

NaN#27 Meeting  
28 – 22 November 2023

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Title: Introduction of numbering issues in Japan

Source: NTT

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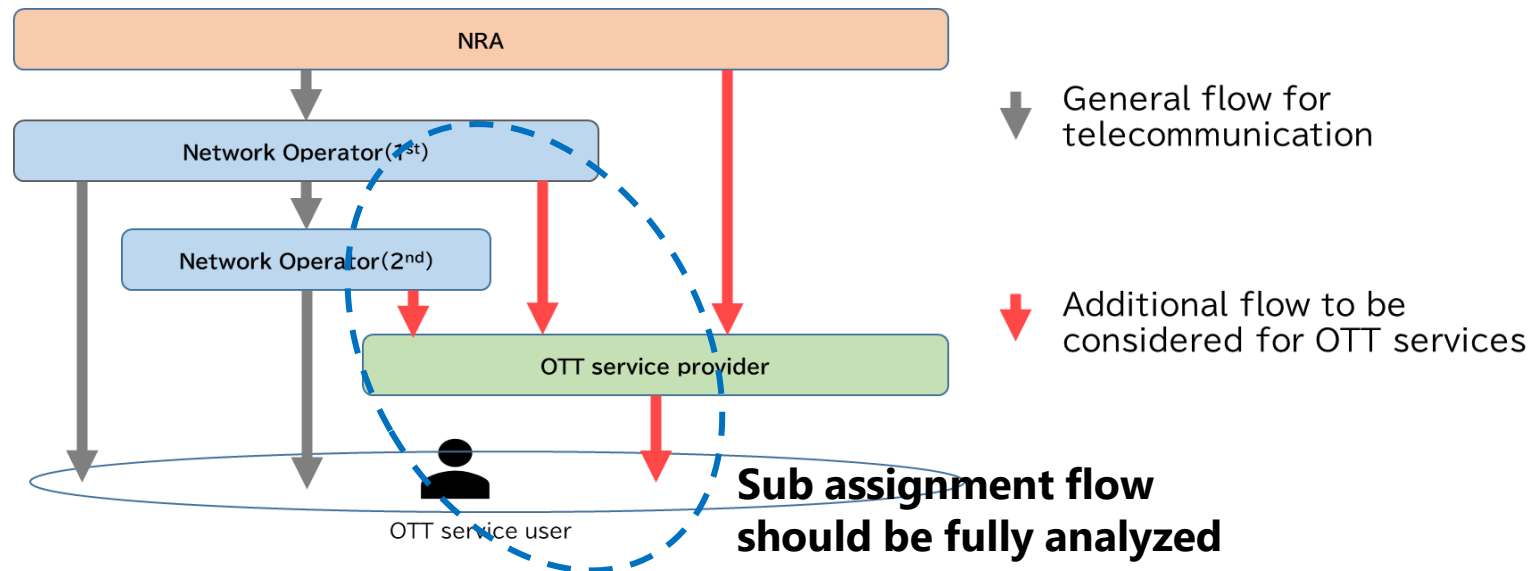
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Efforts are being made to identify various issues related to Japan's telecommunications number policy in the future, while also referring to overseas situations and taking into account changes in the environment such as the shift to all IP PSTN and the progress of cloud/OTT services. This contribution introduces the situation.

# 1.1 Assignment of fixed number used for cloud/OTT services

Followings are the discussion point to be studied for the future assignment of fixed number used for cloud/OTT services.

- In case of the cloud/OTT service most end users use the fixed number nomadically outside of the numbering area. From the point of keeping the geographic significance and social significance of the geographic number and preventing the number misuse, users of the geographic number as CLI have to live in the number area and they have to declare the main activity area for using the number.
- Number assignment flow especially the sub-assignment flow should be fully analyzed from the point of KYC whether the end user usage of the number is properly managed and supervised by the number assigning cloud/OTT service provider.
- Concerning the prevention of the number misuse by cloud/OTT end users, after analyzing the number assignment flow to cloud/OTT end user, the traditional prevention method should be reconsidered and strengthened. And at the same time evolutionary methods such as Stir/Shaken might be introduced and both method should be combined efficiently and effectively.



