**3GPP TSG-SA Meeting #102 *SP-231730***

**Edinburgh, UNITED KINGDOM, 11th Dec 2023 - 15th Dec 2023**

**Source: SA WG5**

**Title: New SID: Study on Cloud Aspects of Management and Orchestration**

**Document for: Approval**

**3GPP TSG-SA5 Meeting #152 *S5-238194***

**Chicago, US, 13-17 November 2023**

**Source: Microsoft**

**Title: Study on cloud aspects of management and orchestration**

**Document for: Approval**

**Agenda Item: 6.2.2**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Study on Cloud Aspects of Management and Orchestration

Acronym: FS\_Cloud\_OAM

Unique identifier: 1020010

Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  |  | X | X |  |
| No | X | X |  |  |  |
| Don't know |  |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | Study  |
|  | Normative – Stage 1 |
|  | Normative – Stage 2 |
|  | Normative – Stage 3 |
|  | Normative – Other\* |

**\* Other = e.g. testing**

## 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 950032 | Study on Management of Cloud Native Virtualized Network Functions |  |

**Dependency on non-3GPP (draft) specification:**

ETSI GS NFV-IFA 049 "Network Functions Virtualisation (NFV) Release 4; Architectural Framework; VNF generic OAM functions specification"

# 3 Justification

Rel-18 WI on Management of Cloud-native Virtualized Network Functions (VNFs) specifies management enhancements for cloud-native VNFs based on the latest Release 4 specifications from ETSI NFV to support the cloud native VNF management by interacting with ETSI NFV MANO, as concluded in TR 28.834.

Meanwhile, ETSI has published ETSI GS NFV-IFA 049 "Network Functions Virtualisation (NFV) Release 4; Architectural Framework; VNF generic OAM functions specification" which specifies the VNF Generic OAM functions framework as part of NFV Release 4. As such, there is a need to study the potential impacts on 3GPP management system in use cases which make use of the VNF generic OAM functions specified in ETSI. This includes studying relevant use cases, the requirements to support these use cases and potential impact on the 3GPP management system.

There are newly developed industry solutions for management and orchestration of cloud native applications that leverage industry standards, i.e., Kubernetes based solutions that do not rely on NFV MANO. These solutions are under consideration in the industry for management and orchestration of cloud deployments of 3GPP networks; CSPs are looking into such solutions for hybrid cloud deployments that deploy cloud native applications with hyperscale cloud providers, it is important to study such solutions to enable their use by the operators. Lack of standardization in this area will lead to proprietary industry solutions that result in high complexity and cost of network operation specifically in multi-cloud deployments. To enable interoperability in use of such industry solutions, it is important for SA5 to study the impact of using various solutions, not limited to ETSI NFV MANO, for management of cloud native network functions on the 3GPP management system.

A cloud deployment scenario identifies the specific type of cloud environment based on ownership, scale, and access, as well as the cloud’s nature and purpose. Cloud deployment scenarios in the industry include public-cloud, private-cloud, hybrid-cloud (combining public and private clouds) and multi-cloud (consisting of more than one cloud provider clouds). Managing different cloud deployment scenarios may have impact on the 3GPP management system.

# 4 Objective

To study the cloud aspects of management and orchestration, including

**WT-1**: Analyse the use cases which utilize the VNF generic OAM functions (specified in ETSI) and their potential impacts when applied to the 3GPP management system and study whether and how to incorporate the VNF generic OAM functions into the 3GPP management system, i.e., the requirements and the potential solutions.

**WT-2**: Study the use cases that utilize the newly developed industry solutions for management of cloud native network functions which leverage industry standards not limited to NFV MANO; study the potential impact of supporting such use cases on the 3GPP management system, i.e., the potential requirements and solutions.

Note: WT-2 includes studying the terminology to determine the appropriate term and definition for cloud native network functions for use in the 3GPP management system.

**WT-3**: Study the use cases, potential requirements and possible solutions for 3GPP management system to support different cloud deployment scenarios, such as public-cloud, private-cloud, hybrid-cloud and multi-cloud deployment scenarios.

|  |  |
| --- | --- |
| **TU estimates and dependencies** |  |
| **Work Task ID** | **TU Estimate****(Study)** | **TU Estimate****(Normative)** | **RAN Dependency****(Yes/No/Maybe)**  | **SA Dependency****(Yes/No/Maybe)** | **Non-3GPP Dependency (EE/ZSM/TMF/etc.)\_** |
| WT-1 | 1 | 0.75 | No | No | ETSI |
| WT-2 | 1.5 | 1 | No | No | No |
| WT-3 | 0.5 | 0.25 | No | No | No |
|  |  |  |  |  |  |

**Total TU estimates for the study phase: 3**

**Total TU estimates for the normative phase: 2**

**Total TU estimates: 5**

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
| Internal TR | 28.XXX | Study on Cloud Aspects of Management and Orchestration | TSG#104(June 2024) | TSG#105(Sept. 2024) |  |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
|  |  |  |  |
|  |  |  |  |

# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA5

# 8 Aspects that involve other WGs

None

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Microsoft |
| Intel |
| AT&T |
| Ericsson |
| Verizon |
| Rakuten Mobile Inc. |
| US Cellular |
| DISH Network |
| Samsung |
| NEC |
| Mavenir |
| China Mobile |
| Deutsche Telekom |