

ENUM Trial in Japan

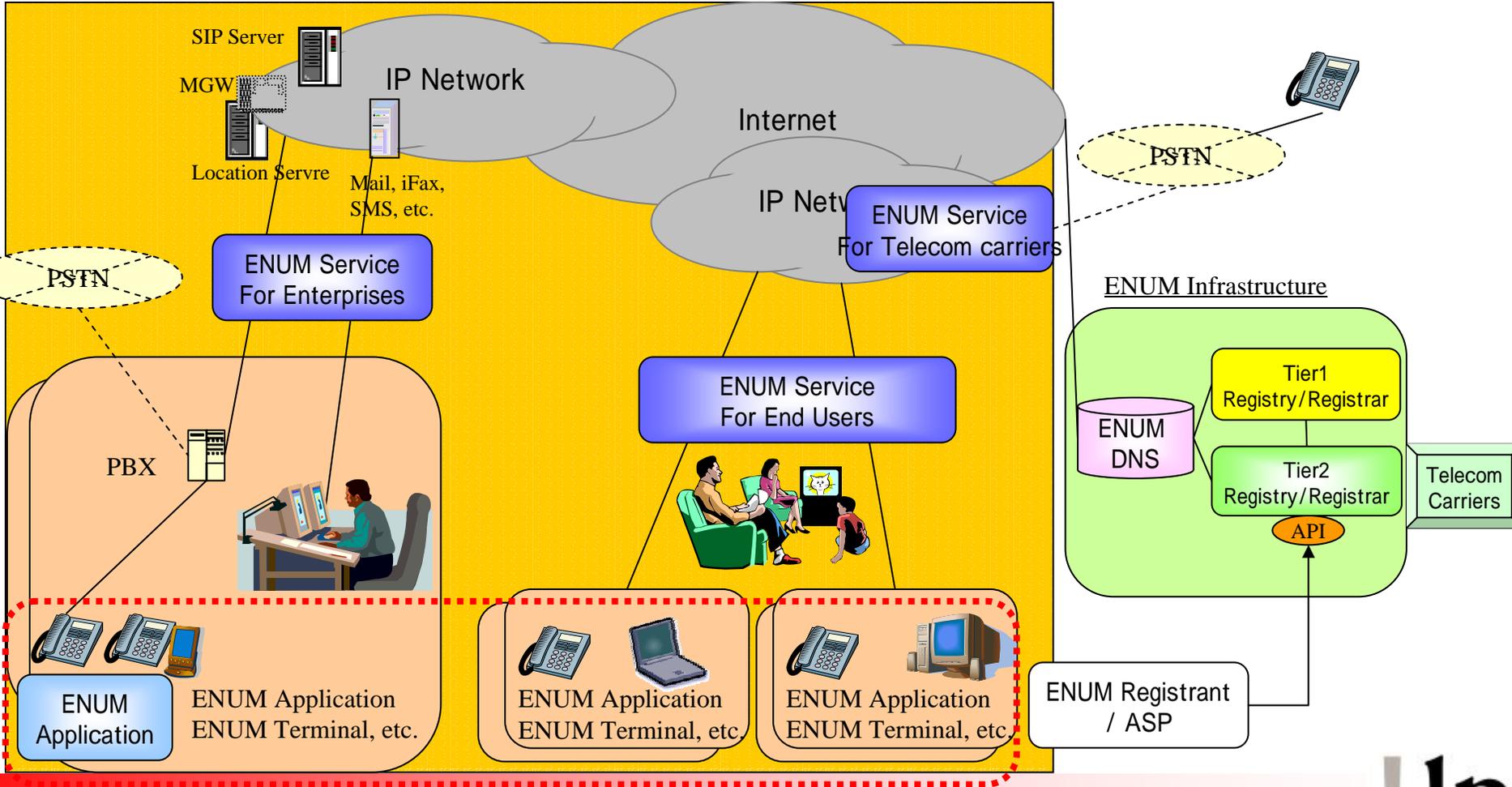
NGI2 & IPv6 DNS Operation Workshop

5 Dec 2003

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Background

Typical ENUM world



ENUM possibilities

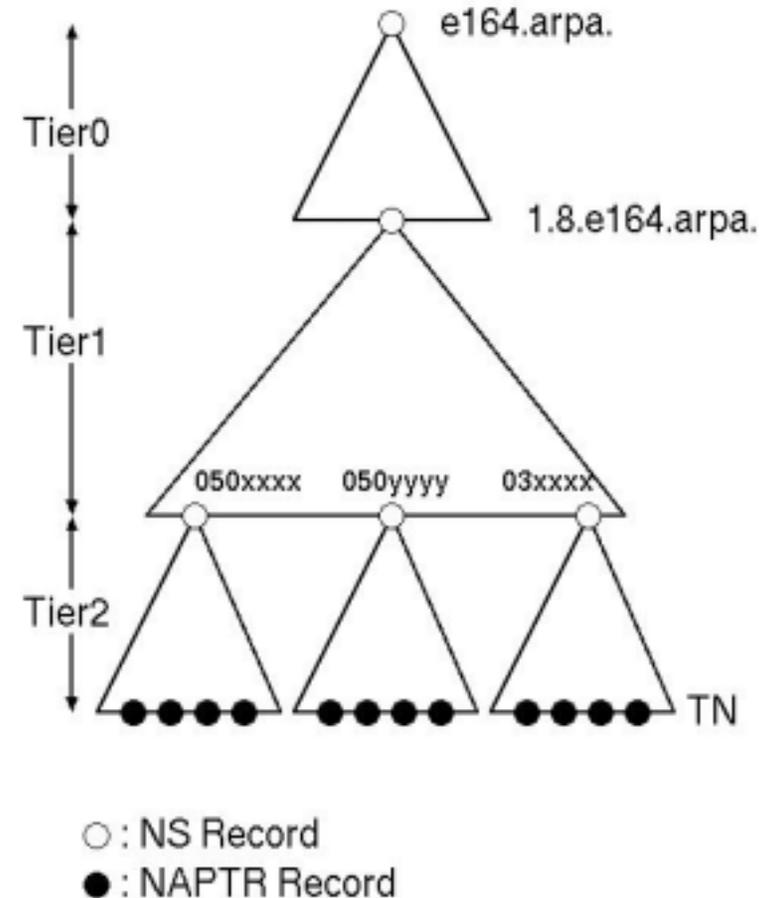
- End users view:
 - Unifications of multiple identifiers into one E.164 number.
 - Tel#, Fax#, Email address, Web address, etc.
 - Increases chance to connect to callee.
 - Can be fall back to another URI(s) if line is busy.
- Operators view:
 - Inter-routing between IP phone carriers.

Operator ENUM / User ENUM

- Operator ENUM
 - Operators (Carriers, ISPs, etc.) set NAPTR to each number they assigned.
 - ENUM services may be limited.
 - Used for inter-routing within operators.
 - ENUM DNS can be internal to the operators.
 - NAPTR RRs can be hidden from users.
- User ENUM
 - Users (E.164 number holders) set NAPTRs according to their demands.
 - Variety of ENUM services can be chosen.
 - User must be verified whether appropriate number holder.
 - Independent number verification authority is required.
- Operation styles are completely different.

