ENUM Trial in Japan

ENUM BoF in RIPE47

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Background

Trends in Communication Market in Japan

Drivers

- **Change of Regulation**
  - **Privatization of Public Telecom Corporation**
  - **Relaxation of Regulation**
- **Evolution of Devices**
  - **Small, Wireless, High-functioned (e.g., mobile phones with cameras)**
- **Popularization of Internet and IP Technology**
  - **From Circuit Exchange to Packet Data Exchange**

History

~Sept.1987	**only NTT provided public telephone services**
First half of 1990s	**communication cost decreased rapidly by competition**
Latter half of 1990s	**share of mobile phones grew rapidly** **subscribers of mobile phones overtook PSTN in March 2000**
2000~	**broadband including IP telephony grew rapidly**

individual IP phone service providers ==> a couple of groups

Assignment of 050-xxxxxxxx to IP Phones

050-xxxxxxxx are being assigned to IP phones so that PSTN users can make calls to IP phones.

*** prefix 050 is an easily recognized code for IP Phone**

IP Phone Numbering Structure

050-CDEF-GHJK

- **050**: IP phone
- **CDEF**: Assigned to service provider
- **GHJK**: Assigned to subscriber

MPHPT

↓ **10 million 050 phone numbers**

service providers

↓ **5 million 050 phone numbers**

users

cf.

PSTN subscribers 60 million

mobile subscribers 80 million

ENUM activities in Japan

- ENUM Study Group & ENUM Trial Japan -

ENUM Study Group

- **Established**
  - **September 2002**

http://www.nic.ad.jp/en/enum/index.html

- **Objectives**
  - **Understanding the ENUM technology : desk work**
  - **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**
- **Final report**
  - **Published in May 2003**

http://www.nic.ad.jp/en/enum/ENUMReport.pdf

ENUM Trial Japan (ETJP)

http://etjp.jp/english/index.html

- **Established**
  - **on 17 September 2003 (1 year activity)**
- **Purpose**
  - **Perform ENUM trials to ensure functioning and feasibility of basic technical facility**
  - **Demonstration of technology for international use**
  - **Accumulation and sharing of know-how about ENUM**
  - **DNS operation for ENUM Trial**
  - **Feasibility test of communication applications (device, software) using ENUM**
  - **Feasibility test of communication services**
- **Results**
  - **Technical verification**
    - **Communication devices and software provided by participants**
    - **Communication services**
  - **Clarification and consideration of relevant issues**

ETJP organization

- **Participants**
  - **Companies, organizations, and individuals who hope to contribute to ETJP activities**
  - **Number of members: 42 (as of January 28, 2004)**
- **Officers**
  - **Chairman**
    - **Shigeki Goto**

      Japan Network Information Center (JPNIC)/Waseda University
  - **Vice chairman**
    - **Hirofumi Hotta**

      Japan Registry Service Co., Ltd.(JPRS)
    - **Yoshiki Ishida**

      WIDE Project

ETJP Working Groups

- **Privacy and Security WG**
  - **Objective**
    - **Discuss data treatment policy in each phase of trial and then publish guidelines**
  - **Milestone**
    - **Jan 2004: First draft, request for comments**
    - **Feb 2004: Second draft**
    - **Mar 2004: Publish guideline**
- **DNS WG**
  - **Objective**
    - **Definition of possible ENUM DNS models in Japan, their requirements and evaluation criteria, then evaluate current DNS implementations**
  - **Milestone**
    - **Feb 2004: Definition of possible ENUM DNS models, requirements, evaluation criteria**
    - **Mar 2004: Build Testbed, evaluation**
    - **Apr 2004: publish reports of the evaluation**

