



Taiwan SIP/ENUM Trial

Jeff Yeh <jeff@twnic.net.tw>

Taiwan Network Information Center (TWNIC)

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AGENDA

- SIP/ ENUM in Taiwan
 - Objectives
 - Milestones
- Noteworthy
- Deployment Status
- Operational Facts
- Issues and Challenges
- APEET



Trial Objectives

- This 3-year SIP / ENUM trial is part of NTPO (The National Science & Technology Program for Telecommunications) research project, which is to explore a common interest of commercial and academic ISPs for ENUM, and to establish a nation-wide SIP / ENUM test bed
- The result, both research & operational outputs, of the trial will be a major reference for National Science Council and the Directorate General of Telecommunications. The system itself is planned to migrate to regular ENUM/VOIP services for the public after the trial



Milestones: 2001~2002

– 2001

- A small ENUM task force established in TWNIC
- Preliminary study on ENUM RFCs
- Set up the initial ENUM DNS and registration system in TWNIC

– 2002

- Applied 6.8.8.e164.arpa but rejected
- Defined ENUM + SIP as the direction for system deployment
- SIP/ ENUM Forum Taiwan established.
- Coordinated with local PSTN carriers, local research institutes, vendors (like Cisco)



Milestones: 2003~

- **2003**
 - SIP / ENUM Trial Phase I began, sponsored by NTPO
 - Completion of SIP/ENUM trial system v1.0 SIP Proxy Server / PCA
 - Determined the number administration plan
 - Around 20 research institutes participated
 - Around 50 companies joined SIP/ ENUM Forum Taiwan
- **2004**
 - PSTN interconnection ready (NTPO sponsored IP-to-PSTN call, 25-min per user per month to Local, Domestic Long Distance and Mobile num.)
 - Trial system v2.0 (MMS, ENUM-enabled email, 3 more proxies installed)
 - ENUM 09440 for nation-wide public WLAN services
 - Around 40 universities, government agencies, ISPs joined the trial
 - ENUM users reached 10,000 at the year end
- **2005**
 - Number of User hits 28,000
 - Inter-connection with local commercial “070” VoIP services
 - Plan for the migration to business operation



