf-opsawg-configuration-tracing