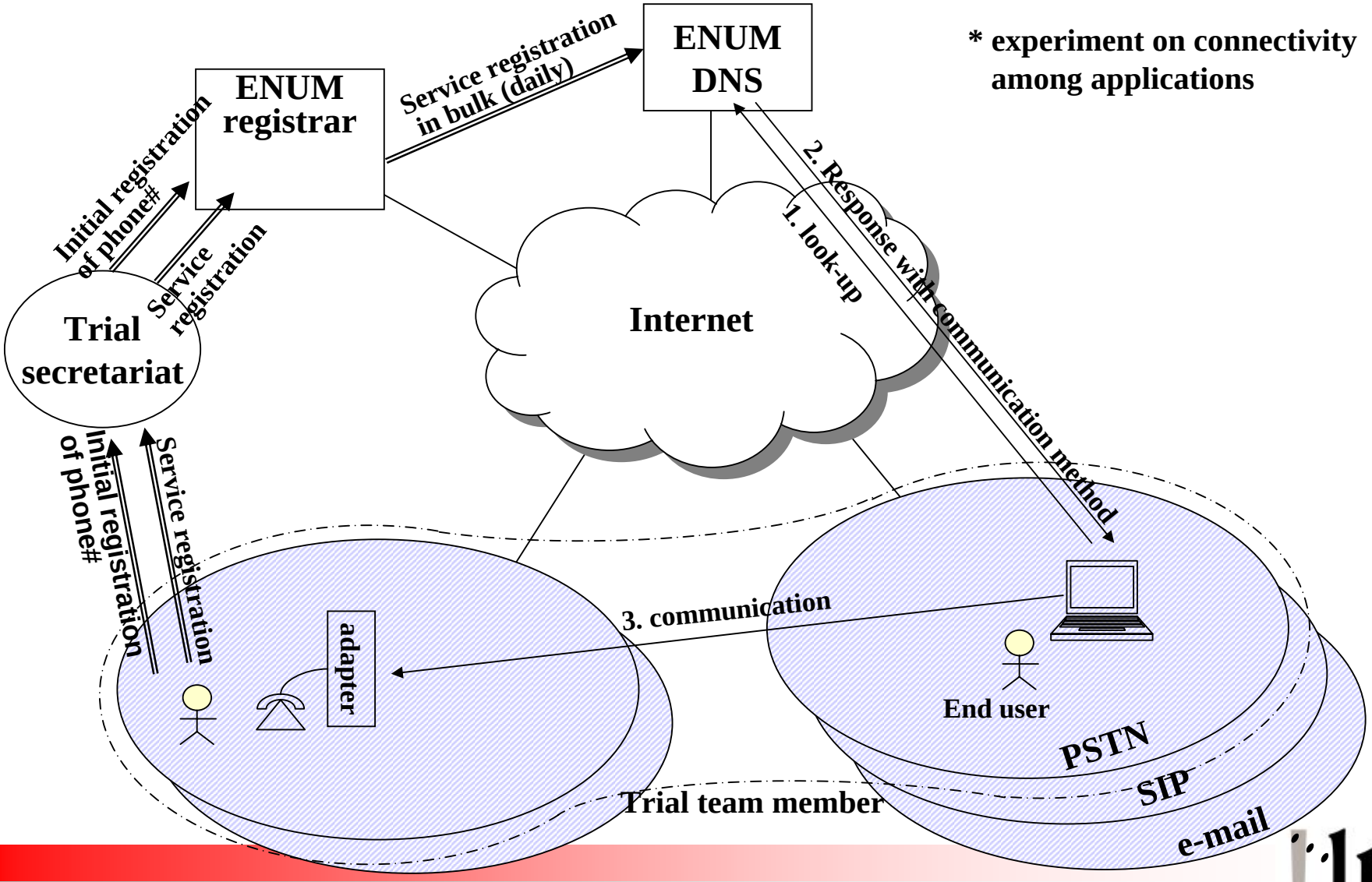
DNS structure design

- **Depends on what model to select**
  - **User ENUM / Operator ENUM**
  - **Requirements (such as Number-Portability?)**
- **Typical requirements for Tier1 DNS:**
  - **Handling of large zone**
    - **even over 100M entries (if all the numbers are held in Tier1)**
  - **Scalability and stability**
  - **Performance**
- **Typical requirements for Tier2 DNS:**
  - **Capability for frequent update**
  - **EDNS0 support ?**
    - **To hold a number of NAPTR RRs for a single E.164 number that may exceed 512 octets in one DNS packet**

