**3GPP TSG-SA5 Meeting #155 *S5-243192***

Jeju, South Korea, 27 - 31 May 2024 revision of S5-242886

**Source: Nokia**

**Title: Rel-19 pCR TR 28.869 Add a potential solution for data streaming for cloud-native network functions**

**Document for: Approval**

**Agenda Item: 6.19.6**

# 1 Decision/action requested

***In this box give a very clear / short /concise statement of what is wanted.***

# 2 References

[1] 3GPP TR 28.869, " Study on cloud aspects for management and orchestration".

# 3 Rationale

There is a need to add a potential solution well-suited to the data streaming of performance metrics in cloud-native NF scenarios.

# 4 Detailed proposal

It is proposed that the following changes be made in clause 5.2.2 of TR 28.869 [1].

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| **Begin Change** |

### 5.2.2 Use case #2: data streaming for cloud native network function

#### 5.2.2.1 Description

Currently 3GPP management system support WebSocket based data streaming for PM, tracing and analytic [10] which establish point-to-point connection between the streaming data reporting MnS consumer and MnS producer. In cloud native deployment, a NF is realized in many micro-services whose workload instances are running in parallel, dynamically scaled in and out, and maybe distributed across multiple server nodes and cloud sites. In conventional WebSocket based solution, streaming data reporting MnS producer aggregate traffic from many distributed workloads generating large amount of data before streaming it to the streaming data reporting MnS consumer via the connection established. The streaming data reporting MnS consumer receive the aggregated traffic first via the connection before distributing to internal functions of the management system which may be also cloud native. This become a performance bottleneck, inefficient and difficult to be managed. Furthermore, cloud native applications are more sensitive to failures and system down time. If the connection between MnS producer and consumer fails due to any reason e.g. software failure, server hardware failure and transport network failure etc, it impacts the entire coverage area of the cloud.

In cloud native deployment, more efficient, highly scalable, and fault-tolerant streaming solution allowing parallel streaming from the micro-services may be needed. Furthermore, the management of streaming connections, resource allocations, scaling, and resiliency for data streaming in cloud native environment is a complicated task. The 3GPP management system shall evolve to address the challenges considering the use of existing industry solutions.

#### 5.2.2.Y Potential solutions

##### 5.2.2.Y.1 Solution #X: Management data streaming based on the message bus protocol

This potential solution proposes the addition of a new reporting method for management data for network functions running in the cloud that do not support the already defined management data reporting methods (i.e., the file-based data reporting MnS and the streaming MnS defined in TS 28.532[10]). The solution proposes the use of a new protocol (i.e., the message bus protocol) for the reporting of management data from the MnS producer to the MnS consumer as shown in Figure 5.2.2.Y.1-1.

MnS producer

MnS consumer

Message bus protocol

Message bus

Management data job control (e.g., PM or trace job creation request and response)

Figure 5.2.2.Y.1-1: Potential solution for management data streaming based on the message bus protocol.

The proposed solution enables MnS producer(s) to stream management data to the message bus when ready while also enabling the MnS consumer to consume these data from the message bus whenever they need to. In addition, this potential solution decouples the production of management data from the consumption of management data. The proposed solution does not have any architectural impacts on the 3GPP management system.

##### 5.2.2.Y.2 Solution #Z: Management data streaming based on HTTP and HTTPS

This potential solution proposes the addition of a new reporting method for management data for network functions running in the cloud that do not support the already defined management data reporting methods (i.e., the file-based data reporting MnS and the streaming MnS defined in TS 28.532[10]). The solution proposes the use of HTTP or HTTPS protocol for the reporting of management data from the MnS producer to the MnS consumer as shown in Figure 5.2.2.Y.2-1.

HTTP/HTTPS protocol

MnS producer

MnS consumer

Management data job control (e.g., PM or trace job creation request and response)

Figure 5.2.2.Y.2-1: Potential solution for management data streaming based on the HTTP/HTTPS protocol.

The potential solution has the benefit of enabling the MnS consumers to collect the management data from the MnS producers whenever they need it relying on the HTTP/HTTPS protocol. The proposed solution does not have any architectural impacts on the 3GPP management system.

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| **End Change** |