Taiwan SIP/ENUM Trial Project

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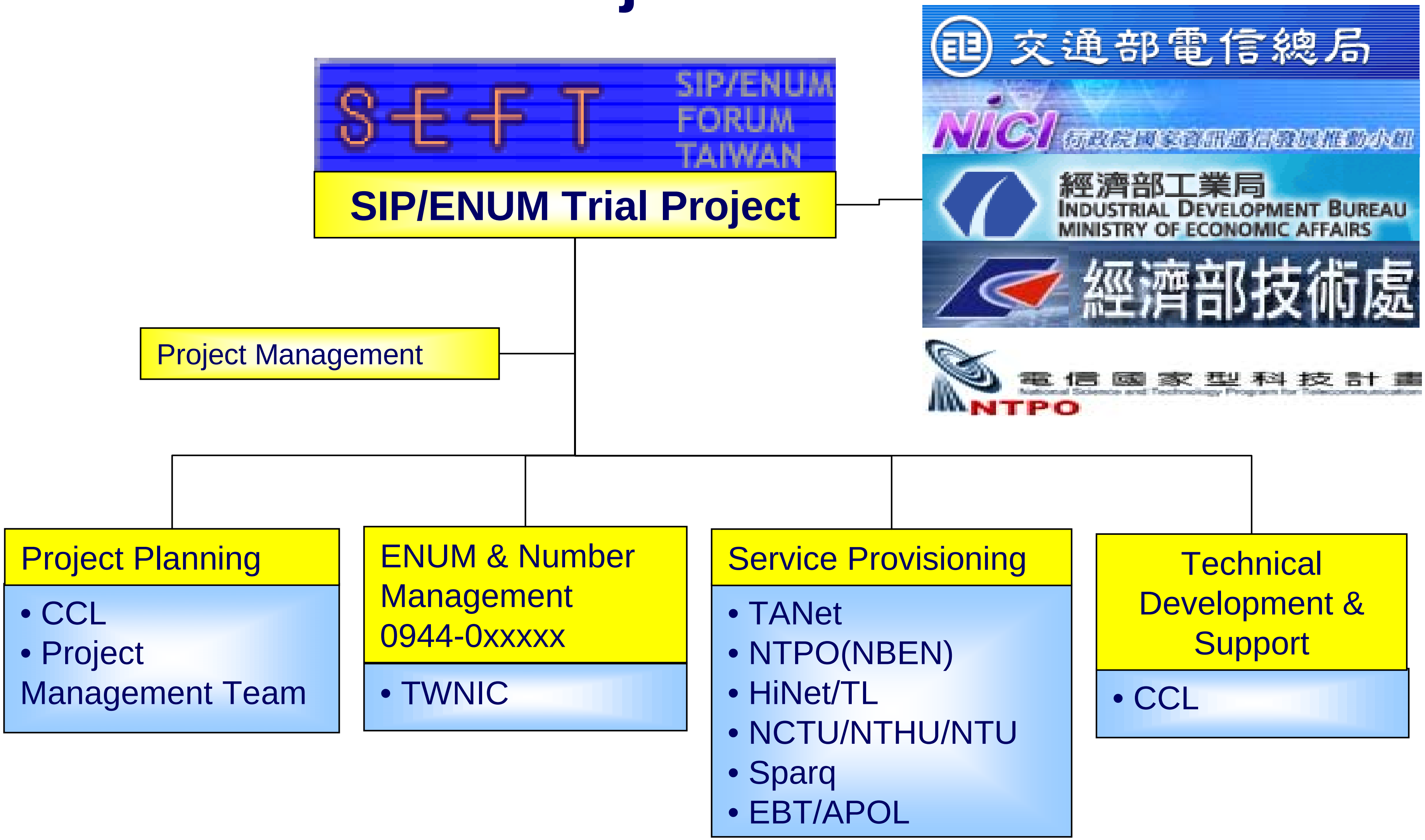
Agenda

- Project Structure
- Phase I Trial Objectives
- SIP/ENUM Trial Architecture
- Application Services in Trial
- Registry/Registrar and Service Roles
- Services Scenario Example
- Alternatives for Enum Routing
- Future Works
- IPOX consortium Introduction

