

5G Energy Efficiency

S5-242576

Release 19 Study on energy efficiency and energy saving aspects of 5G networks and services



-  Several Work Tasks, among which WT-1: Leftovers from Rel-18
 - Energy Consumption of 5G Network Functions
 - Rel-17
 - Focus on VM-based VNF/VNFCs
 - EC is estimated based on vCPU usage of underlying virtual compute resource instance
 - Rel-18
 - EC can be estimated based on vCPU usage, vMemory usage, vDisk usage, I/O traffic
 - Still focused on VM-based VNF/VNFCs

Energy Consumption of a Network Function in Rel-19 (1/2)



- To be addressed in Rel-19, wrt. Energy Consumption of 5G Network Functions
 - Consider Container-based VNF/VNFCs
 - Two tracks being studied:
 - Extend the Rel-17/18 approach for estimating the Energy Consumption of VNF/VNFCs based on Containers
 - New approach aiming at measuring the actual Energy Consumption of VNF/VNFCs based on Containers
 - Both approaches rely on new ETSI NFV measurements defined in IFA 027 v5.x.y (to be published in May 2024)
 - 3GPP management system will collect these measurements from ETSI NFV MANO

Energy Consumption of a Network Function in Rel-19 (2/2)

 Both approaches have pros and cons

Continuation of Rel-17/18 (NF EC Estimation)	New approach (NF EC Measurement)
+ Same approach as for VM based VNF/VNFs	+ Better accuracy
- Accuracy	- Based on a particular and non-standardized solution (Kepler, eBPF, Redfish)

 Both approaches must be investigated further

For discussion

- 📶 3GPP SA5 Rel-19 study item on EE is to be completed by August 2025
- 📶 Normative phase from Sept. 2024 to Sept. 2025
- 📶 SA5 expects that IFA 027 v5.x.y be published ASAP so that SA5 can use it to specify its new EE KPIs
- 📶 SA5 expects that the two approaches (cf. previous slides) will have solutions in Rel-19

Thank you !