Consideration on DNS

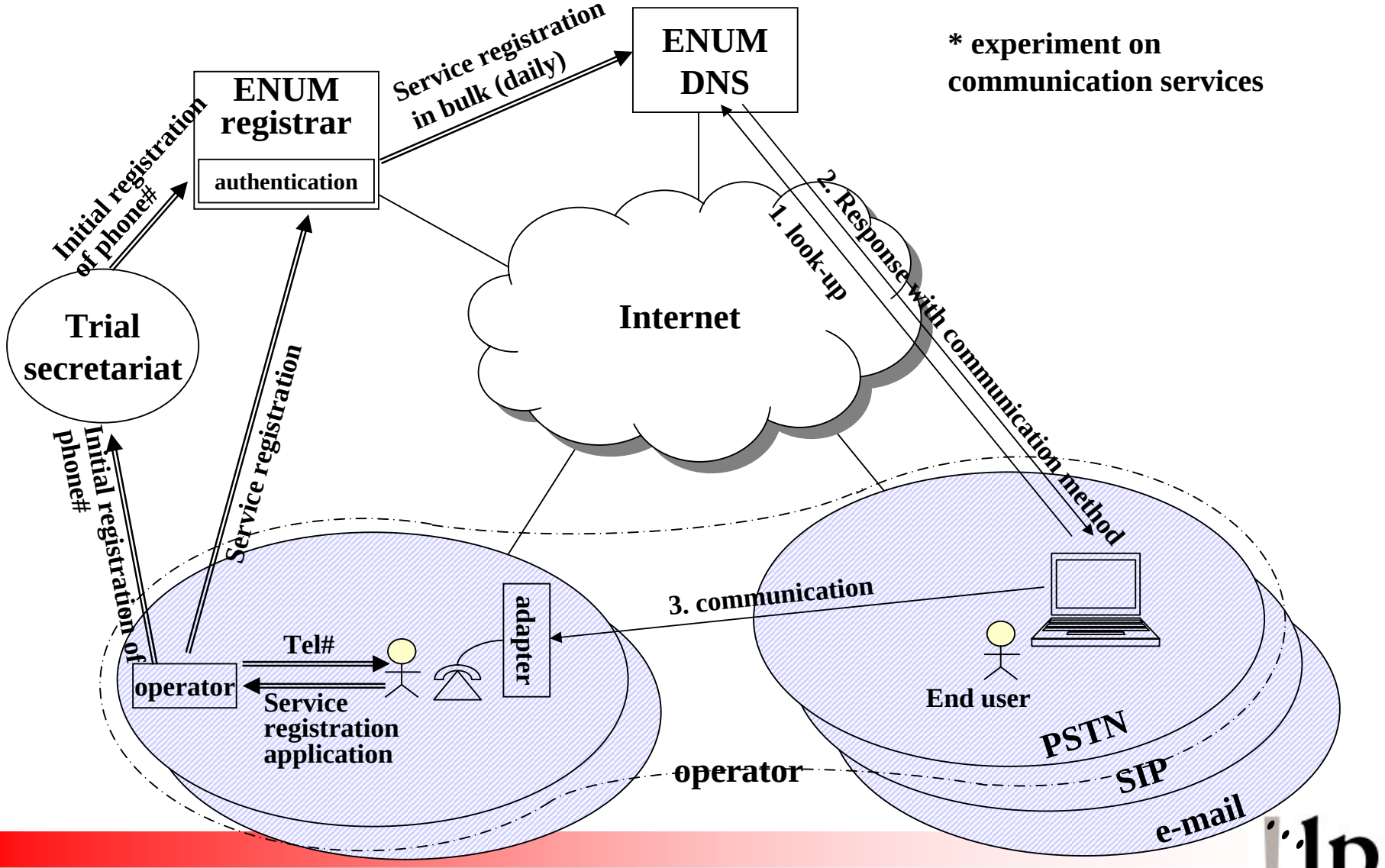
- **Typical ENUM services like Web, Mail, SIP also lookup DNS.**
  - **Web: Hyper-links(A).**
  - **Mail: sending (MX, A), receiving (PTR).**
  - **SIP: service protocol (D2U/D2T NAPTR), service location(SRV), sip server(A)**
- **The number of DNS queries will increase when ENUM is deployed.**
- **Users are nervous about service quality.**
  - **Users don’t care where the bottle neck is.**

ENUM trial (phase1)

