I2RS Traceability

draft-ietf-i2rs-traceability-02

IETF-92

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Summary & Next Steps

- Draft adopted as WG item
- All open issues raised on list and at interim have been addressed
- Authors believe draft is ready for WGLC
- Additional reviews always welcome

Changes Since IETF-91

- Added additional timestamp field
- Mentioned structured syslog should be used
- Added Boolean field to indicate if operational data present
- Mentioned trace logging can require additional resources
- Added trace log export should not block I2RS operations
- Recommended proper timestamp format and granularity
- Replaced relevant usages of "Transaction" with "Operation"
- Added a Transaction ID field

REVIEW OF DRAFT UPDATES

Change Item 1

- Log entry only describes one timestamp. Which is it (client request, agent request, client reply, agent reply)? [Nobo Akiya]

    RESOLUTION: The Timestamp field was replaced with "Request Timestamp" and a new "Result Timestamp" field was added. The former specifies the time at which the Agent received the request and the latter, the time the Agent replied or 0000-00-00T00:00:00.00 if the operation timed out.

Change Item 2

- In section 7.4.1, the draft describes syslog export. RFC5424 structured data elements should be used to encode fields. [Alex Clemm]

    RESOLUTION: New text was added in Section 7.4.1:

    If syslog is used for trace log retrieval, then existing logging infrastructure and capabilities of syslog [RFC5424] should be leveraged without the need to define or extend existing formats. For example, the various fields described in Section 5.2 SHOULD be modeled and encoded as Structured Data Elements (referred to as "SD-ELEMENT"), as described in Section 6.3.1 of [RFC5424].

Change Item 3

- We say that NULL MUST be used if an operation has no operation data; but the operation data may be NULL itself. [Ignas Bagdonas]

  RESOLUTION: Added a new Boolean field called "Operation Data Present" that indicates whether or not to expect operation data.

Change Item 4

- **Asynchronous, long running, blocking operations. Client request may not always be processed synchronously or within a bounded amount of time. To keep Operation and Result Code values in the same record may require buffering the trace log entries, and that may result in additional resource load on the agent and network element** [Ignas Bagdonas]

    RESOLUTION: Added text to section 7.2 to indicate that trace buffering can cause additional resource consumption.

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Change Item 4 (cont.)

Another noteworthy consideration is that Client requests may not always be processed synchronously or within a bounded time period. Consequently, to ensure that trace log fields, such as "Operation" and "Result Code", are part of the same trace log record it may require buffering of the trace log entries. This buffering may result in additional resource load on the Agent and the network element.

Change Item 5

- **Blocking on traceability information export. Traceability information export is a valuable diagnostics tool, but that is not the main function of the I2RS agent, and network element as such. Possible blocking of traceability component should not block the operation of the agent.** [Ignas Bagdonas]

  RESOLUTION: Text was added to section 7.4 to address this.

Change Item 5 (cont.)

Despite the fact that export of I2RS trace log information could be an invaluable diagnostic tool for off-box analysis, exporting this information MUST NOT interfere with the ability of the Agent to process new incoming operations.

Change Item 6

- **Timestamp granularity. RFC3339 defines subsecond granularity in timestamps but leaves the granularity of it aside. While this is highly implementation dependent, the nature of multiple and rapid operations would tend to ask for a recommended minimum granularity of trace records to be specified. While not enforcing, it could be recommended to support UNIX style 32.32 bit second.microsecond or 64 bit nanosecond timestamp granularity represented in RFC3339 format.** [Ignas Bagdonas]

  RESOLUTION: New text was added to the Request Timestamp and Reply Timestamp fields:

```
Given that many I2RS operations can occur in rapid succession, the
use of fractional seconds MUST be used to provide adequate
granularity. Fractional seconds SHOULD be expressed using human-
readable 32-bit second and 32-bit microsecond granularity in
second.microsecond format.
```

Change Item 7

- **Section 7.1: The term 'transaction' in this paragraph seems to describe the internal machinery of the agent that will likely be dependent on many implementation factors and possibly not having much meaning outside the context of such implementation if exported via the traceability mechanism. The I2RS operation level transactions typically would be controlled by the Actor and/or Client, and would not be visible to the Agent. Could you clarify the meaning of the transaction term as used in this context?** [Ignas Bagdonas]

  RESOLUTION: All relevant instances of Transaction were replaced with Operation.

Change Item 8

- **More-trace-logs-follow marker. An operation may return in multiple (sub-)results, possibly spread over a longer period of time compared to request processing and initial trace entry generation. A mechanism for recording into trace log that more output will follow at some later time would be useful.** [Ignas Bagdonas]

    RESOLUTION: We added a new Transaction ID field, which is an opaque string that represents a way to track multiple related I2RS operations. This text will evolve in relation to the work in netconf.

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