Trial Project Structure



SEFT SIP/ENUM FORUM TAIWAN

SIP/ENUM Trial Project

交通部電信總局

NICI 行政院國家資訊通信發展推動小組

經濟部工業局
INDUSTRIAL DEVELOPMENT BUREAU
MINISTRY OF ECONOMIC AFFAIRS

經濟部技術處

電信國家型科技計畫
National Science and Technology Program for Telecommunication
NTPO

Project Management

Project Planning
- CCL
- Project Management Team

ENUM & Number Management 0944-0xxxxx
- TWNIC

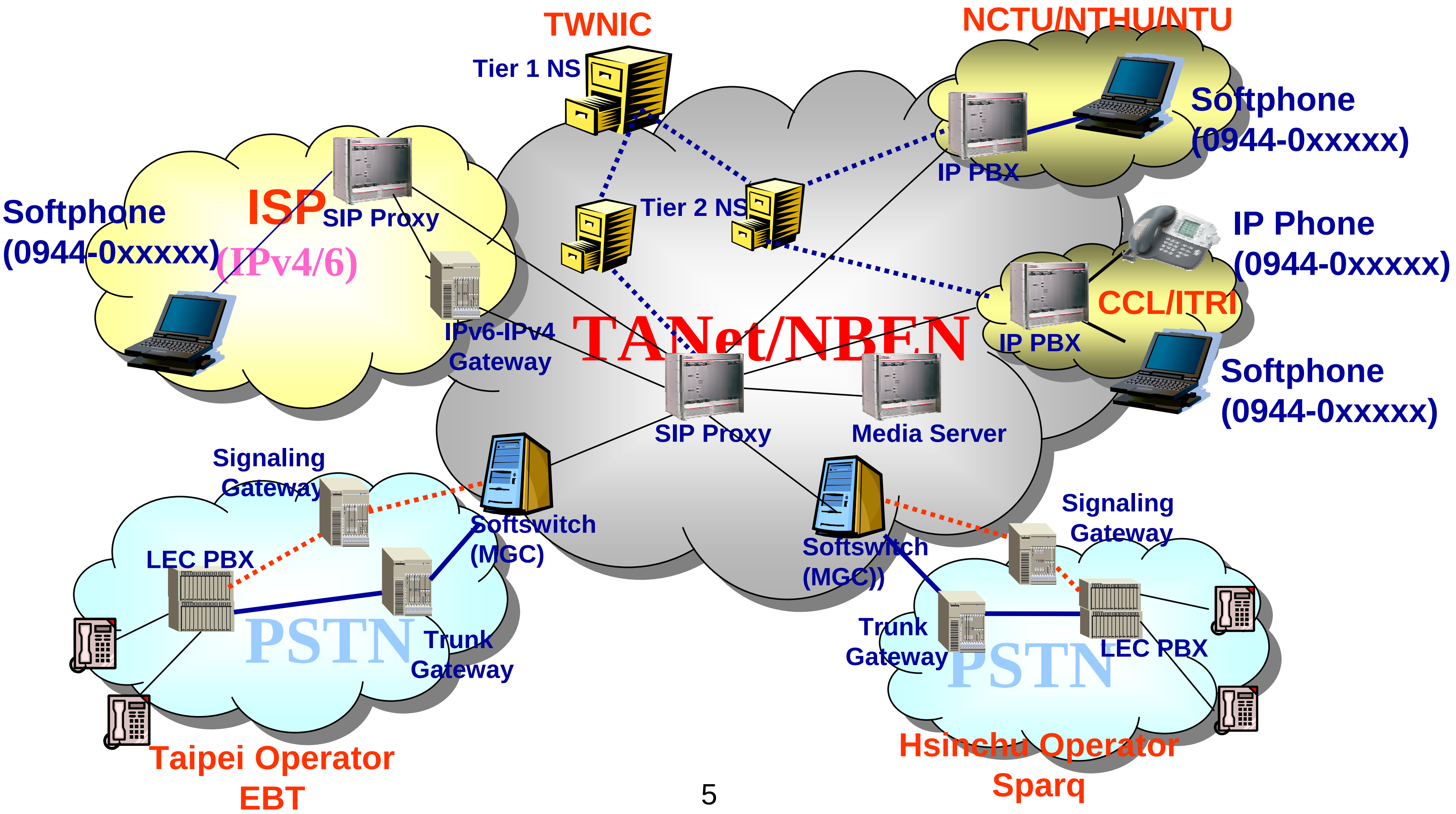
Service Provisioning
- TANet
- NTPO(NBEN)
- HiNet/TL
- NCTU/NTHU/NTU
- Sparq
- EBT/APOL