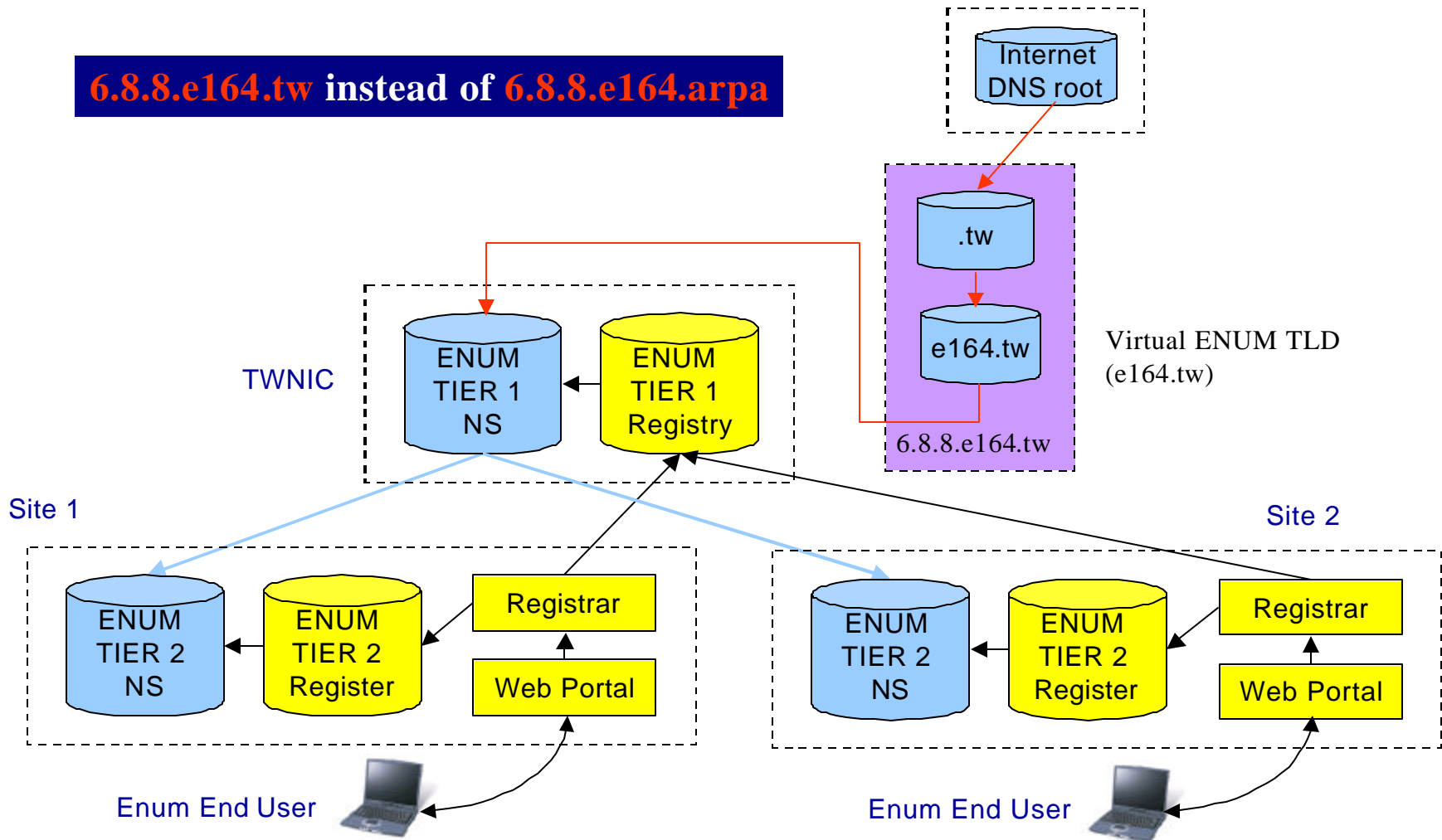
Noteworthy

- More than 13 million people in Taiwan have access to Internet (nearly 60% of total population)
- 3.3 million households in Taiwan are using Broadband Internet (ADSL takes up 90%)
- 80% of VoIP / WLAN products are manufactured by Taiwanese vendors
- Mobile phone penetration rate is more than 110%!
- MSN, Skype are very popular in Taiwan, too

