
ENUM Activities in Japan

- With Focus on Japan ENUM Study Group -

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JPRS (Japan Registry Service)

Background information

- **March 2002**
 - **Study Group on Telecommunications Service Numbering Plans (a kind of Government Advisory Committee)**
 - It was recognized that ENUM be a candidate in managing the relationships between IP addresses and telephone numbers
 - How ENUM would fit Japanese situation should be studied
- **September 2002**
 - Japan ENUM Study Group was formally established after consultation among various kinds of stakeholders
 - Members are from Industry and Academy
 - Observers from the Government
- **November 2002**
 - WIDE Project (General Chairperson, Jun Murai) launched ENUM Working Group
 - Its theme is trial and discussion about ENUM server/client operation from the pure technology aspect
 - Won't use 1.8.e164.arpa

Telephone numbers in Japan

- **Phone numbers in Japan**
 - **Country code** **81**
 - **Administrator** **Ministry of Public Management, Home Affairs, Posts and Telecommunications**
 - **PSTN phones** **0AB~J**
 - **Mobile phones** **090xxxxyyyyyy, 080xxxxyyyyyy, 070xxxxyyyyyy**
 - **IP phones** **050xxxxxyyyy**
- **E.164 number is derived by**
 - **Putting area code at the top**
 - **Deleting leading “0”**
 - **Adding +81 at the top**
 - **Phone number of JPRS**
 - **5297-2571** **in metropolitan Tokyo**
 - **03-5297-2571** **in Japan**
 - **+81-3-5297-2571** **E.164**

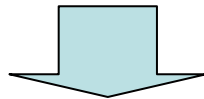
IP Telephone Numbers in Japan

- **050xxxxyyyyyy are assigned to IP telephone services**
- **They are “telephone numbers”**
 - **Subject to Telecommunications Business Law**
 - **Numbers are firstly assigned to telecom providers**
 - **Its network must be connected to PSTN**
 - **It must have telephone-level quality (sound quality, communication delay, ...)**
- **They are the equivalents to traditional phones when seen from PSTN**
 - **Connected to switches via media gateway**
- **IP network is used only in the providers’ system**
- **Way of connection between/among providers**
 - **with ENUM**
 - **with SIP without ENUM**
 - **with Proprietary mechanism**

Japan ENUM Study Group

Background of Establishment

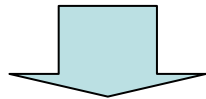
- **ENUM technologies**
 - being standardized in IETF
 - specifications almost fixed
- **Policy of International Operation**
 - have been discussed and becoming more well-defined in ITU-T
 - published as Supplement Document
- **ENUM trial environment**
 - being prepared by IAB , RIPE NCC , ITU-T, etc.
 - being under trial in several countries
- **In Japan**
 - 050xxxxyyyy is being assigned to IP telephones
 - IP telephone services are rapidly growing



- **ENUM should be well studied and understood**
- **How ENUM is used should be made clear**

Objectives

- **Understanding the ENUM technology**
- **Studying the implementation and operation of the ENUM-based system, and related matters**
- **Finding political/regulatory issues related to ENUM-based implementation and operation**
- **Finding technological issues related to ENUM**
- **Clarifying pros and cons in ENUM usage**



The followings are studied

- **ENUM technology**
- **Related technology such as DNS , URI , DDDS**

Members

- **Chair**
 - Shigeki Goto (Waseda Univ.)
- **Vice Chair**
 - Susumu Sano (JPNIC)
- **Secretariat**
 - JPNIC
- **Members (23)**
 - Telecommunication companies
 - IP telephone service providers
 - Network Device Vendors
 - Network Solution Providers
 - ccTLD registry (JPRS)
 - Trading companies
 - Non-profit organizations
 - Professionals from universities
- **Observers**
 - Ministry of Public Management, Home Affairs, Posts and Telecommunications