Technical Development & Support
- CCL

Phase I Trial Objectives

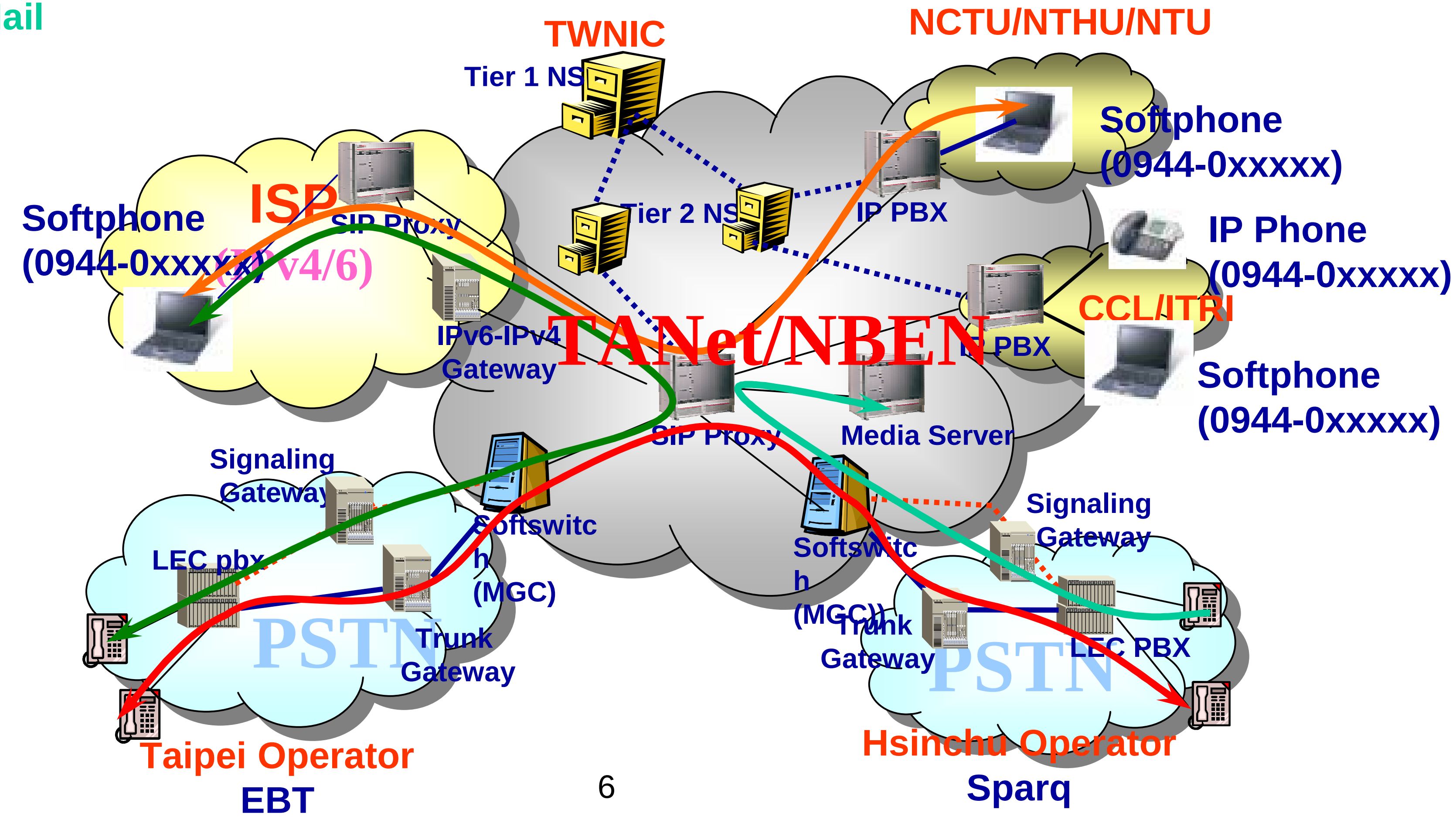
- Time frame: 2003.03 – 2003.12
- Objectives
  - SIP/ENUM Architecture/configurations test
    - What kind of architecture is suitable to Taiwan?
  - Infrastructure Establish
    - Integrate multiple vendors in Taiwan.
    - Telephony Service Provider
    - Internet Service Provider
    - Registrar
    - Registry
  - Basic SIP/Enum Service Deployment

Taiwan SIP/ENUM Trial Architecture


TWNIC
Tier 1 NS
NCTU/NTHU/NTU
Softphone (0944-0xxxxx)
IP PBX
Tier 2 NS
Tier 2 NS
ISP
SIP Proxy
(IPv4/6)
Softphone (0944-0xxxxx)
IPv6-IPv4 Gateway
IP Phone (0944-0xxxxx)
CCL/ITRI
IP PBX
Softphone (0944-0xxxxx)
TANet/NBEN
SIP Proxy
Media Server
Signaling Gateway
Softswitch (MGC)
LEC PBX
PSTN
Trunk Gateway
Taipei Operator EBT
Softswitch (MGC)
Signaling Gateway
Trunk Gateway
PSTN
LEC PBX
Hsinchu Operator Sparq