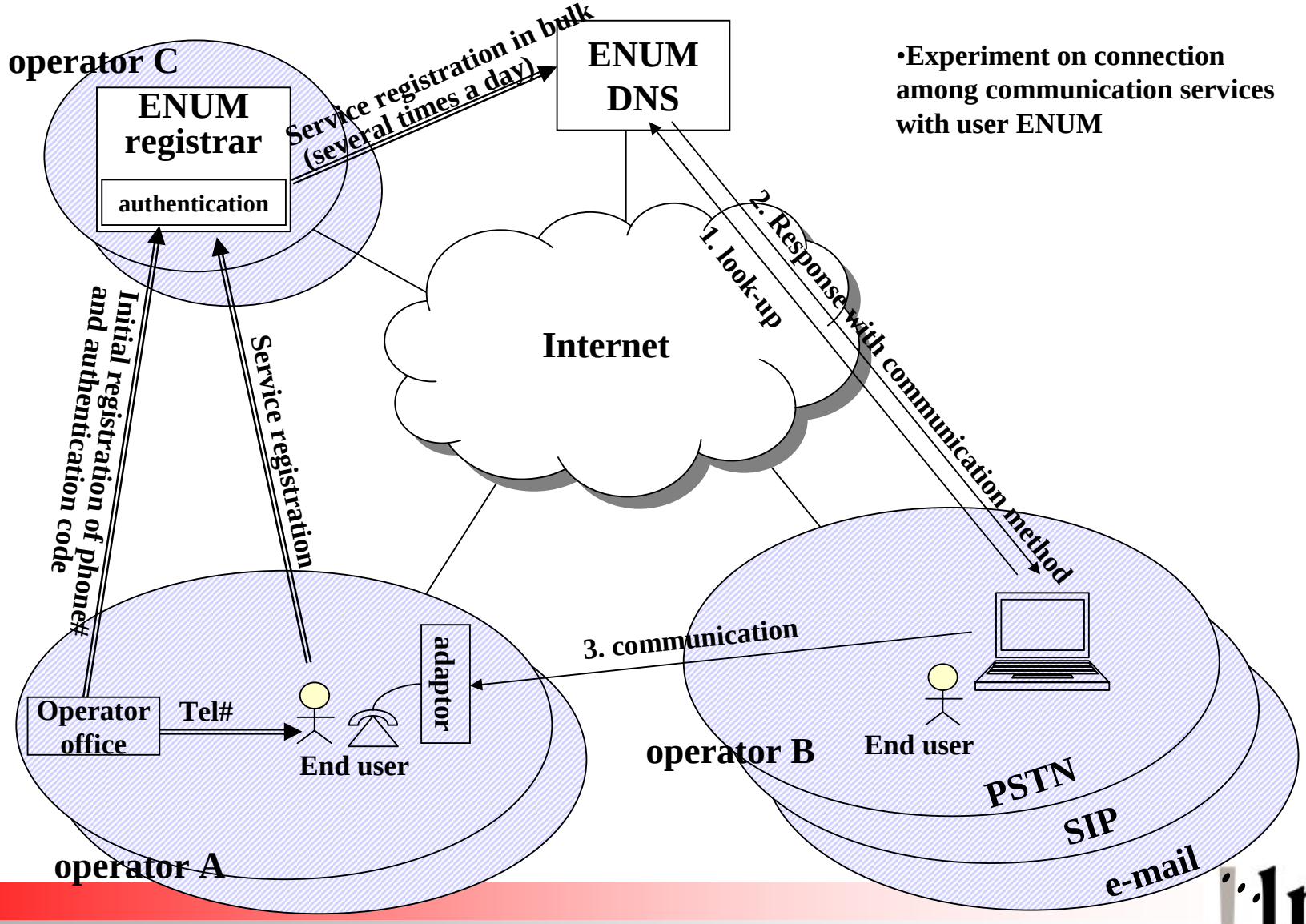


* experiment on connectivity among applications

ENUM trial (phase2)



ENUM trial (phase3)



•Experiment on connection among communication services with user ENUM

Layer of ENUM services and standards

Communication service (multiple carriers)

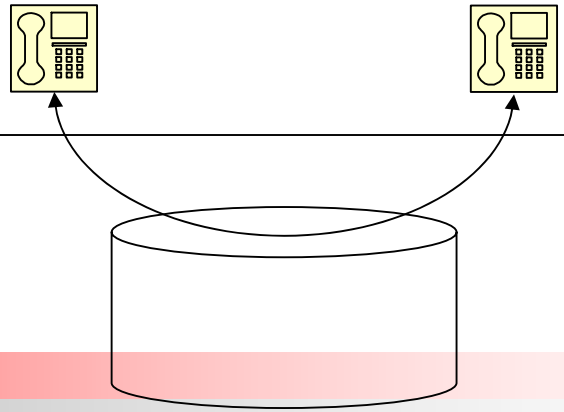
Authentication, Social Security

Communication service (single carrier)

Provisioning, Communication Security

Applications/Terminals

SIP, Mail, Web, etc.



