**3GPP TSG-SA5 Meeting #157 *S5-246246d1***

Hyderabad, India, 14 - 18 October 2024

**Source: NTT DOCOMO**

**Title: pCR 28.869 location information in NFV**

**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 v1.0.1 Study on cloud aspects of management and orchestration.

# 3 Rationale

The contribution proposes to add conclusions and recommendations.

# 4 Detailed proposal

It proposes to make the following changes to TR 28.869 [1].

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| **1st Change** |

5.3.1 Use case #1: Placement of cloud native NFs

5.3.3.1 Description

The distributed cloud deployment types enable the network to be deployed across different geographical locations. In this use case CSPs use the information about the available placement locations and resources in each, if available, to select the optimal location(s) for an NF. This provides the NOPs/CSPs with the choice of where a particular NF can be placed at the time of deployment. The parameters that can impact the choice of placement include geographical service area, performance in terms of latency and available bandwidth, as well as level of deployment complexity. In order to support distributed cloud deployments, the 3GPP management system needs to provide the capability for NOPs/CSPs to learn the available deployment locations.

Note: The mechanism to indicate the preferred placement of a particular NF is already supported by use of attribute ‘locality’ in the ManagedNfProfile datatype.

5.3.3.2 Potential requirements

**REQ-1** The 3GPP management system should be able to collect information about the available deployment locations.

NOTE: The granularity of the location information is FFS.

5.3.3.3 Potential solutions

This solution considers the NFV-MANO approach for managing the placement of a particular NF in the cloud at the time of deployment. According to ETSI GS NFV-IFA 011 [22] the attributes "nfviConstraint", "requestedAdditionalCapabilities" and "mcioConstraintsParams" in the Vdu information element, outlined in clause 7.1.6.2.2, defines the scope of deployment constraints in terms of capabilities necessary for the virtualised resources and/or containerized workloads conforming a cloud-native VNF. The same document also provides details on the use of affinity/anti-affinity scopes, along with related information on how to force deployments affinity in Annex B.

ETSI GS NFV-IFA 036 [26] clause 4.2.8 provides information on how to manage the CIS cluster to create rules and scope for containerized workload placement. A VNF declares its MCIO constraints (what it needs), and the CISM is then informed about the values to use for the actual labels and other information to conform to those placement constraints.

Furthermore, ETSI GS NFV-IFA 013 [23] enables a consumer of NFV-MANO, like the 3GPP management system, to provide input requirements in various NS/VNF LCM operation about location constraints to be considered for the placement of NS and VNF instances (e.g., refer to parameters "locationConstraints", "nestedNsLocationConstraints" in the instantiate NS operation input parameters specified in clause 7.3.3.2 of ETSI GS NFV-IFA 013 [23]).

Location constraints, as specified in stage 3 solutions of the ETSI GS NFV-IFA 013, provide the capability to represent locations in various forms, such as a country code, as a civic address combined with a country code, or as an area, that can also be combined with a country code. The same ETSI GS NFV-IFA 013 [23] specifies the NFVI Capacity Information interface, which enables a consumer to query information about NFVI capacity associated to infrastructure, such as NFVI and CIS clusters, managed by VIM and CIS cluster management (CCM) functions, at given NFVI-PoP locations. Currently, capacity information is associated to logical identifiers of VIM and CCM functions.

In addition, the present solution proposes that NFV-MANO should also provide actual location information to enable matching it with location constraints information already available on the ETSI GS NFV-IFA 013 [23]. As part of the NFVI capacity services provided by the NFV-MANO, additional data is added in respective information elements to provide location information and associate such information to the logical identifiers of VIM and CCM functions.

5.3.3.4 Evaluations of solutions

The potential solution supports the capability to perform NF deployment placement for cloud-native VNFs using NFV-MANO. The solution is compatible with the 3GPP management system framework but would need the NFV-MANO to enable adding information about the available deployment locations in their capacity and/or inventory services and further provide such information through association between logical identifiers currently used and location information.

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| **End of Changes** |