Application Services – 2003

1. Softphone ←→ Softphone
2. PSTN ←→ Softphone
3. PSTN ←→ PSTN
4. Voice Mail


TWNIC
NCTU/NTHU/NTU
Tier 1 NS
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(0944-0xxxxx)
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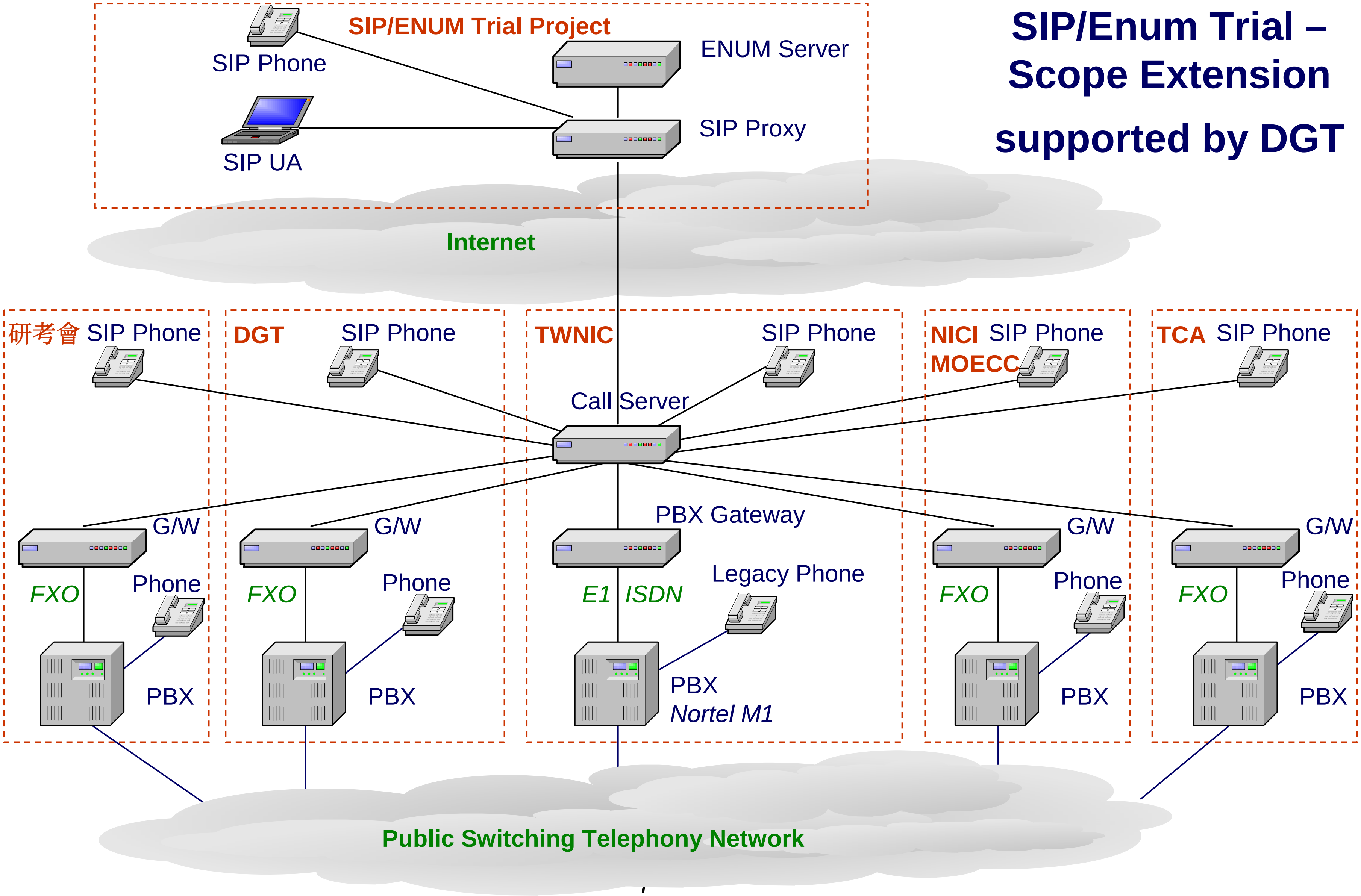