Scope

- **ENUM technology itself**
- **Some issues happening after resolving the telephone number mapping may be important to implement and deploy the service, but they are out of scope on current Japan ENUM Study Group**
- **examples that are out of scope**
 - **fee/charge arrangement**
 - **authentication in the phase of communications between users**
 - **security of communications between users**
 - **improper use**
 - **spamming**
 - **direct-mails**
 - **etc.**
 - **quality and reliability of communications between users**

What will ENUM solve

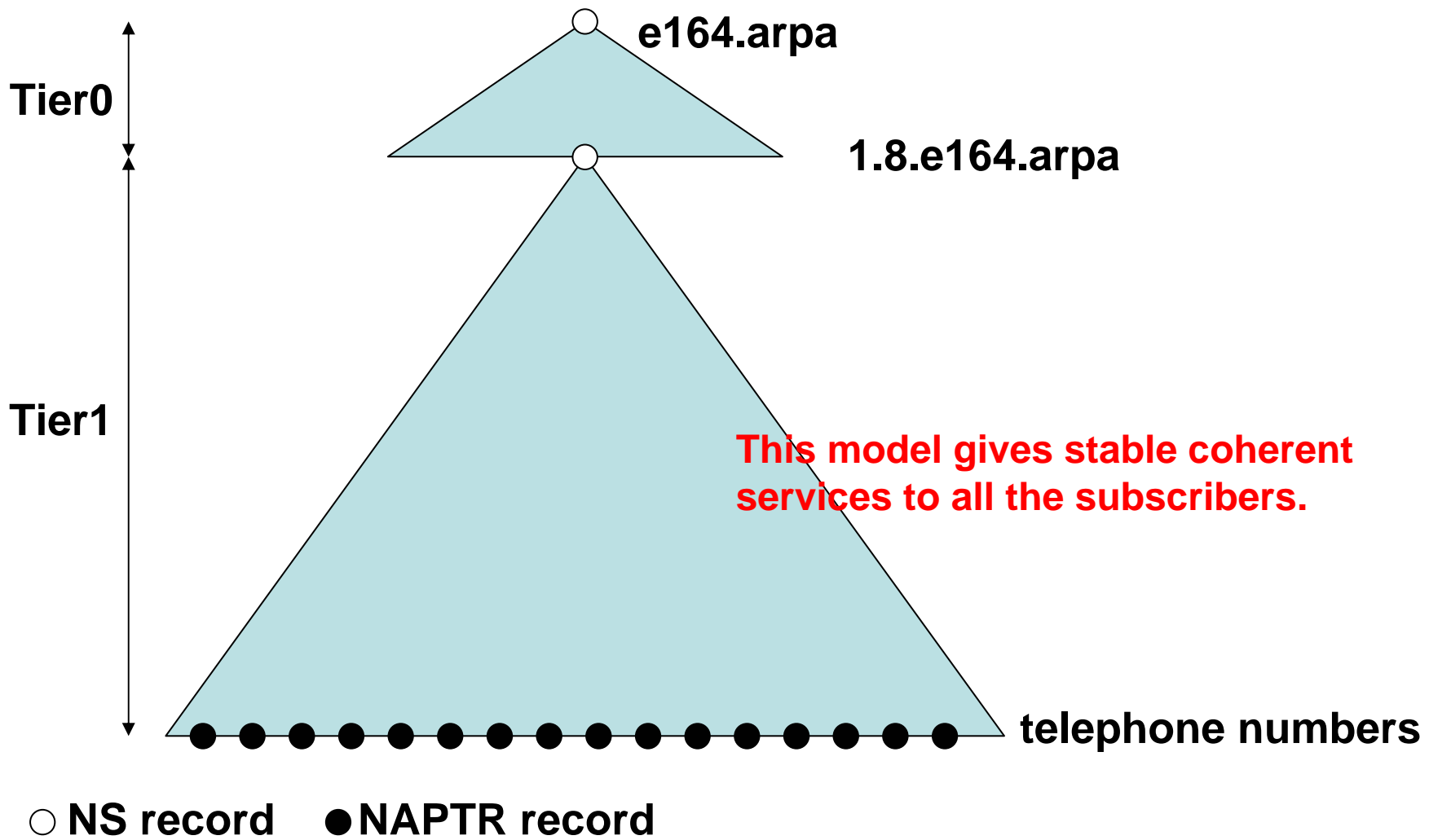
- **Expected usage**
 - Identification of applications by E.164 numbers
 - Solving Telephone number mapping in calling from traditional telephones to Internet telephones
 - Solving telephone number mapping in calling from Internet telephones to traditional telephones
 - Solving telephone number mapping within a telephone network (including an IP telephone network)
- **Implementation and operation, management structure are different in each way of usage**

