CHALLENGES IN UPDATING THE NATIONAL NUMBERING PLAN TO CATER FOR MACHINE-TO-MACHINE (M2M) AND INTERNET OF THINGS (IOT) NUMBERING RESOURCES

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communication for all

OUTLINE

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USES OF THE NUMBERING PLAN

Identification of subscribers and devices - Each number serves as a unique identifier for a specific subscriber or device, facilitating direct communication.

Routing of calls - This ensures that calls reach the intended recipient.

Geographic and Area Codes - These codes help determine the origin or destination of a call, facilitating regional or local communication.

International Dialing - Numbering plans include country codes, which are essential for international dialing.

Service Differentiation - Within a numbering plan, specific number ranges or prefixes can be reserved for specialized services.

Billing and tariff

FACTORS LEADING TO NUMBERING DEMAND INCREASE

Population Growth - As the population of a country increases, there is a natural increase in the demand for phone numbers.

Growing M2M/IoT Adoption - The widespread adoption of M2M/IoT technologies across industries and sectors is a significant driver of numbering demand.

Business Growth: Economic growth and the establishment of new businesses can lead to an increased demand for phone numbers.

Multiple SIM Cards - Some individuals and businesses use multiple SIM cards or phone numbers for various purposes, such as work, personal, or international communication, which can contribute to an increase in numbering demand.

Personal Devices - Individuals may own multiple personal communication devices, such as smartphones, tablets, and smartwatches, each requiring a phone number.

Temporary Needs- Some businesses or individuals may require temporary phone numbers for specific purposes, such as short-term projects or events, which can lead to increased demand for temporary numbering resources.

MEASURES IN PLACE TO MINIMIZE HOARDING - UGANDA

- An Operator is allegeable to apply for a new range if the already-allocated ranges are at 75% utilization rate.
- Allocation of small ranges rather than huge ranges - Blocks

Challenge with Mobile Numbers

- National Systems Payment Act, 2020
  ✓*Mentions – Dormant, 450 days*
- The regulation of communications regulation, 2023
  ✓*Mentions – 3 months*

TRADITIONAL NUMBERING PLAN

- Conventional/Traditional numbering assignment
  - A method of assigning phone numbers that is based on the public switched telephone network (PSTN).
  - Each phone number is unique and is assigned to a specific device or user.
  - Conventional numbering assignment is well-suited for applications where a limited number of devices need to be identified, such as mobile phones and landlines.

M2M/IOT NUMBERING RESOURCES

- M2M/IoT numbering resources
  - A newer approach to assigning phone numbers that is specifically designed for machine-to-machine (M2M) and Internet of Things (IoT) applications.
  - M2M/IoT numbering resources are more flexible than conventional numbering assignment and can be used to identify a large number of devices.
  - This makes them well-suited for applications such as smart cities, industrial automation, and asset tracking.

CURRENT STRUCTURE OF UGANDA'S NATIONAL NUMBERING PLAN

First digit	Designation
1	Reserved
2, 3, 4	Fixed telephony services
5, 6	Reserved
7	All mobile services
8, 9	Special rate services

CHALLENGES IN UPDATING THE NNP TO CATER FOR M2M/IOT NUMBERING RESOURCES

Numbering Resource Exhaustion

- The rapid growth of M2M/IoT devices can strain existing numbering resources, potentially leading to their exhaustion. Traditional numbering plans may not have allocated an adequate range of numbers to support the widespread deployment of M2M/IoT devices. Assigning unique phone numbers or identifiers to each device can quickly deplete the available resources.

Numbering Plan Complexity

- Introducing M2M/IoT numbering resources can increase the complexity of the numbering plan. It may involve creating new number ranges, defining specific dialing patterns, or implementing additional routing rules. Balancing the need for flexibility, scalability, and efficient resource allocation within the numbering plan can be challenging.

CHALLENGES IN UPDATING THE NNP TO CATER FOR M2M/IOT NUMBERING RESOURCES

Coexistence with Legacy Systems

- Existing legacy systems, services, and devices may still rely on the traditional numbering plan. Ensuring smooth coexistence between legacy systems and new M2M/IoT numbering resources is essential to maintain compatibility and uninterrupted service delivery.

The vast number of IoT devices

- The number of IoT devices is expected to grow to trillions in the coming years. This puts a strain on existing numbering resources, which were not designed to support such a large number of devices.

CHALLENGES IN UPDATING THE NNP TO CATER FOR M2M/IOT NUMBERING RESOURCES

The need to minimize disruption to existing services

- When updating a national numbering plan, it is important to minimize disruption to existing services. This can be a challenge, as existing services may rely on specific numbering resources.

Security and Privacy

- IoT devices often collect and transmit sensitive data. Ensuring that the numbering plan includes security measures to protect against unauthorized access to these devices is crucial. This also involves addressing privacy concerns related to the use of unique identifiers for tracking.

CHALLENGES IN UPDATING THE NNP TO CATER FOR M2M/IOT NUMBERING RESOURCES

The need for global interoperability

- IoT devices are often used to connect to services and applications that are hosted in different countries. This means that IoT numbering plans need to be interoperable globally.

The diversity of IoT devices

- IoT devices vary widely in terms of their capabilities and requirements. Some devices, such as smart thermostats and light bulbs, have relatively simple numbering needs. Others, such as self-driving cars and industrial control systems, have more complex requirements.

CHALLENGES IN UPDATING THE NNP TO CATER FOR M2M/IOT NUMBERING RESOURCES

Education and Awareness

- Introducing M2M/IoT numbering resources often requires educating stakeholders, service providers, and end-users about the changes and how they impact their operations. Raising awareness about new numbering schemes, dialing patterns, and provisioning processes is crucial to ensure a smooth transition, minimize frauds and disruptions.

Network Infrastructure Upgrades

- Supporting M2M/IoT deployments may require network infrastructure upgrades to handle the increased traffic and data volumes generated by these devices. Upgrading network capacity, coverage, and backend systems may be necessary to support the anticipated growth of M2M/IoT services.

CHALLENGES IN UPDATING THE NNP TO CATER FOR M2M/IOT NUMBERING RESOURCES

Interoperability and Roaming

- M2M/IoT devices often require seamless connectivity and roaming capabilities across different networks and service providers. Harmonizing numbering plans and ensuring interoperability between networks can be complex, particularly when dealing with cross-border deployments or international roaming agreements.
- If M2M and IoT devices are expected to operate globally, harmonizing the national numbering plan with international standards and agreements becomes important to facilitate cross-border connectivity.

WAY FORWARD

Despite these challenges, it is important for countries to update their national numbering plans to cater for M2M/IoT numbering resources. This will help to ensure that IoT devices can be connected and used effectively.

Addressing these challenges requires close collaboration between regulatory bodies, service providers, industry stakeholders, and standards organizations.

M2M/IOT NUMBERING INTRODUCTION QUESTIONS

What factors should an Administration consider when introducing M2M/IoT numbers?

Which standard/recommendation(s) did you consider and why?

How did you deal with the requirement to coordinate with other countries to ensure global interoperability?

What advantages have you realized after introduction of M2M/IoT numbers into your numbering plan?

What challenges have you realized after introduction of M2M/IoT numbers into your numbering plan?

What advise do you have for member states that are is the process of introducing M2M/IoT numbers into their numbering plan?

THANK YOU

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