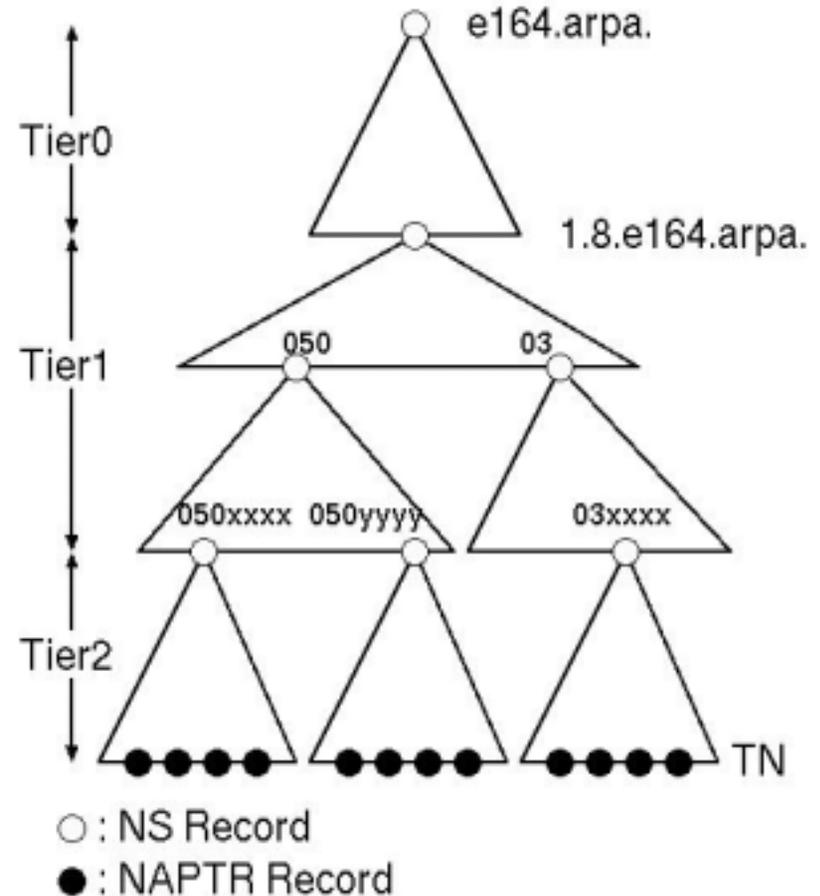
Tier structure: example 1

- Tier1 delegates number block(s) to Tier2.



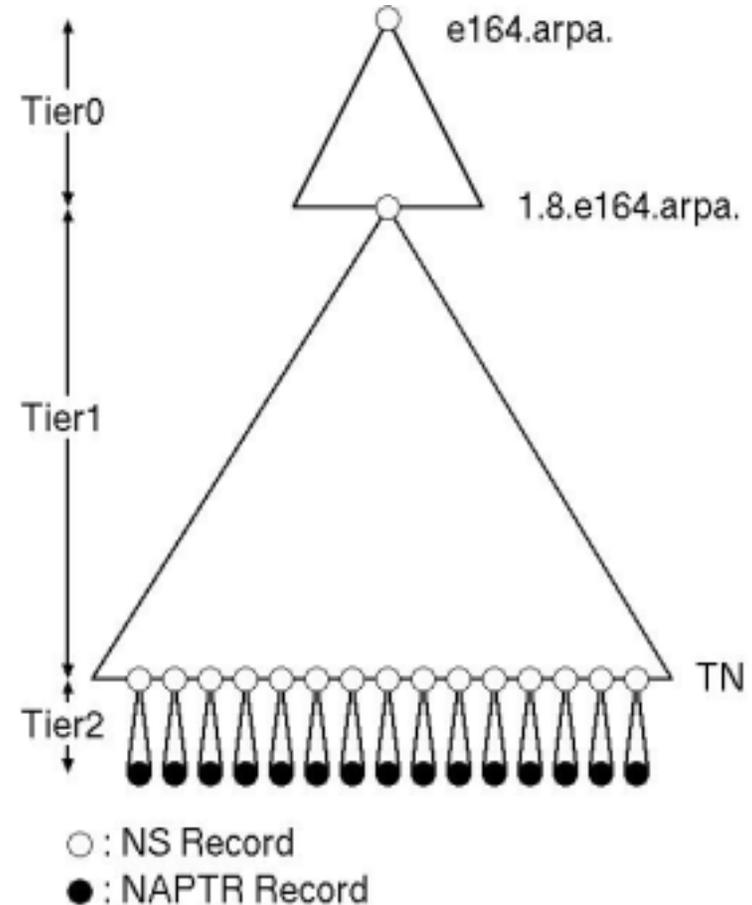
Tier structure: example 2

- Tier1 is layered according to number plan.
- Tier1 delegates number block(s) to Tier2.