Deployment Status

ENUM DNS

6.8.8.e164.tw instead of **6.8.8.e164.arpa**



ENUM Service Portal



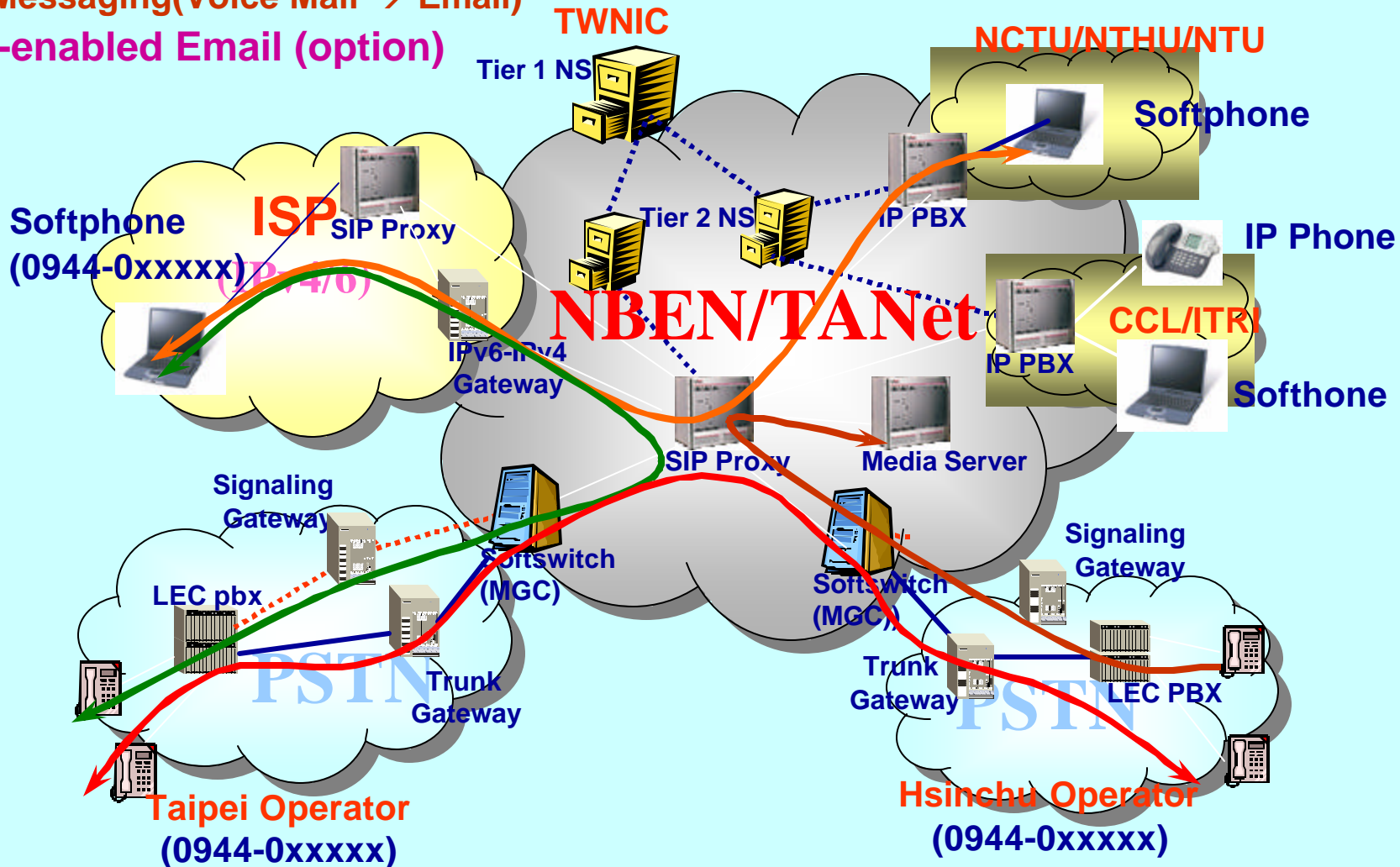
- Numbering (09440)
 - Application
 - Org. Info
 - Admin. Guideline
- Log-in
 - Download PCA
 - Maintain User Record
 - Maintain NAPTR
- Query
 - ENUM Whois
 - ENUM NAPTR
 - Call Log
- Enum Trial Documentation
- Enum System Documentation



<http://service.enum.org.tw>

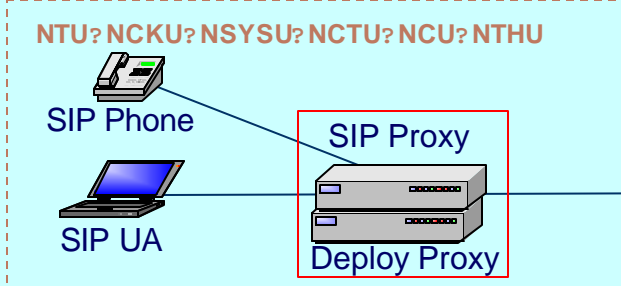
Service Map

1. Softphone \leftrightarrow Softphone
2. PSTN \leftrightarrow Softphone
3. PSTN \leftrightarrow PSTN
4. Unified Messaging (Voice Mail \rightarrow Email)
- 5*. ENUM-enabled Email (option)

