**3GPP TSG-SA WG1 Meeting #108 S1-244587**

**Orlando, Florida, USA, 18-22 November 2024** *(revision of S1-244196)*

Title: Diverse device types

Agenda Item: 8.1.1 System and Operation Aspects

Source: Apple

Contact: Mona Mustapha at apple dot com

*Abstract: This contribution describes the need for a 6G system to support diverse device types, to enable requirements from different market segments.*

---------- Proposed changes ----------

## 5 System and Operational Aspects

Editor's Note: "System and Operational Aspects" facilitates system and network operation features that underpin overall operation, covering aspects that apply across use cases and services, and those that relate to network operations. These aspects include, for example: migration scenarios, interworking with earlier 3GPP systems, interworking with non-3GPP system, roaming and interconnection, network simplification, network sharing, security, privacy, resilience, sustainability and energy efficiency, device diversity, support of legacy services

## 5.1 Continued support for Diverse device types

### 5.1.1 Description

It is envisioned that a next generation system will continue to support a population of UEs with varying capabilities that would support different use cases. For example, simple devices with limited capabilities would be supported by the 6G network, alongside more sophisticated devices that support more advanced features and capabilities.

To illustrate this further, simple devices could have lower throughput, lower bandwidth, lower power consumption and lower processing power capabilities. Other more sophisticated devices could have higher throughput, higher bandwidth, higher power consumption and higher processing power capabilities.

To better support the various device types that represent different market segments, the 6G system needs the flexibility to optimally support these different device types.

While different device types already exist in 5G, it is essential that this requirement is included from the first release of 6G.

### 5.1.2 Existing features partly or fully covering the use case functionality

TS 22.261 indicates in various clauses, the intent of a 5G system to support "diverse UEs and services" in the informative text, for example:

Introduction clause:

*The need to support different kinds of UEs (e.g. for the Internet of Things (IoT)), …*

Clause 6.2.1:

*A key feature of 5G is support for UEs with different mobility management needs. 5G will support UEs with a range of mobility management needs …*

Clause 6.4.1:

*5G introduces the opportunity to design a system to be optimized for supporting diverse UEs and services.*

Also, a number of requirements in TS 22.261 mention "UE capabilities":

*The 5G system shall support a mechanism for a UE to select and access network slice(s) based on* ***UE capability****, ongoing application, radio resources assigned to the slice, and policy (e.g., application preference).*

*The 5G system shall allow the operator to assign a UE to a network slice, to move a UE from one network slice to another, and to remove a UE from a network slice based on subscription,* ***UE capabilities****, the access technology being used by the UE, operator's policies and services provided by the network slice.*

*The 5G system shall support UEs with multiple radio and single radio* ***capabilities****.*

Furthermore, in 4G, TS 22.278 clause 6.2 indicates:

*The Evolved Packet System shall provide for session mobility and session adaptation to* ***terminal capabilities****, …*

There are features already defined in other WGs in 5G that reflect the diverse device support in 5G. However, there are no requirements defined in Stage 1 in 5G. Therefore, it is proposed that a requirement to enable the network to support different device types / capabilities is defined more clearly.

### 5.1.3 Potential Requirement to align with existing 5G capabilities

[PR 5.1.3-001] The 6G system shall support UEs with different characteristics such as data rate, latency, power consumption, battery life, power supply type, available processing power, storage/memory, form factor, weight, minimum life duration, etc.