



NMHH

Nemzeti Média- és Hírközlési Hatóság

Numbering issues for mobile private networks

IDENTIFIER MANAGEMENT UNIT

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With 5G technology and network slicing coming to the forefront, the practical implementation of private networks is becoming more and more important, both in international and domestic markets. One aspect of this topic is the need for numbering resources for essentially 5G private networks to be implemented in specific cases, and the range of identifiers available for practical implementation.

When looking at the deployment of private network solutions from a numbering perspective, there are two main focal points (technical and legal):

- MCC + MNC
- phone numbers

Telephone numbers are required when there is communication between the private network and the public network endpoints using telephone numbers. Telephone numbers for communication are provided by the public service provider. This document does not discuss this issue any further.

Examining the internationally assigned Mobile Country Code (MCC) and its associated Mobile Network Code (MNC) from a technical perspective, programming the system with MCC-MNC is essential for the deployment and practical implementation of business solutions. The MCC-MNC identifying the mobile network is the primary way of ensuring the uniqueness and distinctiveness of private network solutions, while identifying private networks within the mobile network is the network operator's responsibility.

MCC clearly defines a country or a shared-use international network. The mobile country code (MCC) is 3 digits long. The mobile country code is assigned by the International Telecommunication Union (ITU). The MNC pertaining to a geographical MCC is managed by the country concerned, while the MNC pertaining to a non-geographical MCC domain is managed by the ITU. Hungary's mobile country code is 216; the MNC range under MCC=216 is managed by the NMHH.

When presenting the identifiers available in Hungary for the deployment of private network solutions, limited in this case to MCC + MNC, and based on the international and domestic regulatory environment, below we describe the elements of the toolkit currently available, the most important conditions for deploying these elements and their relationship to each other.

The relevant detailed legal requirements are included in [Recommendation ITU-T E.212](#) (The international identification plan for public networks and subscriptions) and Annex 2 to [NMHH Decree 14/2020 \(15. XII.\)](#) on the national plan for the allocation of identifiers for electronic communications networks and the management of identifiers (ANFT).

The MCC-MNC identifiers available in Hungary at the time of preparing this document are listed in the overview table below. The MCC-MNC toolkit available is presented in the table in a comparative way, focusing on the use for private network purposes.

The table shows the relevant terms of use for private network solutions, broken down into categories, and includes all possible values for each category, as well as the actual value that is/can be recorded for the given MCC-MNC identifier, in the interests of comparability.

This professional overview by the NMHH is for information purposes only, and based on the relevant constitutional principles and practice, the NMHH's opinion issued without a regulatory procedure framework cannot be considered a law, or any other source of law or a public law instrument to regulate organisations, and it does not have any normative character, legal force or binding content.

Categories	Values	MNC	Private network MNC	Test MNC	Non-ANFT MNC	MCC=999
MCC-MNC	216-00...99	216-00...94, 216-99	216-00...94	216-95...98		
	216-000...999				216-000...999	
	999-00...999					999-00...999
Purpose of use	public mobile service	public mobile service				
	business solutions for private networks	business solutions for private networks	business solutions for private networks			business solutions for private networks
	test (business operation excluded)	test (business operation excluded)	test (business operation excluded)	test (business operation excluded)	test (business operation excluded)	test (business operation excluded)
Connection to public networks	possible	possible	possible	possible	possible	
	excluded					excluded
Licensing	yes	yes	yes	yes	yes	
	no					no
NMHH procedure	licensing	licensing	licensing	licensing	licensing	
	register	register	register	register	register	
	ITU notification	ITU notification	ITU notification			
ITU procedure	no					no
	register	register	register			
	no			no	no	no
Usage fee	yes	yes	yes			
	no			no	no	no
Duration of use	indefinite	indefinite	indefinite			
	fixed term			fixed term (max 6 months)	fixed term (max 6 months)	
	any					any
Uniqueness of licence		individual licence for a single holder	individual licence for a single holder	several licences can be issued at the same time to different holders (uniqueness: with consent of first holder, spatially separated)	individual licence for a single holder	no licence (uniqueness, global protection against interference not guaranteed)

1 Solutions within MCC=216 for Hungary

1.1 MNC

The Mobile Network Code (MNC) together with the Mobile Country Code (MCC) uniquely identifies the home mobile network of the terminal equipment or user connected to the mobile network.

The length of the MNC for Hungary's mobile country code (MCC=216) is 2 digits. The MNC is assigned by the NMHH, and the assignment and withdrawal of an MNC, with the exception of a test MNC, is notified by the NMHH to the ITU.

Conditions for assignment:

- An MNC belonging to MCC=216 may be assigned to operators that are registered by the Authority in the register of electronic communications service providers for the provision of mobile telephony services and for the enterprise designated by the Government to operate and provide the GSM-R system.
- An MNC may be assigned to an operator not specifically listed in the ANFT if the applicant submits a declaration of network cooperation for the provision of the service from at least one operator specifically listed in the ANFT and providing mobile telephony services (MNO), in the absence of such a declaration the MNC cannot be used (MVNO cases).
- In justified cases, more than one MNC may be assigned for an eligible operator.
- The necessity, assignment and specific conditions of use of MNCs are determined by the NMHH.
- There is a charge for using the MNC.
- By default, the use of the MNC is not restricted in terms of territory or time.