## 1.2 Future of numbering area while maintaining geographic significance

Followings are the discussion point to be studied for the future geographic numbering area while maintaining geographic significance.

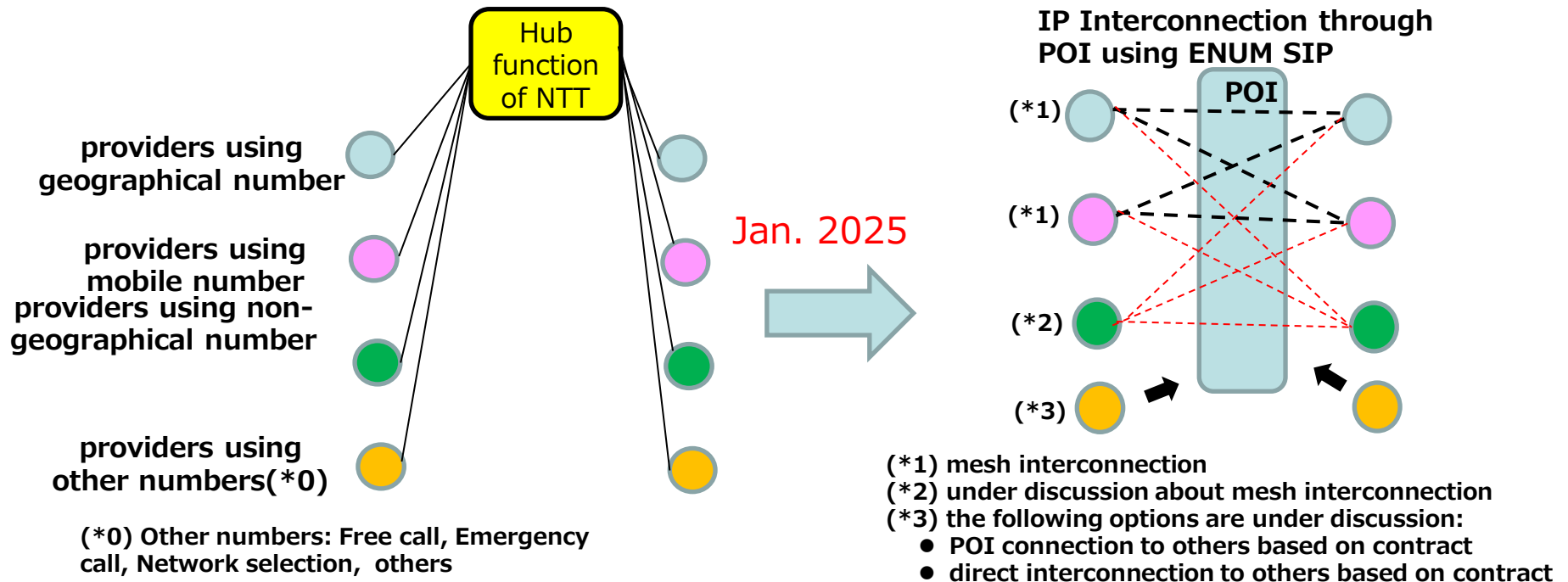
- The current situation about the numbering area are largely divided between those who are moving toward consolidation and national location portability (such as France) and those who want to maintain the current numbering area. (such as Germany).
- Japan currently has 661 numbering areas and puts importance in both maintaining geographic significance like in Germany and maintaining the digit length like in other countries and trying to find the good way forward.