Tier structure: example 3

- Tier1 delegates each number to Tier2.
- Easy to provide number portability.
- Suitable for User ENUM.



DNS structure design

- Depends on which model to select.
- Typical requirements for Tier1 DNS:
 - Handling of large zone (up to 100M entry).
 - Scalability and stability.
 - Performance.
- Typical requirements for Tier2 DNS:
 - Capability for frequent update.
 - Relationship with registry database.
 - EDNS0 support.

Registry DB

- Tier1:
 - Frequency of zone generation.
 - Zone transfer method to primary DNS.
 - Authentication and consistency.
 - Interface for Tier2 Registry (or Tier1 Registrar).
 - EPP?
- Tier2:
 - Partial (dynamic) update.
 - Interface for User (or Tier2 Registrar).
 - Validation of number holder.
 - Interface for Tier1 Registry (or Registrar).
 - EPP?

Consideration for DNS

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

Issues

- Future vision, business model.
 - Operator ENUM / User ENUM.
 - Management Entity, responsibility.
 - Charge.
- DNS operation.
 - Tier structure.
 - DNS server distribution.
 - Provisioning of NAPTR data.
- Application software development.
 - ENUM client.
 - Relation with other applications, such as Mailer, SIP phone, etc.

Issues (cont.)

- Security.
 - DNS data.
 - ENUM provisioning.
 - User communication (application level).
- Privacy.
 - End user data (whois).
 - Anonymity (DNS Data).
 - Trace of the user behaviour.
- Regulation.
 - ENUM numbering plan.
 - Guarantee of quality of service.

ENUM activities in Japan

ENUM Study Group

- Established
 - September 2002.
- Objectives
 - Understanding the ENUM technology: desk work.
 - Finding political/regulatory issues related to ENUM-based implementation and operation.
 - Studying the implementation and operation of the ENUM-based system, and related matters.
 - Finding technological issues related to ENUM.
 - Clarifying pros and cons in ENUM usage.
- Target of the study
 - ENUM technology.
 - Related technology such as DNS , URI , DDDS.
- Final report
 - Published on May 2003 (English translation coming soon).

ENUM Trial Japan (ETJP)