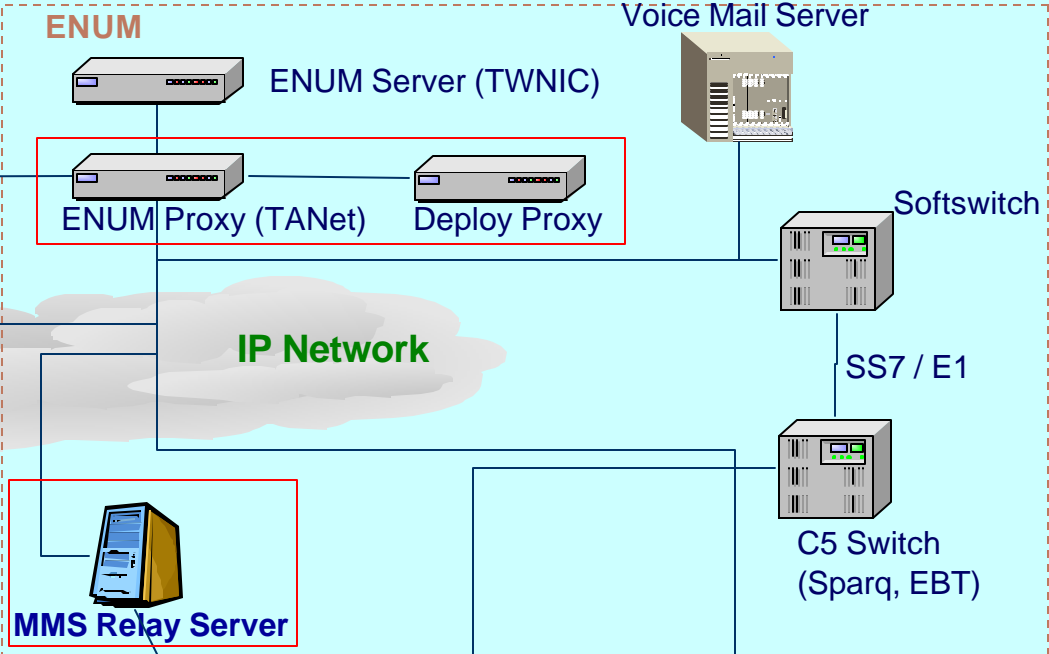


SIP/ENUM Trial Architecture

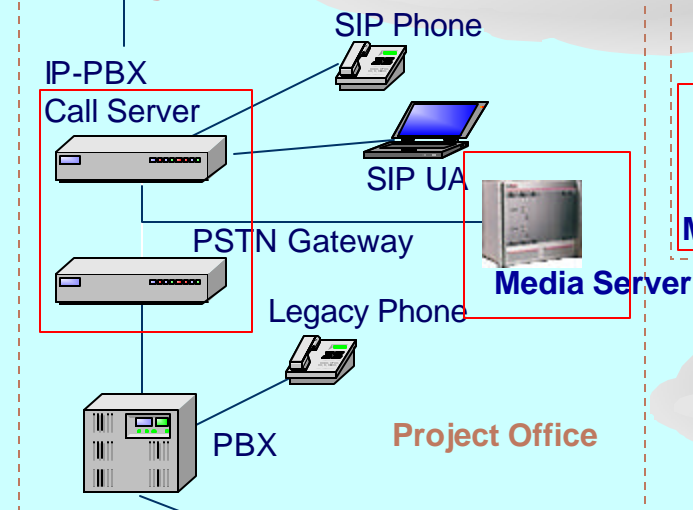
Configuration B – Proxy Users(6)



Core Service Platform



Configuration A – IP-PBX Users (1)