Tier Structure

- **Tier structure and DNS zone structure**
 - Country dependent
 - Existing structures of Telecom and Internet-related industry should be considered and a new combined/compromised structure may be needed to adopt ENUM (further discussion needed)
- **Recommendation**
 - Boundary between Tier0 and Tier1 is 1.8.e164.arpa
 - as +81 is used for subscribers if and only if in Japan
 - Boundary between Tier1 and Tier2 has some options
 - Examples are shown in next pages

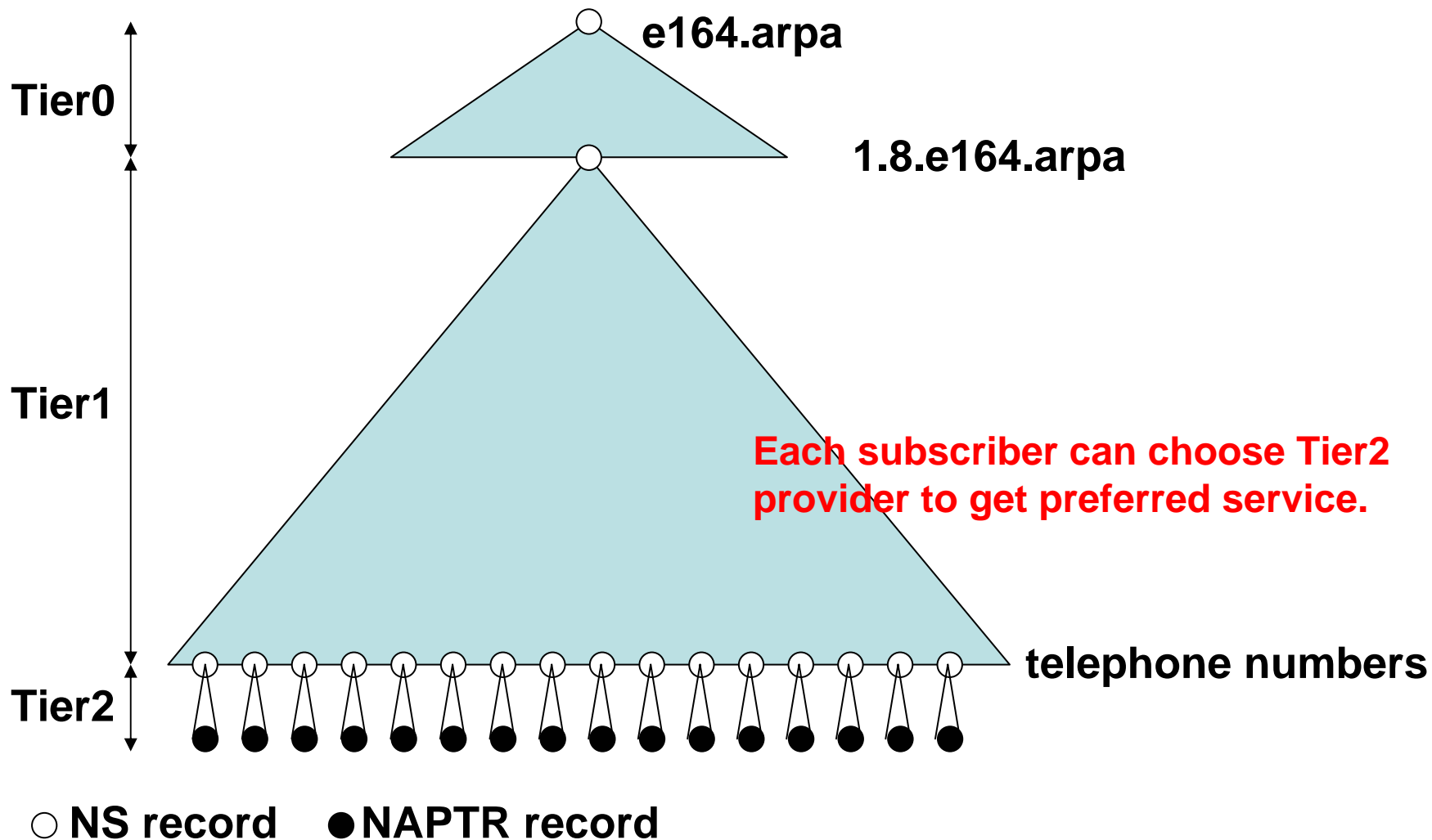
Boundary between Tier1 and Tier2 (model1)