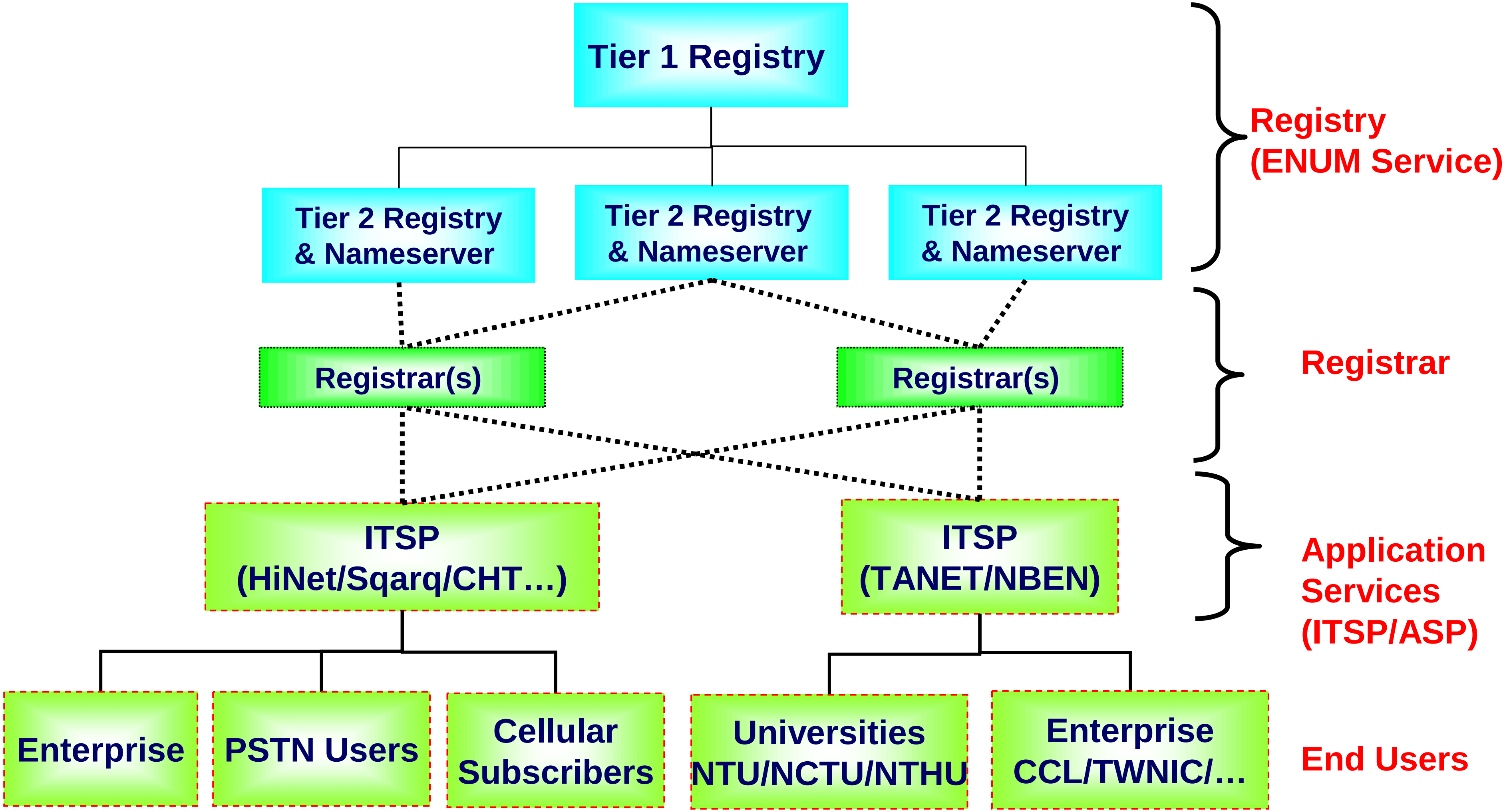
CCL/ITRI
IP PBX
IPv6-IPv4
Gateway
TANet/NBEN
Softphone
(0944-0xxxxx)
SIP Proxy
Media Server
Signaling
Gateway
Softswitch
(MGC)
LEC pbx
Signaling
Gateway
Softswitch
(MGC)
Trunk
Gateway
PSTN
Trunk
Gateway
LEC PBX
PSTN
Taipei Operator
EBT
Hsinchu Operator
Sparq