MMS Relay Server

GPRS Core Network

Configuration C – Standalone Users



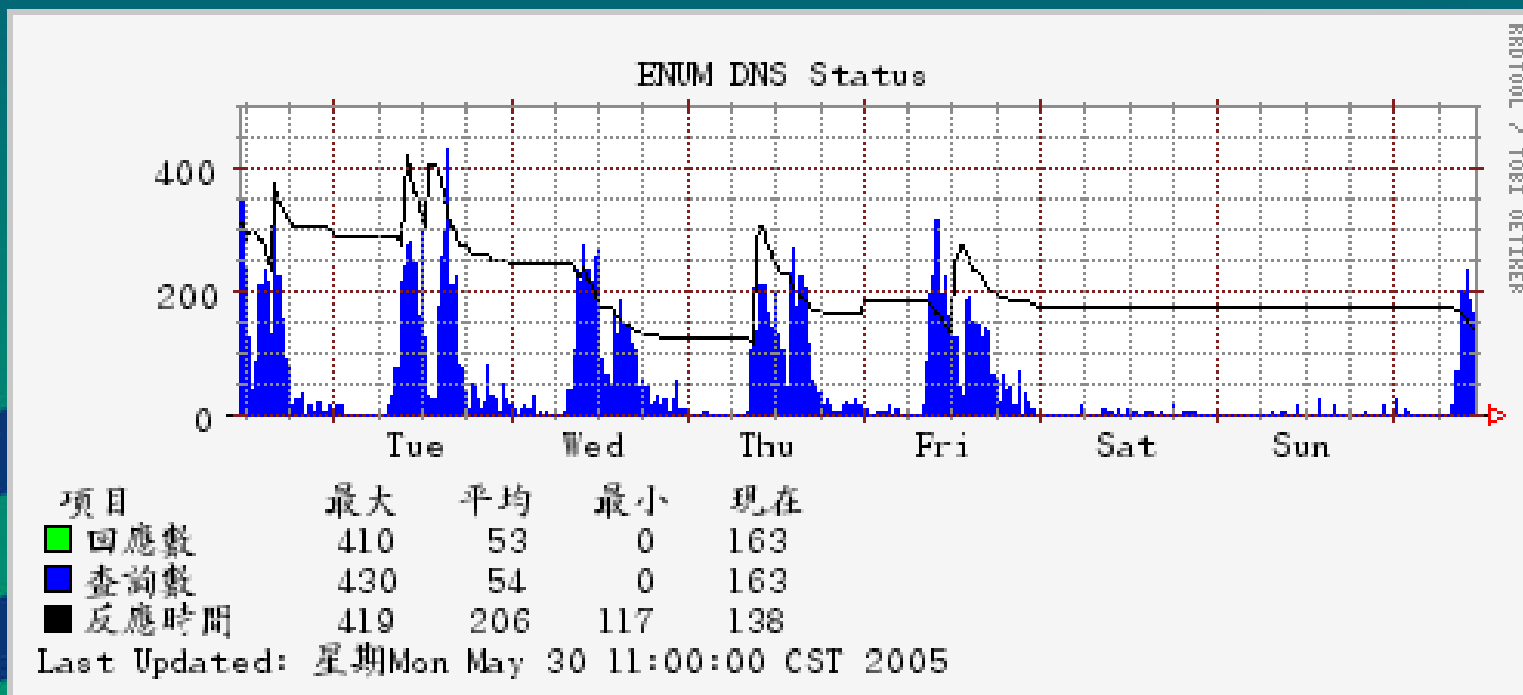
Public Switched Telephone Network

Operational Facts



Fact 1: Calls (as of May 2005)

- Total number of calls made (since 2003.10) : 241,865
- Total call duration: 405:3:18:30 (D/H/M/S)
- IP/PSTN Ratio: approx. 1:3
- ENUM DNS (weekly)





Fact 2: Users (as of May 2005)

- Total number of ENUM registrants: 27,861
 - By SIP proxy--
 - NCKU (south): 3691
 - NCTU (north): 8474
 - NCU (central): 2693
 - NSYSU (south): 277
 - NTHU (east): 10,346
 - NTU (north): 2,380
- Total number of active registrars: 46

Issues and Challenges



e164.tw / 6.8.8.e164.arpa TLD

- Using e164.tw domain name
 - Dealing with RIPE/NCC and ITU-T is non-technical issue
- International Cooperation
 - APEET
 - CNNIC (within CDNC)
 - KRNIC (MoU)
- Looking for more international partners!
- ...and let users speak for us!



