**3GPP TSG-SA5 Meeting #160 *S5-252520***

**Goteborg, Sweden, 07 - 11 April 2025**

**Source:** **Moderator (China Mobile)**

**Title: New SID and/or WID on cloud aspects of management and orchestration phase 2**

**Document for: Approval**

**Agenda Item: 5.5**

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 )Management of cloud aspects of management and orchestration Phase 2 or New WID on Life Cycle Management (LCM) of NF Deployment

Acronym: FS\_Cloud\_OAM\_Ph2 or LCM\_NF\_Deployment

Unique identifier:

Potential target Release: Rel-20

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

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| --- | --- | --- | --- | --- | --- |
| 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 …

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

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| FS\_Cloud\_OAM | SA5 | 1020010 |  Study on Cloud Aspects of Management and Orchestration |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
|  |  |  |

# 3 Justification

TR 28.869 studies cloud aspects of management and orchestration, specifically, the use of VNF generic OAM functions defined by ETSI NFV, the use of industry solutions including ETSI NFV’s NFV-MANO, and other solutions for management of cloud native network functions, and the support of different cloud deployment scenarios.

The following key issues were analyzed and related solutions were provided in the TR phase:

- Use of VNF generic OAM functions supporting cloud-native VNFs/NF Deployment instances management:

The use cases of configuration, upgrade, traffic, and policy management of cloud-native VNFs were studied, and the corresponding solutions were described, which mainly introduce platform entities that interact with the 3GPP management system.

- Use of industry solutions for management of cloud-native VNF/NF Deployment instances:

 Use cases for LCM of NF Deployment instances (i.e., creation, modification, termination and scaling of NF Deployment instances) were studied. Use cases related to data streaming have been also analyzed. The corresponding solutions acknowledge that the 3GPP management architecture is flexible to support the use of NFV-MANO but not limited to it, for the management of NF Deployment instances.

- The Observability for Cloud Native Network functions were studied.

- To support cloud native concepts in 3GPP, several related terms has been studied and used in the TR 28.869, but there is no consensus on their definition and concepts used in the TR phase.

In addition to what has already been studied in the TR above, there are some new aspects to be studied in order to support cloud native.

The current inventory specifications (such as 3GPP TS 32.690, TS 32.692, TS 28.631, TS 28.632, TS 28.633) reflect the advances in mobile networks upto LTE. The evolving usage of network functions in cloud-native environments has led to disaggregation of software components needed to implement a 3GPP NF. SA5 should study the impact of all of these aspects on existing 3GPP inventory standards and specify the way forward.

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The current 3GPP SA5 specifications specify the management and orchestrations of virtualized parts of 5G Network functions using ETSI NFV MANO. However, there are other newly developed industry solutions for management and orchestration of cloud native applications, i.e., Kubernetes® based solutions that do not rely on ETSI NFV MANO. To enable the use of various solutions by the operators, it is critical for 3GPP to support the use of non ETSI NFV MANO solution in addition to existing use of ETSI NFV MANO solution.

SA5 has conducted a study on LCM of NF Deployment in Rel-19. The following aspects have been studied and described in TR 28.869:

* 3GPP management architecture to support LCM of NF Deployment using various industry solutions.
* LCM of NF Deployment use cases, requirement, and solutions

3GPP specification enhancement is needed to capture above aspects as 3GPP stage 1 and stage 2 for the normative work.

(Note: The above content need to be added/updated based on the discussion at the SA5 meeting, as the TR has no conclusions as so far.)

# 4 Objective

The objectives include the following aspects for the 3GPP management system to support cloud native:

WT-1: Investigate/Specify potential terminology and concepts.

WT 1-1: Define/Specify terminology and concepts to support cloud native in 3GPP.

WT 1-2: Investigate/Specify the relationship between the 3GPP NF and the NF deployment.

WT-2: Investigate/Specify enhancements for 3GPP management system related to LCM to support cloud native or to support LCM of NF Deployment.

WT 2-1: 3GPP management architecture evolution.

WT 2-2: The use cases, requirements and solution/procedures using non ETSI NFV MANO, and potential update to existing ones using ETSI NFV MANO.

WT 2-3: Study/Specify usage of declarative descriptors and define the declarative descriptors to support cloud native NF /NF Deployment management.

Objective of S5-252701

WT-1: Specify 3GPP management architecture to support LCM of NF Deployment

WT-2: Specify the requirements for 3GPP management system to support LCM of NF Deployment

WT-3: Specify the use cases for 3GPP management system to support LCM of NF Deployment:

* New use cases to support LCM of NF Deployment using non ETSI NFV MANO
* Potential update to existing use case to support LCM of cloud native VNF using ETSI NFV MANO

WT-4: Specify the procedures for 3GPP management system to support LCM of NF Deployment:

* New procedures to support LCM of NF Deployment using non ETSI NFV MANO
* Potential update to existing procedure to support LCM of cloud native VNF using ETSI NFV MANO

WT-3: Enhancements related to CM, PM, FM and policy management.

WT 3-1: Study enhancements related to provisioning (including CM and policy management) and observability/telemetry (such as PM, FM, logging, etc.) for cloud native. Example target operations are software management, heartbeat monitoring and access control, data streaming for monitoring.

WT 3-2: Investigate interactions with external cloud management systems that support generic OAM functionality, including frameworks and solutions for observability used in cloud-native environments, like telco PaaS systems.

WT-4: Study/Specify enhancements related to data streaming for NF when 3GPP supports cloud-native.

  WT-4.1: Investigate potential requirements for enhancing data streaming for the NF based on message bus.

 WT-4.2: Investigate potential solutions and impacts for data streaming of the NF based on message bus.

WT-5: Advanced patterns in management of cloud native VNFs

WT 5-1: Study the Gitops approach and its relationship with the 3GPP management system.

WT 5-2: Study how topology and inventory management are impacted by supportting cloud native.

## TU estimates and dependencies

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| --- | --- | --- | --- | --- |
| **Work Task ID** | **TU Estimate****(Study)** | **TU Estimate****(Normative)** | **RAN Dependency****(Yes/No/Maybe)**  | **SA Dependency****(Yes/No/Maybe)** |
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# 5 Expected Output and Time scale

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| --- |
| 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 |
|  |  |  | SA#110 | SA#111 |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| TS 28.531 | Add support to LCM of NF Deployment using non ETSI NFV MANO, update existing LCM use cases and procedures using ETSI NFV MANO | SA#114 |  |
| TS 28.533 | Possible update to support management and orchestration using various solutions | SA#114 |  |
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# 6 Work item Rapporteur(s)

# 7 Work item leadership

SA5

# 8 Aspects that involve other WGs

ETSI NFV

# 9 Supporting Individual Members

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| Supporting IM name |
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