Tier1 has phone numbers in full and no Tier2 is introduced



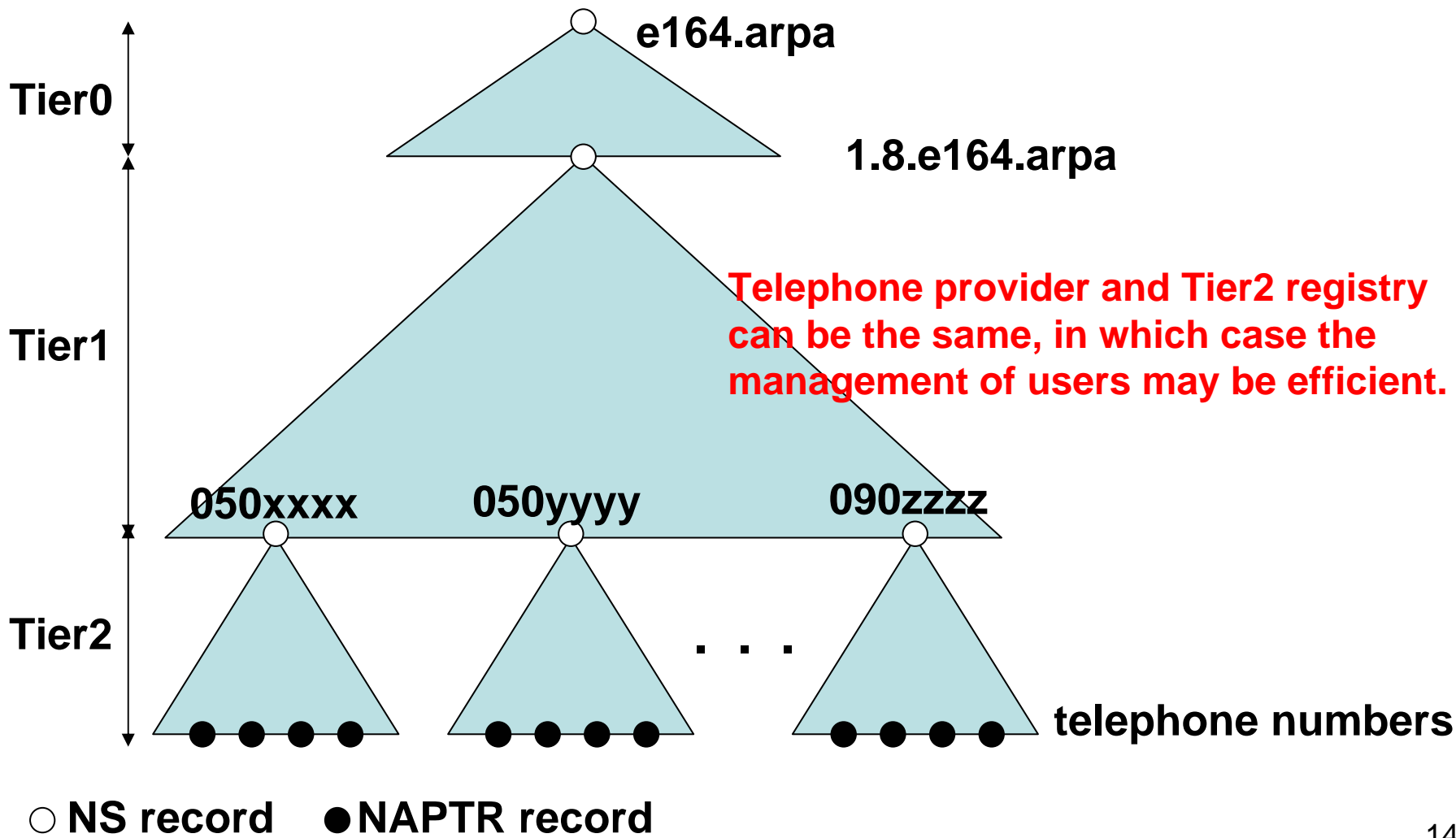
Boundary between Tier1 and Tier2 (model2)