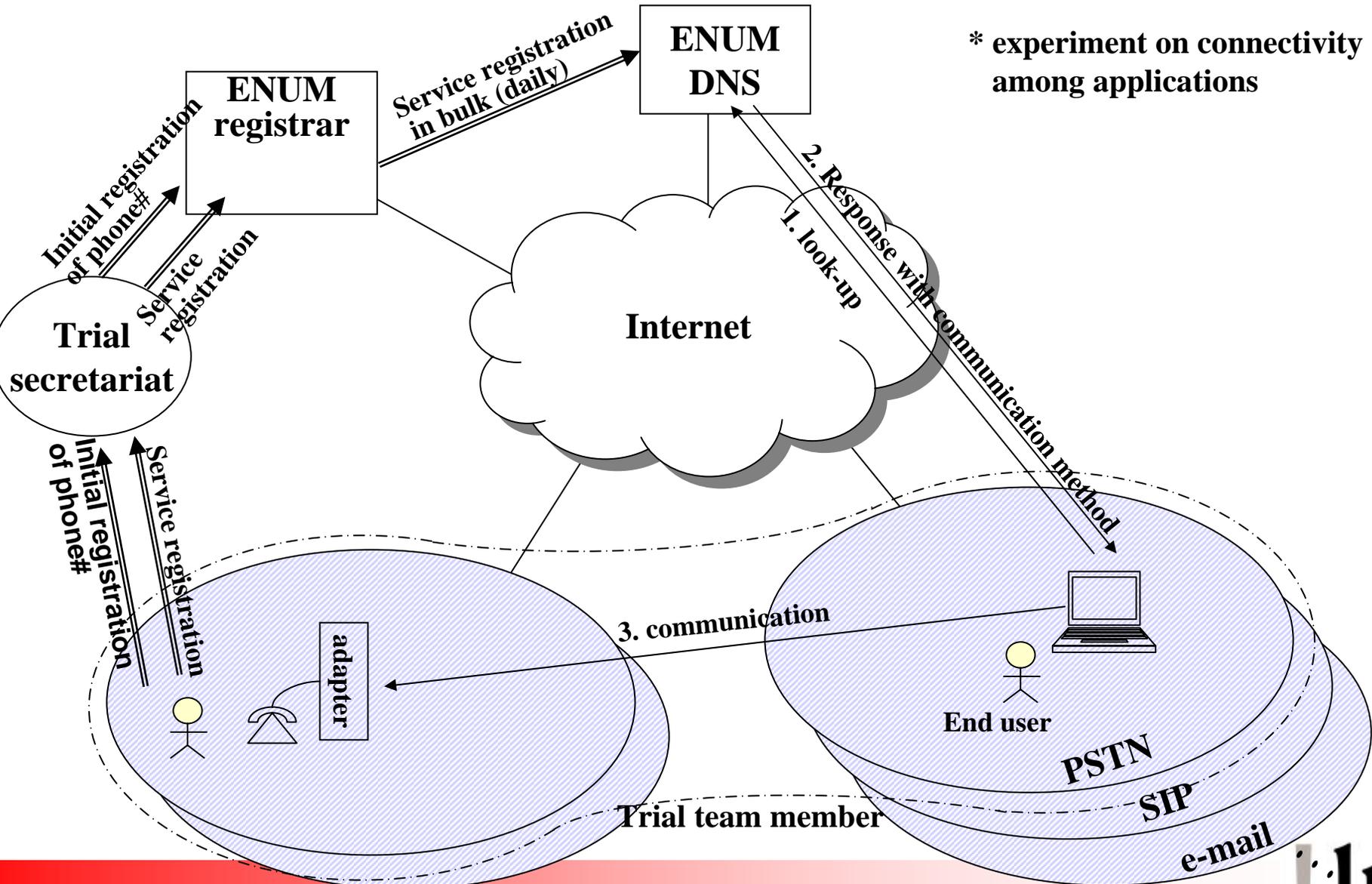
- Established
 - on 17 September 2003 (1 year activity).
- Purpose
 - Perform ENUM trials to ensure functioning and feasibility of basic technical facility.
 - Demonstration of technology for international use.
 - Accumulation of know-how on ENUM and sharing of it among participants.
- Activities
 - DNS operation for ENUM Trial.
 - Feasibility test of communication applications (device, software) using ENUM.
 - Feasibility test of communication services.
- Results
 - Results of 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 21 Nov 2003).
- 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