SIP/Enum Trial – Scope Extension

supported by DGT


SIP/ENUM Trial Project
SIP Phone
ENUM Server
SIP UA
SIP Proxy
Internet
研考會 SIP Phone
DGT
SIP Phone
TWNIC
SIP Phone
NICI
MOECC
SIP Phone
TCA
SIP Phone
Call Server
G/W
FXO
Phone
PBX
G/W
FXO
Phone
PBX
PBX Gateway
E1
ISDN
Legacy Phone
PBX
Nortel M1
G/W
FXO
Phone
PBX
G/W
FXO
Phone
PBX
Public Switching Telephony Network

Registry/Registrar and Service Roles



Tier 1 Registry

Tier 2 Registry & Nameserver

Tier 2 Registry & Nameserver

Tier 2 Registry & Nameserver

Registry (ENUM Service)

Registrar(s)

Registrar(s)

Registrar

ITSP (HiNet/Sqarq/CHT…)

ITSP (TANET/NBEN)

Application Services (ITSP/ASP)

Enterprise

PSTN Users

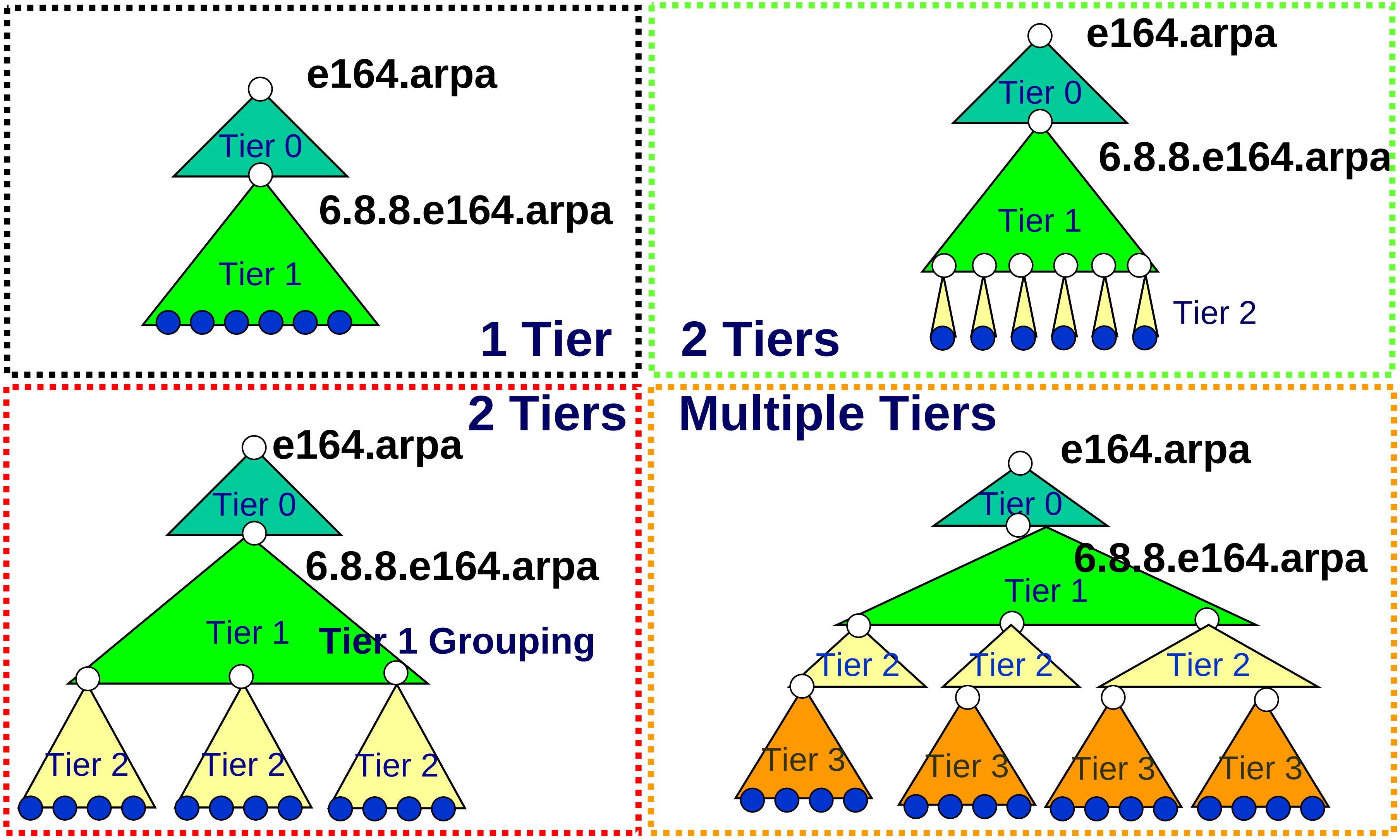
Cellular Subscribers

Universities NTU/NCTU/NTHU

Enterprise CCL/TWNIC/…

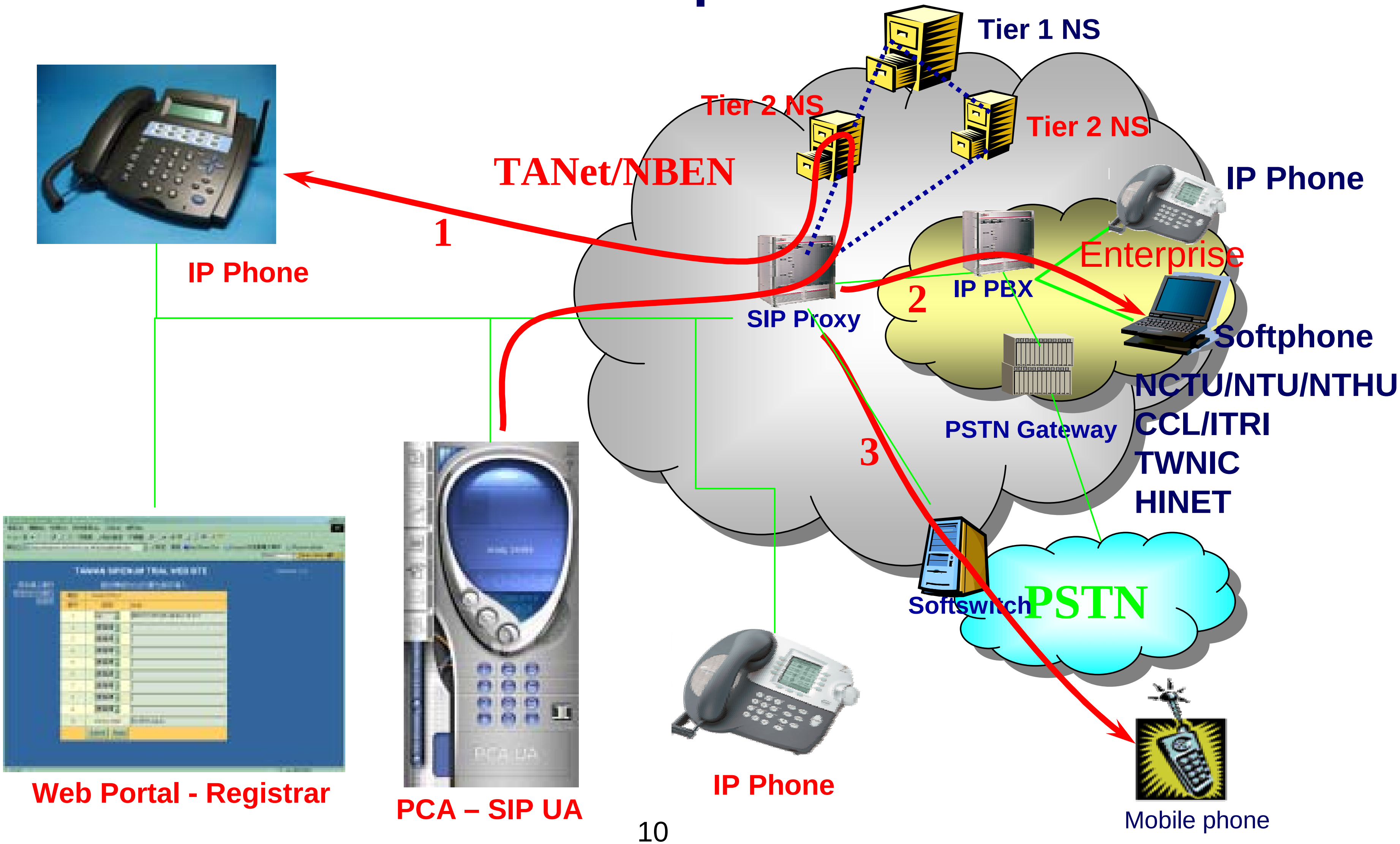
