



ECC Recommendation (11)03

Numbering and Addressing for Machine-to-Machine
(M2M) Communications

approved 05 May 2011

latest amended 22 June 2023

INTRODUCTION

Since the adoption in 2011 of this Recommendation (11)03 on Numbering and Addressing for Machine-to-Machine (M2M) Communications numerous M2M applications have entered the market.

CEPT administrations have also gained a broader view of the growing ecosystem for the Internet of Things (IoT), Industrial Internet of Things (IIoT) and Machine Type Communication (MTC)¹. M2M is a communication technology where information can be transferred in an automated way with little or no human interaction between devices and applications. The advantages of M2M are great for both business and consumer purposes. For business, M2M technology is being leveraged to bring about more effective and efficient operations. For consumers, as an example, applications used for home security and smart metering are facilitated by M2M.

Even if most M2M applications are used in a private network where network internal numbers or private IP-addresses are sufficient, in cases where interoperability with a public electronic communications network is needed, public identifiers have to be used. In current and foreseeable cases, such public identifiers include typically national E.164 numbers. In this regard, the current and continued need for national E.164 numbers for such cases requires that accessibility of national E.164 numbers for M2M applications should be safeguarded.

For those use cases, where E.164 numbers from national numbering plans are used, operators and M2M Service Providers typically use existing E.164 mobile number ranges or dedicated M2M numbering ranges where defined. The usage of the existing mobile numbering ranges offer the advantage of the relatively simple implementation in the already existing networks. However, in many countries dedicated M2M number ranges were defined either due to scarcity of E.164 mobile numbers or due to other reasons (e.g. different regulatory treatment between mobile and M2M number ranges).

ITU-T has introduced Country Code (CC) 882 (first assignment made in 1998) and CC 883 (first assignment made in 2007) for shared numbering resources for networks operational in more than one country and is currently working on a new recommendation that could lead to allocation of a CC specific for IoT. Also, within the EU, Member States have to make available a range of non-geographic numbers which may be used for the provision of electronic communications services other than interpersonal communications services, throughout the territory of the Union² and such ranges are suitable for M2M applications. This Recommendation refers to these new possibilities and recommends a harmonised view on preferable numbering and addressing solutions.

It should be noted that E.118 and E.212 identifiers are not within the scope of this Recommendation.

¹ For the purpose of this Recommendation the term M2M is encompassing M2M, IoT, IIoT, and MTC.

² In accordance with Article 93(4) of the Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018.

ECC RECOMMENDATION (11)03 OF 24 JUNE 2011 ON NUMBERING AND ADDRESSING FOR M2M COMMUNICATIONS, AMENDED 17 JUNE 2016, AMENDED 22 JUNE 2023

“The European Conference of Postal and Telecommunications Administrations,

considering

- a) that the development of M2M applications should be taken into account when managing the national numbering plan;
- b) that for M2M applications which need to interoperate with public networks will be largely based on the use of E.164 numbers and so accessibility of national E.164 numbers for M2M applications should be safeguarded;
- c) that identifiers other than national E.164 numbers might be used for M2M applications (e.g. IPv6 addressing and/or External Identifiers³);
- d) that there could be a correspondingly large amount of E.164 numbers associated with each single M2M application;
- e) that there may not be sufficient capacity in the existing mobile number ranges to accommodate numbering requirements for M2M applications;
- f) that in the EU, Member States have to make available a range of non-geographic numbers which may be used for the provision of electronic communications services other than interpersonal communications services, throughout the territory of the Union, and such range is suitable for M2M applications;
- g) that the use of network internal numbers or global numbers or External Identifiers may create lock-in of customers, which may make it harder for such customers to switch their provider;
- h) that Over-The-Air (OTA) provisioning of numbering resources may however facilitate switching of providers and also reduce potential lock-in of customers;
- i) that ECC Report 274 [1] provides guidance on OTA provisioning of SIM profiles including its impact on Number Portability;
- j) that ECC Recommendation (16)02 [3] provides guidance and high level principles regarding extraterritorial use of E.164 Number;
- k) that ECC Report 337 [4] provides guidance on the management of public numbering resources for mobile non-public networks.

recommends

that CEPT administrations should:

1. establish, in cooperation with market players, numbering solutions for M2M applications as part of the national numbering plan;
2. take into account that global numbers and identifiers other than E.164 numbers (e.g. IP addressing and/or External Identifiers) might be used for M2M applications;

³ 3GPP Technical Standards (TSs) 23.003 have introduced External Identifiers, that are public resources. In a mobile environment, External Identifiers can substitute E.164 numbers, while E.212 numbering resources continue to be used. The External Identifier have the form `username@realm`.

3. encourage the use of numbering resources other than public E.164 numbers, where technically feasible and in particular where scarcity issues may arise, for M2M applications which are supported in mobile non-public networks (see ECC Report 337);
4. consider opening up new number range(s) for M2M applications or in cases where there is no scarcity, use existing number ranges for mobile networks. The number length in any new number range(s) accommodating future mass M2M applications should be as long as possible (15 digits according to Recommendation ITU-T E.164 [2]) in order to ensure the most effective and efficient use of the numbering resources;
5. invite providers to consider applying for ITU global numbering resources in accordance with the applicable ITU-T Recommendation(s) for multi-country services;
6. consider the potential lock-in of customers (end-users) when evaluating the use of specific number range(s) or other identifiers in M2M applications. However, Over-The-Air (OTA) provisioning of numbering resources may facilitate switching of providers and also reduces the potential lock-in of customers;
7. consider that some regulatory requirements (e.g. emergency communications) may not be relevant or useful for some M2M applications. Exceptions regarding existing regulatory requirements could be applied to numbering range(s) designated to M2M. Notwithstanding, these M2M designated numbering ranges cannot be used to avoid regulatory requirements.”

Note:

Please check the Office documentation database <https://docdb.cept.org/> for the up to date position on the implementation of this and other ECC Recommendations.

ANNEX 1: LIST OF REFERENCES

- [1] [ECC Report 274](#): “Regulatory Analysis of Over-The-Air Provisioning of SIM profiles including its impact on Number Portability”, approved December 2018
- [2] Recommendation ITU-T E.164: “The international public telecommunication numbering plan” (11/2010)
- [3] [ECC Recommendation 16\(02\)](#): “Extraterritorial Use of E.164 Numbers - High level principles of assignment and use, approved June 2016, latest amended June 2023
- [4] [ECC Report 337](#): “Public numbering resources for mobile non-public networks”, approved June 2022