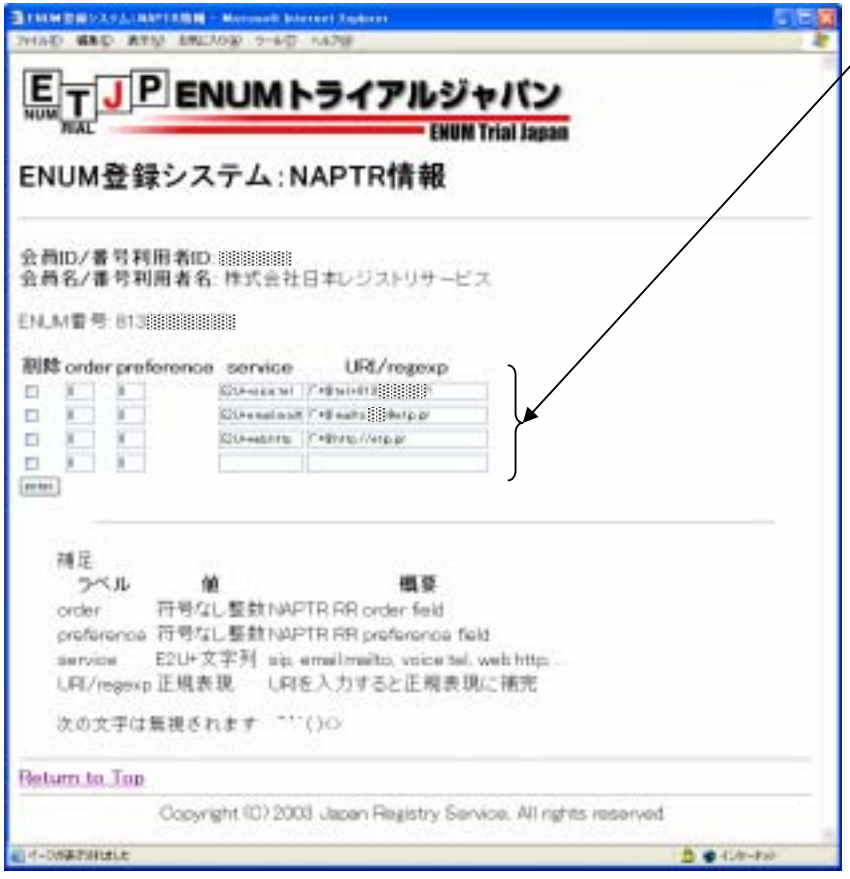
Infrastructure

ENUM DNS

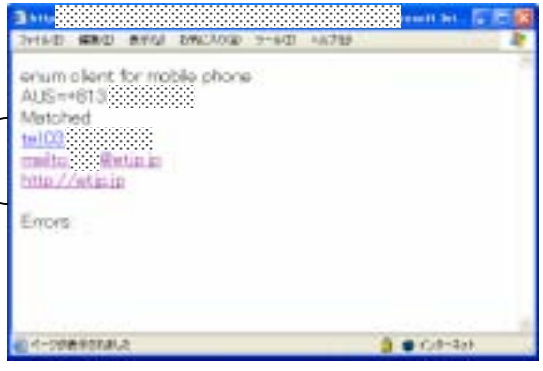
ETJP Registration system (Phase 1)

- **Each ETJP member can apply their preferred numbers as their trial E.164 numbers.**
- **Verification is performed by each member's ID and password.**

NAPTR Registration Web I/F (Phase 1)



- **ETJP members can set their preferred NAPTR RRs to the trial DNS through this Web I/F.**
- **Those NAPTR RRs are updated within a few minutes.**
- **Can be examined via ENUM client-like Web I/F.**

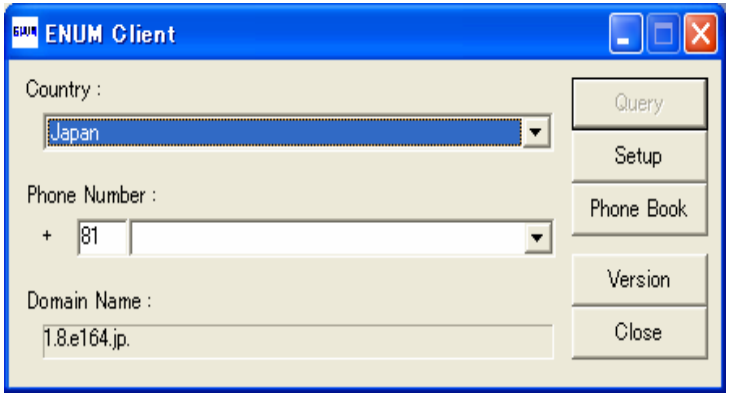


ETJP applications (Phase 1)