End Users

ENUM DNS Architecture


e164.arpa
Tier 0
6.8.8.e164.arpa
Tier 1
1 Tier
e164.arpa
Tier 0
6.8.8.e164.arpa
Tier 1
Tier 2
2 Tiers
2 Tiers
e164.arpa
Tier 0
6.8.8.e164.arpa
Tier 1
Tier 1 Grouping
Tier 2
Tier 2
Tier 2
Multiple Tiers
e164.arpa
Tier 0
6.8.8.e164.arpa
Tier 1
Tier 2
Tier 2
Tier 2
Tier 3
Tier 3
Tier 3
Tier 3

○ NS record ● NAPTR record

Services Scenario Example



Tier 1 NS

Tier 2 NS

Tier 2 NS

TANet/NBEN

1

2

3

IP Phone

IP Phone

IP Phone

Enterprise

IP PBX

SIP Proxy

Softphone

PSTN Gateway

NCTU/NTU/NTHU
CCL/ITRI
TWNIC
HINET

Softswitch

PSTN

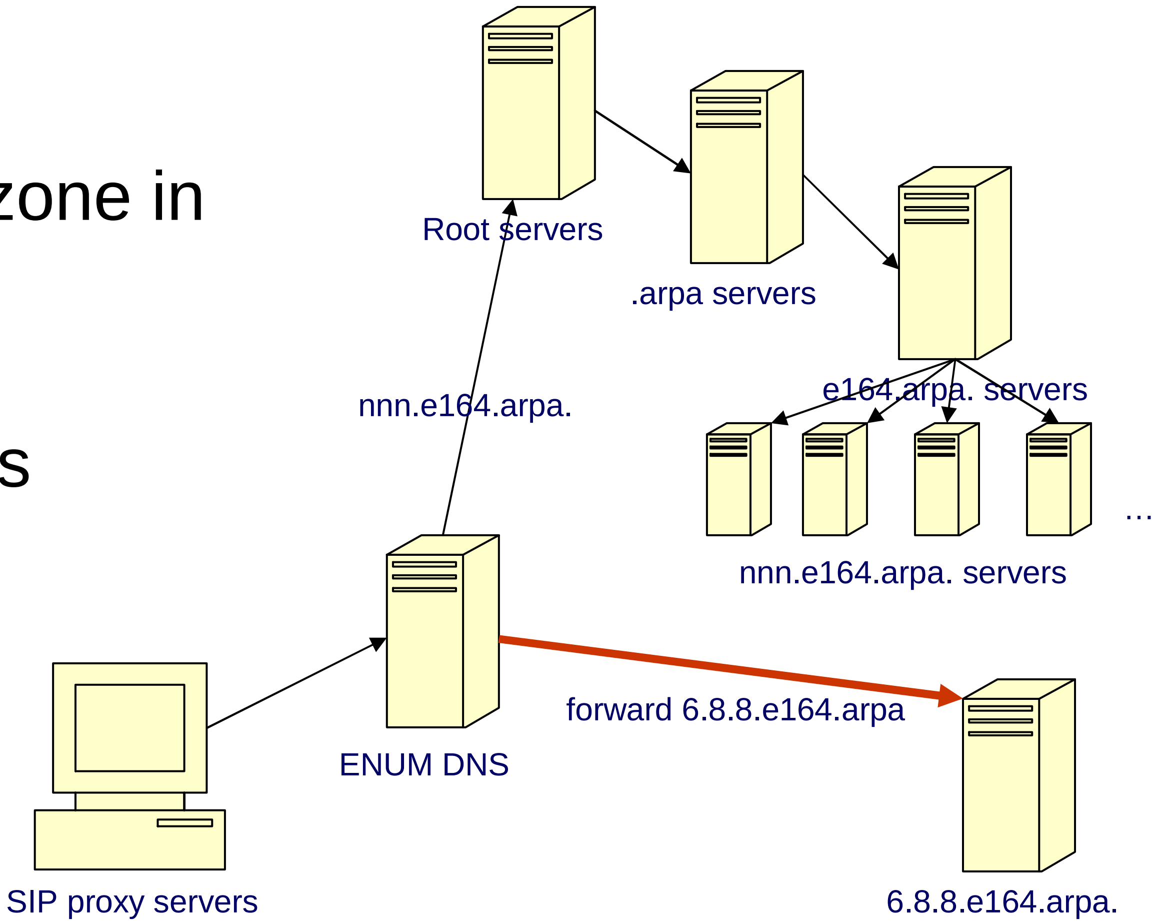
Web Portal - Registrar

PCA – SIP UA

Mobile phone

Alternatives for Enum routing

- 6.8.8.e164.arpa delegation issue
- setup a forward zone in DNS server for 6.8.8.e164.arpa.
- Other alternatives