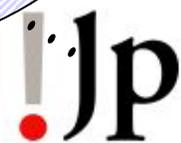
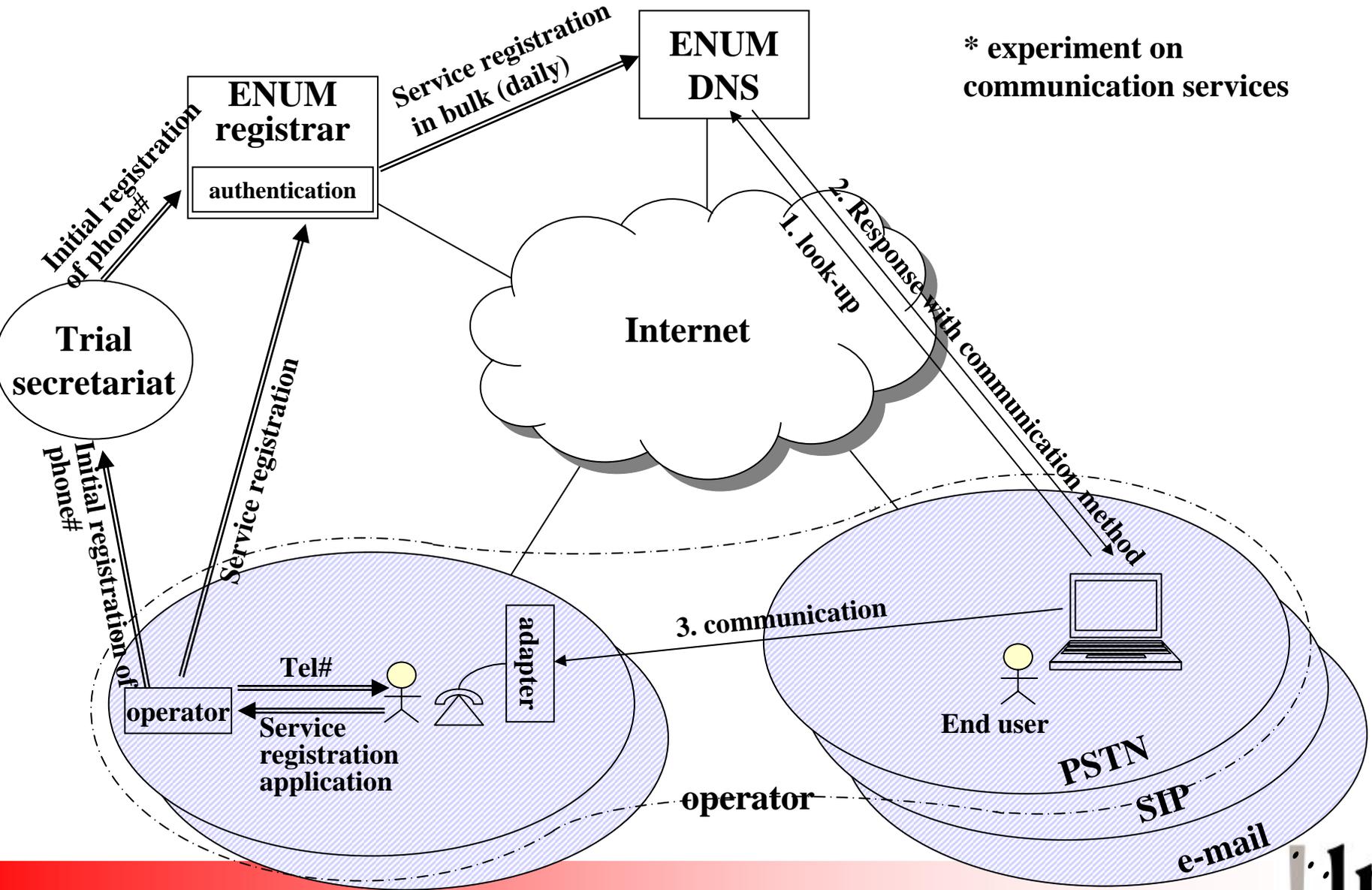
ENUM trial (phase 1)

