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Logging over Media over QUIC Transport
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Abstract

Real time systems often run into the problems where the network bandwidth for logging in shared with the real time media and impacts the media quality. There is a desire to transport the logging data at an appropriate priority level over the same transport as the media. This allows the logging data to take advantage of times when the media bitrate is blow the peak rate while not impact the peak rate available for media.

This document specifies how to send syslog RFC5424 type information over the Media Over QUIC Transport (MOQT) [I-D.ietf-moq-transport].

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1. Introduction

The idea is each device that was logging would publish each log message as an MOQT object. The devices or systems publishing the logs are referred to as resources and have a unique ResourceID. The URLs for the objects would be set up such that a subscriber could subscribe to each resource creating logs separately, and could pick the log priority level in the subscriptions. The log collector would subscribe to the logs from the appropriate Resources that the collector wished to monitor.

The data model used is consistent with the "OpenTelemetry Specification" [OTEL] (see https://opentelemetry.io/docs/specs/otel/logs/data-model/) (https://opentelemetry.io/docs/specs/otel/logs/data-model/)) and a superset of the [RFC5424] data model for logging.

[RFC5424] specifies a layered architecture that provides for support of any number of transport layer mappings for transmitting syslog messages. This document describes the MOQT transport mapping for the syslog protocol.

2. Terminology

2.1. Resource ID

Each Resource that creates logs has a unique resourceID. This is created by taking the MAC address of the primary network interface in binary, computing the SHA1 hash of it, then truncating to lower 64 bits. Note the SHA1 does not provide any security priories, it is just a hash that is widely implemented in hardware. If this is not possible, any other random stable 64 bit identifier may be used. The advantage of us MAC address is that many other management systems use this address and using it makes it easier to correlate with other systems. The disadvantage is that it reveals the MAC address.

3. Naming

The TrackNamespace consists of following tuples (represented in string format for ease of readability):

"(moq://moq-syslog.arpa/logs-v1/),(resourceID)"

The TrackName tuple is a single byte that has the log priority level in binary. Following the pattern:

<log_level>

The MOQT Group ID is timestamp (explain in the next section) in the message truncated to a 62 bit binary integer.

The MOQT Object ID is zero unless more than one message is produced in the same microseconds in which case they each will get their own Object ID.

4. Object Data

The object payload is a JSON [RFC8259] object with the following optional fields:

* severity: As defined in [RFC5424]. Encoded as string "Emergency", "Alert", ... "Debug". This is called ServerText in [OTEL].

* timestamp: single integer with number of microseconds since "1 Jan 1972" using NTP Era zero conventions.

* pri: As defined in [RFC5424]. Numeric value from 0 to 23 and default is 1 if not present.

* hostname: As defined in [RFC5424]. Note this might not be a hostname.

* appname: As defined in [RFC5424].

* procid: As defined in [RFC5424].

* msgid: As defined in [RFC5424].

* msg: As defined in [RFC5424]. This is a UTF-8 string.

Any other fields are treated as structured data as defined in [RFC5424] and include:

* TraceID: Used in [OTEL] and defined in [CRD-trace-context-2-20240328].

* SpanID: As defined in [OTEL].

* InstrumentationScope: As defined in [OTEL].

Any other fields are treated as "Attributes" when mapped to [OTEL].

5. IANA

TBD

6. Security Considerations

TBD

7. Examples

On 31 Dec 1999 UTC a server produces the log message "shutting down for Y2K" with severity INFO. The timestamp for this would be 3,155,587,200. The JSON data would be:

```
Group 1740807280, Object ID 0
{
   "timestamp":3155587200,
   "severity":"Info",
   "msg":"shutting down forY2K"
}
```

8. Normative References

[I-D.ietf-moq-transport]
Nandakumar, S., Vasiliev, V., Swett, I., and A. Frindell, "Media over QUIC Transport", Work in Progress, Internet-Draft, draft-ietf-moq-transport-14, 2 September 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-moq-transport-14>.

[RFC5424] Gerhards, R., "The Syslog Protocol", RFC 5424, DOI 10.17487/RFC5424, March 2009, <https://www.rfc-editor.org/info/rfc5424>.

[RFC8259] Bray, T., Ed., "The JavaScript Object Notation (JSON) Data Interchange Format", STD 90, RFC 8259, DOI 10.17487/RFC8259, December 2017, <https://www.rfc-editor.org/info/rfc8259>.

9. Informative References

[CRD-trace-context-2-20240328]
Kanzhelev, S., Dyla, D., Shkuro, Y., Sundaram, J. K., and B. Krol, "Trace Context Level 2", W3C CRD-trace-context-2-20240328, 28 March 2024, <https://www.w3.org/TR/2024/CRD-trace-context-2-20240328/>.

[OTEL] Ruech, A., "OpenTelemetry Specification 1.34.0", 11 June 2024, <https://opentelemetry.io/docs/specs/otel/logs/>.

Appendix A. Acknowledgments

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