Tier1 has phone numbers in full and Tier2 handles a NAPTR record of each number.



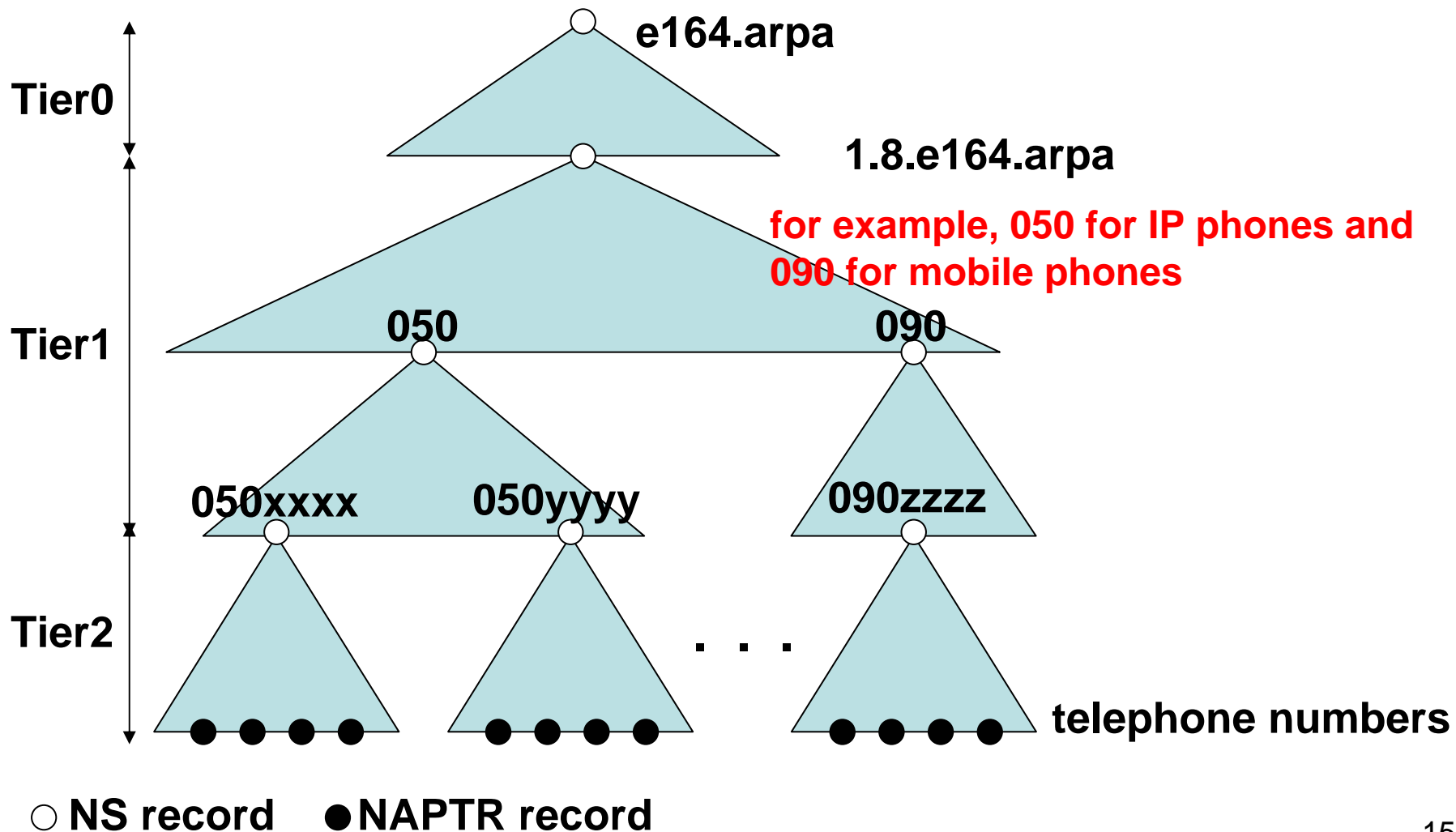
Boundary between Tier1 and Tier2 (model3)