* experiment on connectivity among applications

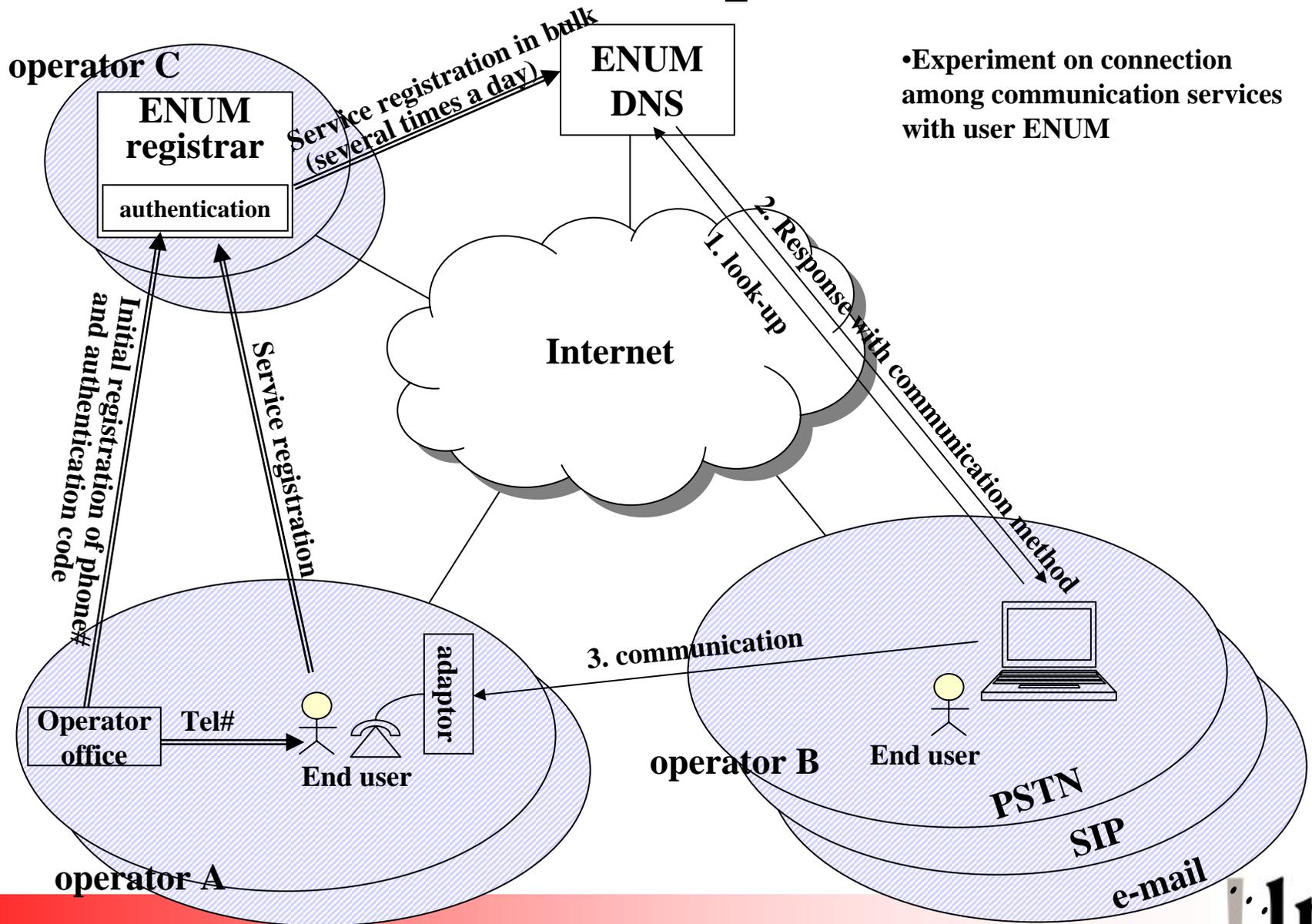


ENUM trial (phase2)

