**3GPP TSG-SA5 Meeting #148-e *S5-233239rev2***

e-meeting, 17-25 April 2023

**Source: Huawei, Deutsche Telekom**

**Title: Conclusion for KI#2 Energy Consumption of containerized VNF/**

**VNFCs**

**Document for: Approval**

**Agenda Item: 6.9.1.1**

# 1 Decision/action requested

**Include the proposed changes in TR 28.913**

# 2 References

[1] 3GPP TR 28.913: "Study on new aspects of EE for 5G networks phase 2"

# 3 Rationale

This pCR proposes to introduce a conclusion to Key Issue #2 into TR 28.913 [1].

# 4 Detailed proposal

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| **First change** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 28.554: " Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[3] ETSI GS NFV-IFA 027 V4.2.2 (2021-07): "Network Functions Virtualisation (NFV) Release 4; Management and Orchestration; Performance Measurements Specification".

[4] ETSI ES 202 336-12 V1.2.1 (2019-02): "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model".

[5] ETSI GS NFV-EVE 004 V1.1.1 (2016-03): "Network Functions Virtualisation (NFV); Virtualisation Technologies; Report on the application of Different Virtualisation Technologies in the NFV Framework".

[6] ETSI GR NFV-IFA 029 V3.3.1 (2019-11): "Network Functions Virtualisation (NFV) Release 3; Architecture; Report on the Enhancements of the NFV architecture towards "Cloud-native" and "PaaS"".

[7] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[8] 3GPP TS 38.401: "NG-RAN; Architecture description".

[9] The Greenhouse Gas Protocol - <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

[10] 3GPP TS 28.530: "Management and orchestration; Concepts, use cases and requirements".

[11] 3GPP TS 28.552: " Management and orchestration; 5G performance measurements".

[12] ETSI GS NFV-IFA 008 V4.3.1 (2022-05): "Management and Orchestration; Ve-Vnfm reference point - Interface and Information Model Specification".

[13] 3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".

[14] 3GPP TS 32.551: "Energy Saving Management (ESM); Concepts and requirements".

[15] 3GPP TS 22.261: "Service requirements for the 5G system".

[16] 3GPP TS 22.289: "Mobile Communication System for Railways".

[17] 3GPP TS 22.186: "Enhancement of 3GPP support for V2X scenarios; Stage 1".

[X] ETSI GR NFV-EVE 021 V0.9.0 (2022-12): " Network Functions Virtualisation (NFV) Release 5; Evolution and Ecosystem; Report on energy efficiency aspects for NFV ".

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| **Next change** |

## 4.2 Key Issue #2: Energy Consumption of containerized VNF/VNFCs

### 4.2.1 Description

The Rel-17 definition of the Energy Consumption (EC) of VNF/VNFCs (see TS 28.554 [2] – clauses 6.7.3.1.2 and 6.7.3.1.3) is valid for VM-based VNFs, i.e. when VNF/VNFC(s) are implemented on Virtual Machine(s) (VM).

ETSI ISG NFV started considering that VNF/VNFCs can be implemented using OS container technology (see e.g. [5] and [6]).

In the context of this key issue, a VNF (respectively VNFC) running using OS container technology is called a ‘containerized VNF’ (resp. ‘containerized VNFC’), as per ETSI GR NFV-IFA 029 [6] clause 5.3.1.

This key issue aims at investigating on potential definition(s) of EC for containerized VNF/VNFCs.

### 4.2.3 Conclusion

There is no potential solution to key issue #2 in this version of the document.

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| **End of changes** |