Boundary corresponds to the chunks (10,000 numbers) assigned to Telecom providers.



Boundary between Tier1 and Tier2 (model4)

Tier1 is divided into groups corresponding to chunks, each represents a phone service for example.



DNS Zone structure for ENUM

- **A single or multiple DNS zones will be introduced to manage each unit of each Tier.**
- **single / multiple will be chosen by each manager of each unit**
 - easiness of management
 - efficiency of provisioning
 - efficiency of resolution
 - etc.
- **The chunk of phone numbers that registrar handles does not necessarily correspond to a DNS zone**
 - in case of correspondence
 - Authentication of record-change is easier
 - in case of non-correspondence
 - Authentication of record-change requires more caution in implementing access to each NAPTR record

User ENUM and Operator ENUM

- **User ENUM and Operator ENUM**
 - Definitions of them were inevitable in carrying forward a discussion
 - Definition should have been done with our words and with knowledge of national telecom industry structure
- **User ENUM**
 - Each user of E.164 number, who subscribes a telecom service identified by the number, registers his/her favorite application services to ENUM records at his/her will
 - IETF, UKEG, ENUM Forum(US) seem to mainly give focus on this category
- **Operator ENUM**
 - A provider, which has assigned the number to the user, uses ENUM records to implement its service identified by the number at its will
 - This receives interests from IP telephone service providers in Japan
- **Combined models of User and Operator ENUM**
 - Addition of User ENUM flavor to Operator ENUM
 - Addition of Operator ENUM flavor to User ENUM

Features of User ENUM & Operator ENUM

	User ENUM	Operator ENUM
registered by	user	operator
objectives	to publicize services intended by the user	to publicize services to implement the operator's service
URIs	Various (as users like)	URIs to identify the operator's services
phone numbers managed by	user or operator	operator
accessed by	Internet users	subscribers or network devices of the operator
authentication of accesses	from large number of users	from small number of operators
security	Internet level	determined by the operator
quality of DNS	Internet level	determined by the operator

Future activity

- **More investigation on implementation and operation of User ENUM and Operator ENUM will be put forward**
- **Requirements will be investigated for both User ENUM and Operator ENUM**
 - Efficiency
 - Function
 - Reliability
 - Security
 - Privacy
 - Management structure of DNS
 - Provisioning process
 - etc.
- **Issues in each model will be clarified**
- **Experiment/trial will be done**
 - to identify issues not extracted by the desk work
 - to elaborate practical solutions

More on the future

- **Business structure**
 - Structure of Tier1s and Tier2s ?
 - Who are the providers of Tier1 and Tier2 ?
 - How to cover the cost of ENUM system and operation ?
- **Relationship with telephone numbering system**
 - Whom does each phone number belong to?
 - What does phone number identify ?
 - Phone service ?
 - Is User ENUM violate the policy of telephone numbers?
- **More clarification of demands needed**
 - Usage of phone numbers in the Internet ?
 - Common database among IP telephone service providers ?