* experiment on communication services

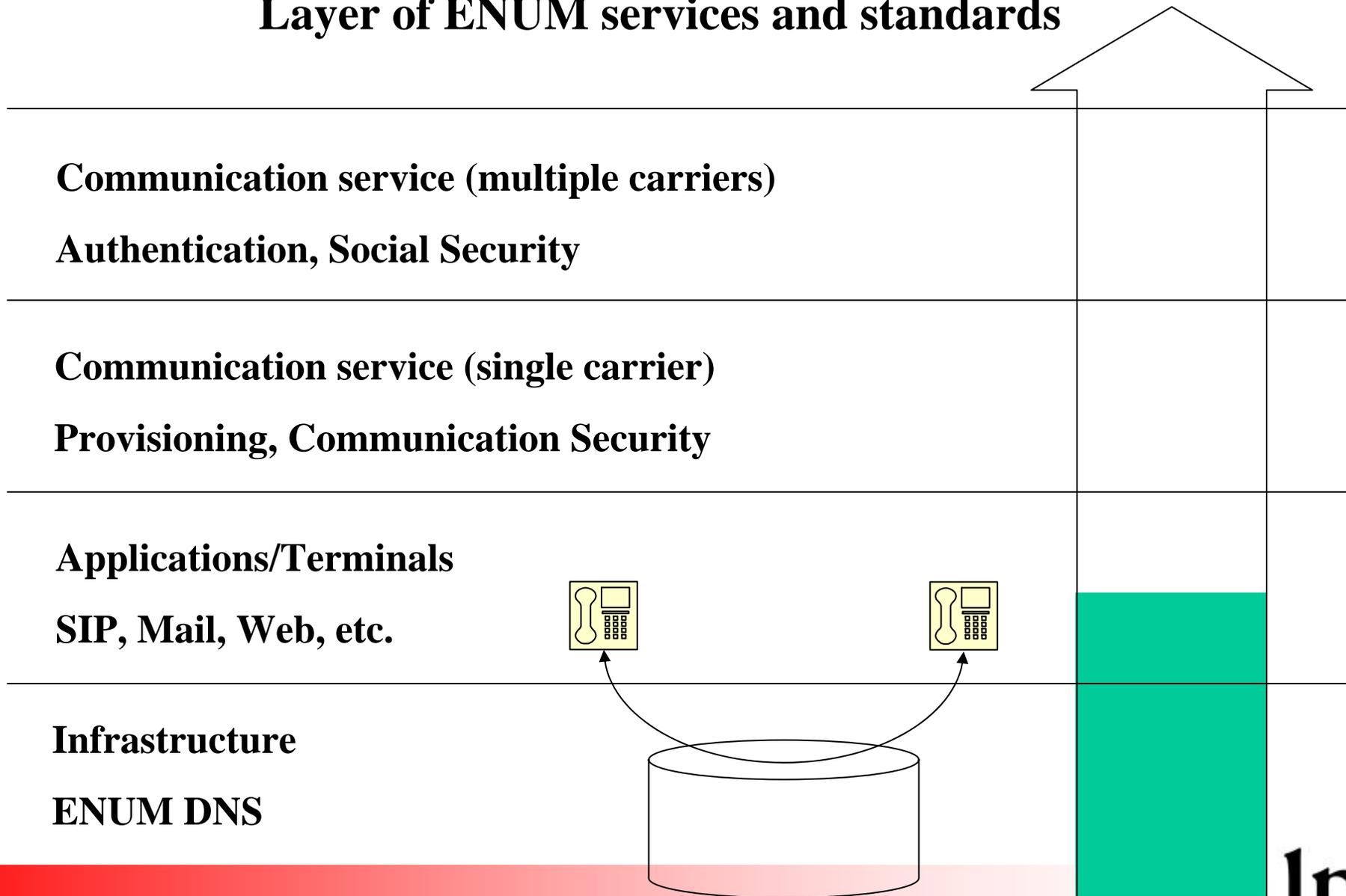


ENUM trial (phase3)



•Experiment on connection among communication services with user ENUM

Layer of ENUM services and standards



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)

ENUM登録システム: NAPTR情報

会員ID/番号利用者ID: [masked]
 会員名/番号利用者名: 株式会社日本レジストリサービス

ENUM番号: 813[masked]

削除	order	preference	service	URI/regexp
<input type="checkbox"/>	0	0	tel	*[masked]
<input type="checkbox"/>	0	0	tel	*[masked]
<input type="checkbox"/>	0	0	web	*[masked]
<input type="checkbox"/>	0	0		

enter

補足
 フォーム 値 概要
 order 符号なし整数 NAPTR RR order field
 preference 符号なし整数 NAPTR RR preference field
 service E2U+文字列 sip, email,mailto, voice, tel, web, http, ...
 URI/regexp 正規表現 URIを入力すると正規表現に補充
 次の文字は無視されます: * (1)

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- 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.

```
enum client for mobile phone
AUS=+813: [masked]
Matched
tel: [masked]
mailto: [masked]
http://[masked]
Errors
```

ETJP applications (Phase 1)

- ENUM enabled SIP Proxy (Softfront).
- ENUM enable VoIP Router (Yamaha, CISCO).
- ENUM enabled InternetFAX (Panasonic).

References

- ETJP
 - <http://etjp.jp/>
- ENUM Study Group
 - <http://www.nic.ad.jp/en/enum/>

Q & A