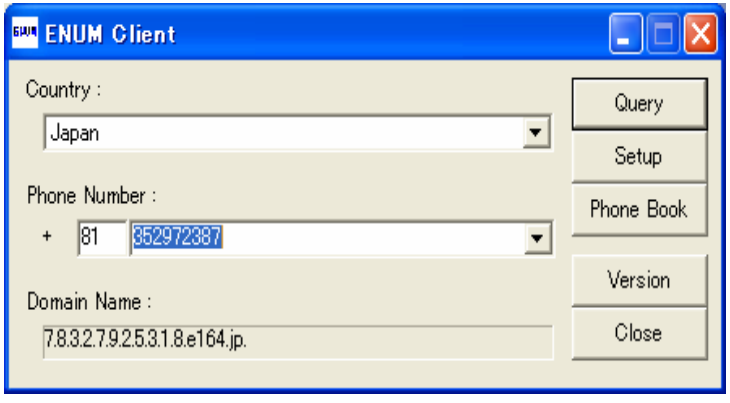
- **ENUM enabled SIP Proxy (Softfront)**
- **ENUM enabled VoIP Router (Yamaha, CISCO)**
- **ENUM enabled InternetFAX (Panasonic)**
- **Sample Software ENUM Client (JPRS)**
  - **Source codes are open to the members**
  - **Object codes of runtime libraries used by the sample software are open to the members**
  - **API (under development)**
    - **SetDNS : specifies the DNS server**
    - **SetAUS : specifies the Telephone Number**
    - **CreateAUS : create the AUS Number using the locale info**
    - **ENUMQuery : look-up NAPTR records**
    - **ENUMGetData : picks up NAPTR records one by one**

More application and SDK

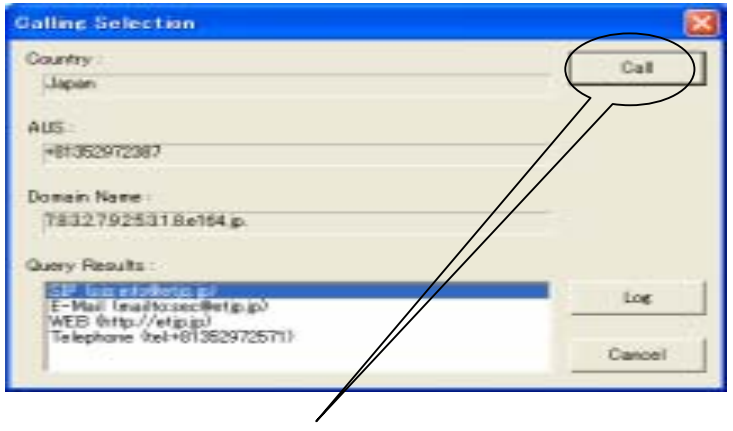
1) start



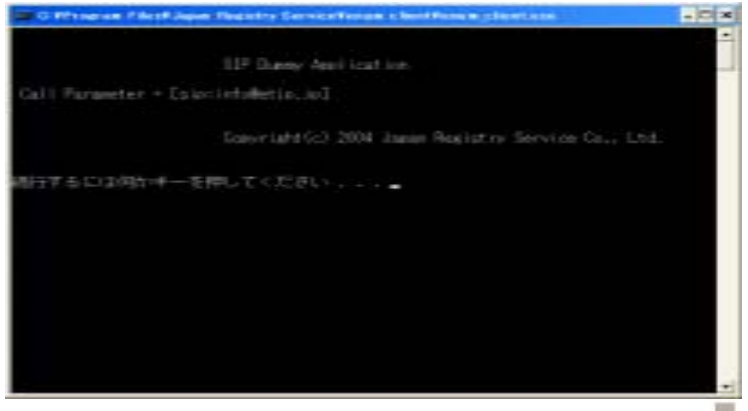
2) input telephone number and look-up



3) services are shown and select one



4) Start the communication service



References

- **ETJP**
  - **http://etjp.jp/ (in Japanese)**
  - **http://etjp.jp/english/**
- **ENUM Study Group**
  - **http://www.nic.ad.jp/en/enum/**
- **JPRS**
  - **http://jprs.co.jp/enum/ (in Japanese)**

Q & A