US	Approximately 3 to 5 new area codes are added in the form of overlay every year as a countermeasure against number scarcity. So physical areas and number area codes do not directly correspond. So geographic significance is being lost. There are 144 area codes without overlay and 108 with overlay for a total of 252 physical areas. There is not a plan to increase the number digit.
UK	As for the 610 number areas by 2025 overlays may be introduced in about 5 areas due to number scarcity. Even if there is an addition of numbered areas that will be the extent of the addition.
Germany	Germany's geographical numbering has remained unchanged since the 5,200 number areas were established after World War II. Number scarcity is largely avoided by increasing the number digits longer. The top priority is to avoid changing numbers for individuals and companies as much as possible, and there is no plan to change the 5200 area in the future.
France	A user survey regarding geographic significance in 2019, and the ratio of those who said it should be maintained and those who did not agree was about 50-50. France does not have a geographical number scarcity and the main reason for reducing the number areas, ultimately reaching one by 2023 is that people can move addresses without changing their number.

## 2. Usage of ENUM NP for inter-network connection and exceptions

Followings are the discussion point to be studied for the future inter-network connection.

- In Japan, interconnection of networks has been non-IP interconnection using ISUP through incumbent/dominant PSTN (NTT) as hub function. This will be changed to IP interconnection using SIP through POI (Point Of Interconnection) at Tokyo and Osaka by 2025.
- When providers use geographic number or mobile number, they must offer NP and they must implement mesh interconnection each other. Central DB for NP does not exist in Japan instead ENUP NP function will be introduced.
- Following 2 points are left to be studied.
  - ✓ When providers use non-geographic number, offering NP and implementing mesh interconnection is under discussion.
  - ✓ When providers use other numbers(Free call, Emergency call, Network selection, others) POI connection or direct interconnection is used based on contract.



### 3. Emergency call services for nomadic users by cloud/OTT services

Followings are the discussion point to be studied for emergency call services for nomadic users by cloud/OTT services.

- Current situation

- The Telecommunications Number Plan in Japan stipulates that fixed-line telephone numbers and mobile telephone numbers should be able to make emergency calls.
- The exception is if a fixed phone number is used nomadically by cloud/OTT services, measures will be taken to make emergency calls impossible. And the same measure is taken for the specific IP phone numbers(non-geographic numbers) for nomadic users.
- This is because in the above services it is very difficult for user terminals to notify the police, fire department, or coast guard of the emergency call user's location correctly.

- Issues

Because the number of nomadic users by cloud/OTT services is on the rise, there is a possibility that many users are not aware of the above restrictions and may not understand the reason of making emergency calls impossible.

- Direction of consideration

What technology is needed to provide emergency services to nomadic users in cloud/OTT services?

[Example of the necessary study]

- Obtaining location information of the user's destination is an issue via Internet telephone.
  - ✓ GPS method for acquiring location, but there are issues inside buildings and in high-rise areas.
  - ✓ A mechanism is needed to determine the nearest PSAP based on location information.
  - ✓ Location information must be sufficient for emergency personnel from PSAP.
- PSAP is a regional organization and has jurisdiction over various areas. Therefore, there are issues with how to connect emergency calls from Internet telephones and how to operate them.
- Previously, PSAPs were connected to the PSTN, but the connection configuration has changed due to the shift to IP networks and advances in IMS (IP Multimedia Subsystem) architecture.

## 4. Study for proper use of telephone numbers

Followings are the discussion point to be studied for proper use of telephone numbers. The description in 1.1 (Assignment of fixed number used for cloud/OTT services) is also relevant.

### ● Current situation

In Japan, efforts based on the followings are being implemented.

- Business telecommunications equipment regulations includes measures to prevent CLI spoofing.
- Interconnection agreements between designated carriers and TCA's caller number falsification countermeasures guidelines includes measures to prevent caller number spoofing.

### ● Issues

Despite the above efforts being implemented, cases of caller number spoofing still occur as follows.

- Certain number of inquiries happen regarding the use of numbers that have not been assigned by the Ministry of Internal Affairs and Communications to business operators.
- A group arrested in July of this year on suspicion of attempted fraud displayed the number of an actual Hokkaido Police station.