Challenges Ahead

- Legal: VoIP Wiretap
 - User data protection and privacy (ENUM WHOIS) has always been an issue
 - The 09440 prefix can be used publicly only if the issue of VoIP wiretapping is solved
 - And Emergency call, Location Awareness...
- Technical: NAT/Firewall
 - The current trial does not provide NAT solution
 - Firewall has been an obstacle for connection to proxy server and RTP Port
 - IPv6 could be one better solution?
- Numbers
 - An expected demand for 1 million numbers, but only assigned 1/10 of it
 - On commercial side, “0X0-abcd-efgh” is also under consideration
- Changing status: “Trial” to real business operation

APEET



Background

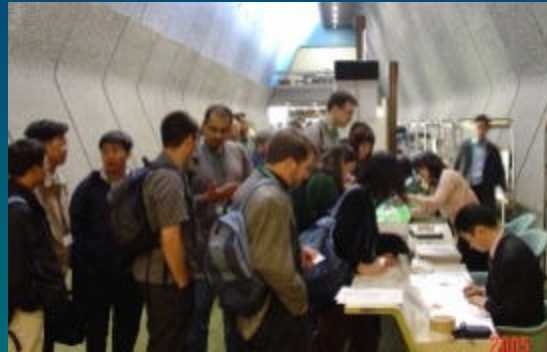
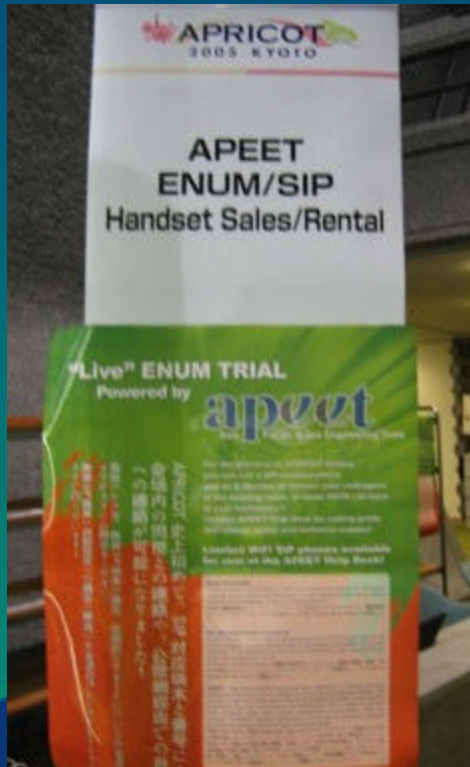
- APEET
 - Started in 2004, APEET is an informal project team comprises of engineers from CNNIC, JPRS, KRNIC, SGNIC and TWNIC and other invited experts.
 - The goal of APEET is to conduct joint trials and to promote the development of ENUM and its related technology such as SIP.



Objective

- Provide an opportunity to have ENUM/SIP experience
 - ENUM
 - Information registration and Number resolution
 - SIP
 - Voice communication between participants
- Not providing 'Telephone service'
 - No Warranty, No Guarantee
 - Connectivity, Quality, etc.

APEET on APRICOT 2005





APEET on APRICOT 2005

- Oversea call
 - The same with ordinal oversea call
 - Available Country Codes are:
 - 1(US), 46(Sweden), 65(Singapore), 86(China), 886(Taiwan)
- Call statistics
 - Feb 16 11:07:56 - Feb 26 00:00:00

	APRICOT	CN	SG	SE	TW	US	Total
200-OK	3227	1755	1017	2	787	1095	7883
461-CNE	43	23	7	0	88	31	192
481-Busy	62	7	35	0	0	6	110

Number of ENUM calls (8882005xxxx) from 200 - OK = 122

- Handsets Sold-Out
 - 100 units within 5 hours!



APEET on APAN 20th

- Available Country Codes are:
 - 1(US), 65(Singapore), 86(China), 886(Taiwan)
- Wifi phone still available!



What's next?

- 64th IETF – Nov 2005 @ Vancouver
 - Target: 500 to 2000 handsets
- Looking for sponsors for ...
 - Wifi handsets
 - PSTN Interconnections (using ENUM for routing)
 - SIP server with ENUM capability
 - ENUM applications
- Contact us at info@apenum.org



Thank You

SIP/ENUM Trail Taiwan: service.enum.org.tw

TWNIC:

APEET: www.apenum.org