Categories	MNC
MCC-MNC	216-00...94, 216-99
Purpose of use	public mobile service business solutions for private networks test (business operation excluded)
Connection to public networks	possible
Licensing	yes
NMHH procedure	licensing register ITU notification
ITU procedure	register
Usage fee	yes
Duration of use	indefinite
Uniqueness of licence	individual licence for a single holder

1.2 Private network MNC

The private network MNC can be designated in the MNC domain, according to the identifier management rules for the MNC domain. The private network restriction is not indicated in the numbering register, the allocation of the private network MNC is determined by the terms of use specified in the individual licence.

- A private network MNC is an identifier assigned to an authorised operator for the purpose of business solutions for private network purposes only, subject to restrictive conditions defined in an MNC individual licence.
- A private network MNC is a shared-use MNC for business solutions for private network purposes, i.e. the co-existence of individual private network solutions under this MNC is ensured by the assignee:
 - The assignee is responsible for the separation, registration and protection of each private network solution on a commercial basis.
 - The assignee is responsible for the interoperability, if any, of each private network solution and its interconnection, if any, with public networks on a commercial basis.
- There is a charge for using the MNC on the private network.
- By default, use of the private network MNC is not restricted in terms of territory or time.

Categories	Private network MNC
MCC-MNC	216-00...94
Purpose of use	business solutions for private networks, test (business operation excluded)
Connection to public networks	possible
Licensing	yes
NMHH procedure	licensing register ITU notification
ITU procedure	register
Usage fee	yes
Duration of use	indefinite
Uniqueness of licence	individual licence for a single holder

1.3 Test MNC

Within the MNC range of Hungary's MCC=216 mobile country code, the legislation separates the range of mobile network codes reserved for testing purposes and the rules for identifier management with the

test MNC. Test MNC range: 95–98.

The test MNC is an identifier for use restricted by legal requirements:

- The NMHH will assign a test MNC in the legally defined range for testing purposes only.
- The test MNC is assigned for a fixed term of up to 6 months.
- The assignment of the test MNC is geographically delimited in the individual licence (county level).
- A test MNC may be assigned to more than one service provider, provided that the original holder of the assignment permit agrees to the use of the test MNC by the operator applying.

Conditions for assignment:

- A test MNC may be assigned on the basis of a technically substantiated, reasoned application by an operator registered by the authority in the register of electronic communications service providers for the provision of electronic communications services, and who, in its application, has clearly indicated its network and service plan and the purpose of the test MNC that justify the need for assignment.
- Further conditions for use of the test MNC, depending on the nature, purpose and territorial use of the testing specified in the application, will be specified by the NMHH in the individual licence.
- When the right to use a test MNC expires, the test MNC is considered to be in a free state without a separate decision by the authority, and the authority does not set a quarantine (assignment break) period.
- In the event the assignment application is resubmitted, the NMHH proceeds with the assignment procedure for the free test MNCs available in the range in the order in which the applications are received.
- There is no charge for using the test MNC.

Categories	Test MNC
MCC-MNC	216-95...98
Purpose of use	test (business operation excluded)
Connection to public networks	possible
Licensing	yes
NMHH procedure	licensing register
ITU procedure	no
Usage fee	no
Duration of use	fixed term (max 6 months)
Uniqueness of licence	several licences can be issued at the same time to different holders (uniqueness: with consent of first holder, spatially separated)

1.4 Non-ANFT test MNC

The NMHH may assign MNCs other than those included in the ANFT, that is outside the 2-digit MNC range of Hungary's MCC=216 for testing purposes with a temporary licence (hereinafter referred to as "non-ANFT test MNC").

The non-ANFT test MNC is an identifier for use restricted by legal requirements:

- It is assigned by the NMHH for testing purposes only, with a value outside the two-digit MNC range defined in the ANFT (current practice uses 3 digits).
- The non-ANFT test MNC is assigned for a fixed term of up to 6 months.
- The need for a non-ANFT test MNC, its assignment and the additional terms and conditions for its use depending on the nature, purpose and territorial use of the testing specified in the application are laid down by the NMHH in the individual licence.
- There is no charge for using the non-ANFT test MNC.
- A non-ANFT test MNC may only be used in the nature, under the conditions and in the manner specified in the assignment permit of the authority.

Categories	Non-ANFT test MNC
MCC-MNC	216-000...999
Purpose of use	test (business operation excluded)
Connection to public networks	possible
Licensing	yes
NMHH procedure	licensing register
ITU procedure	no
Usage fee	no
Duration of use	fixed term (max 6 months)
Uniqueness of licence	individual licence for a single holder

2 Globally shared MCC=999 and the MNCs under it

In mid-2018, the ITU amended its [Recommendation ITU-T E.212](#) for the MCC and MNC, and supplemented it with Appendix III for MCC=999 and MNCs thereunder as follows:

- MCC=999 and the 2 or 3 digit MNCs thereunder are category identifiers globally shared by the ITU, which have only been introduced for use within private networks.
- MNCs under MCC=999 are global identifiers that may be used without an ITU licence and for which the ITU does not keep a record of their use.
- MNCs under MCC=999 as global identifiers do not require an NMHH licensing procedure. The NMHH does not keep records of the use of these MCCs and MNCs.
- There is no limit to the number of users who can use MCC+MNC global identifiers.
- MCC+MNC can only be interpreted and used within the specific network.
- Not for use for roaming and routing between MCC+MNC networks.

Categories	MCC=999
MCC-MNC	999-00...999
Purpose of use	business solutions for private networks, test (business operation excluded)
Connection to public networks	excluded
Licensing	no
NMHH procedure	no
ITU procedure	no
Usage fee	no
Duration of use	any
Uniqueness of licence	no licence (uniqueness, global protection against interference not guaranteed)