### ● Direction of consideration

- The implementation status and effects of the CLI spoofing countermeasures currently in place?
- What kind of measures and implementation issues can be considered in order to clarify the flow of numbers to the final user (KYC: Know your Customer)?
- Are there any issues with the current form of service and number provision by carriers (provided for use in telecommunications business according to contract terms, etc.)? If there is a problem, what is the desired form, and what kind of problems and solutions can be considered to realize it?
- What should we consider in the future? (Society's needs regarding caller ID spoofing, research on the current situation in other countries where caller ID authentication systems (countermeasures against caller ID spoofing such as STIR/SHAKEN) have been introduced in other countries, etc.)

## 5. Grasp and measures for scarcity of fixed, mobile, and M2M number resources

Followings are the discussion point to be studied for grasp and measures for scarcity of fixed, mobile, and M2M number resources.

### ● Current situation

- Fixed numbers are assigned in units of 10,000 numbers.
- IMSIs are assigned in units of 1 billion for MCC 440 and in units of 10 billion for MCC 441.
- The usage of 020 numbers(previous 11digit M2M number) in 2022 has increased slightly compared to the previous year, and it appears that the transition to 0200 numbers (new 14digit M2M number) is not progressing smoothly.

### ● Issues

- Regarding fixed numbers, there is a possibility that demand for specific numbering area will increase rapidly in the future due to changes in city planning, etc., and there is a risk that the current assignment units(10,000 numbers) will not be able to meet the demand.
- Regarding IMSI, many assignee companies tend to be low usage rates, with the actual number of IMSIs in use remaining in the tens of thousands, despite the assignment in the billions. If the number of companies providing local 5G increases in the future, it is not unthinkable that IMSI will be scarce.

### ● Direction of consideration

- Is it necessary to review the assignment units for fixed telephone numbers and IMSI in the light of future demand trends and environmental changes? If so, what kind of revision would be appropriate? At that time, what kind of issues and solutions can be considered?
- Although 020 numbers do not currently have any other potential uses, is there a need for some kind of effort to promote the transition to 0200 numbers, with future possibilities in mind?

## 6. Countermeasures against number misuse via SMS

Followings are the discussion point to be studied for number misuse via SMS.

- Current situation
  - SMS is the transmission and exchange of text using telecommunications numbers. Currently, there are no specific regulations.
  - SMS uses a voice transmission mobile phone number as its destination, but it is also possible to display a fixed phone number or business name (such as LINE, etc.) as the sender.
  
- Issues
  - Although there is a considerable number of use of SMS, SMS providers are outside of the regulation.
  - According to the Anti-Phishing Council, many phishing (smishing) induced by SMS have been identified, including reports of text impersonating financial brands and Amazon, as well as messages inducing the installation of fraudulent apps (malware, etc.).
  
- Direction of consideration
  - What is the appropriate way to deal with SMS providers or SMS distributors from the perspective of the numbering regulation?
  - Also, what are the issues and solutions that can be considered in dealing with this?  
(Example) MNOs that provide SMS will formulate and operate voluntary provision guidelines.

(Reference: Overseas trends)

ECC-NaN in Europe and ATIS in the US have recently started considering SMS from the perspective of calling number spoofing.

## 7. Service porting of fixed number including the environment of it

Followings are the discussion point to be studied for porting of fixed number.

- Current situation

The transition of the PSTN to an IP network will take place in January 2025, and after the transition, the Numbering Plan stipulates that two-way number portability of fixed telephone numbers will be possible, and currently number assignee carriers are underway to realize this goal.

- Issues

Two-way number portability for fixed telephone numbers is not limited to first number assignee operators, but also applies to businesses operators that receive wholesale provision as second or third assignee of number, so it is necessary to ensure a smooth transition that includes wholesale business operators.

There are some cases where number portability is not possible (IP → Metal, etc.) which may cause confusion.

It is also necessary to take measures to support users (notifying users of the implementation, setting construction costs, establishing a complaint desk, etc.).

- Direction of consideration

In realizing two-way number portability, it is necessary to identify issues and consider solutions from an overall perspective that includes non-number-assignee service providers .

In this case, it is necessary to proceed with the discussion in order to share the understanding of the related industry as a whole.

It is necessary to identify all cases where two-way number portability is necessary but difficult to do it.