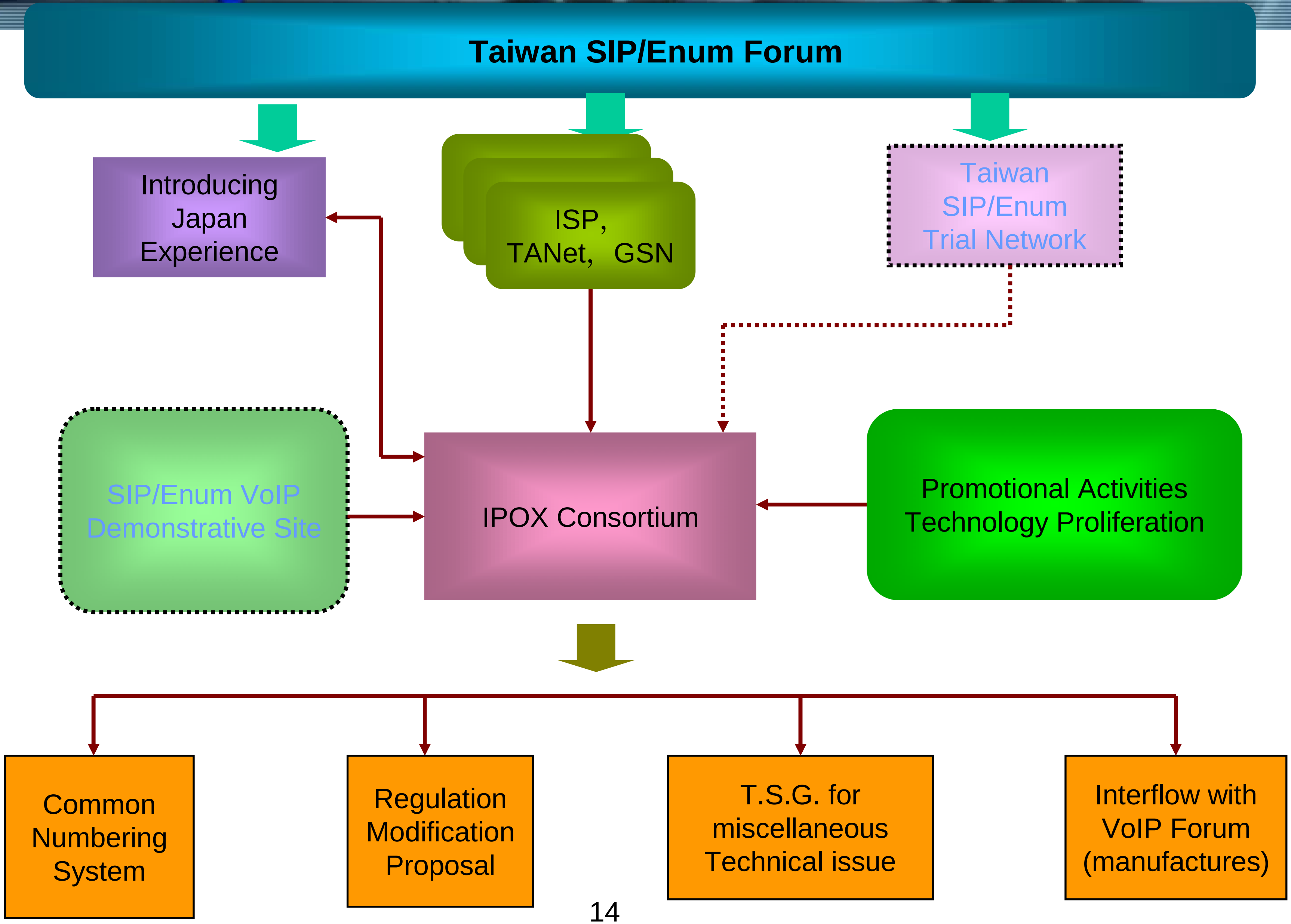

Root servers
.arpa servers
e164.arpa. servers
nnn.e164.arpa.
…
nnn.e164.arpa. servers
ENUM DNS
forward 6.8.8.e164.arpa
SIP proxy servers
6.8.8.e164.arpa.

Future Works

- Evaluate phase 1 system performance.
  - Cache (TTL) issue (timely update)
  - Zone file transfer (time delay)
  - …..
- Business Operation Model Consideration
  - VOIP business models
  - Enum business models
  - Other issues: authentication, privacy, security, etc..
- New Services Development
  - MMS
  - IMS
  - iFax
  - …
- Alternatives for Enum Routing and International cooperation

IPOX (IP Phone Open eXchange) Consortium

Initiative for IP Phone Commercial Deployment Promotion in Taiwan



Taiwan SIP/Enum Forum

Introducing Japan Experience

ISP, TANet, GSN

Taiwan SIP/Enum Trial Network

SIP/Enum VoIP Demonstrative Site

IPOX Consortium

Promotional Activities Technology Proliferation

Common Numbering System

Regulation Modification Proposal

T.S.G. for miscellaneous Technical issue

Interflow with VoIP Forum (manufactures)

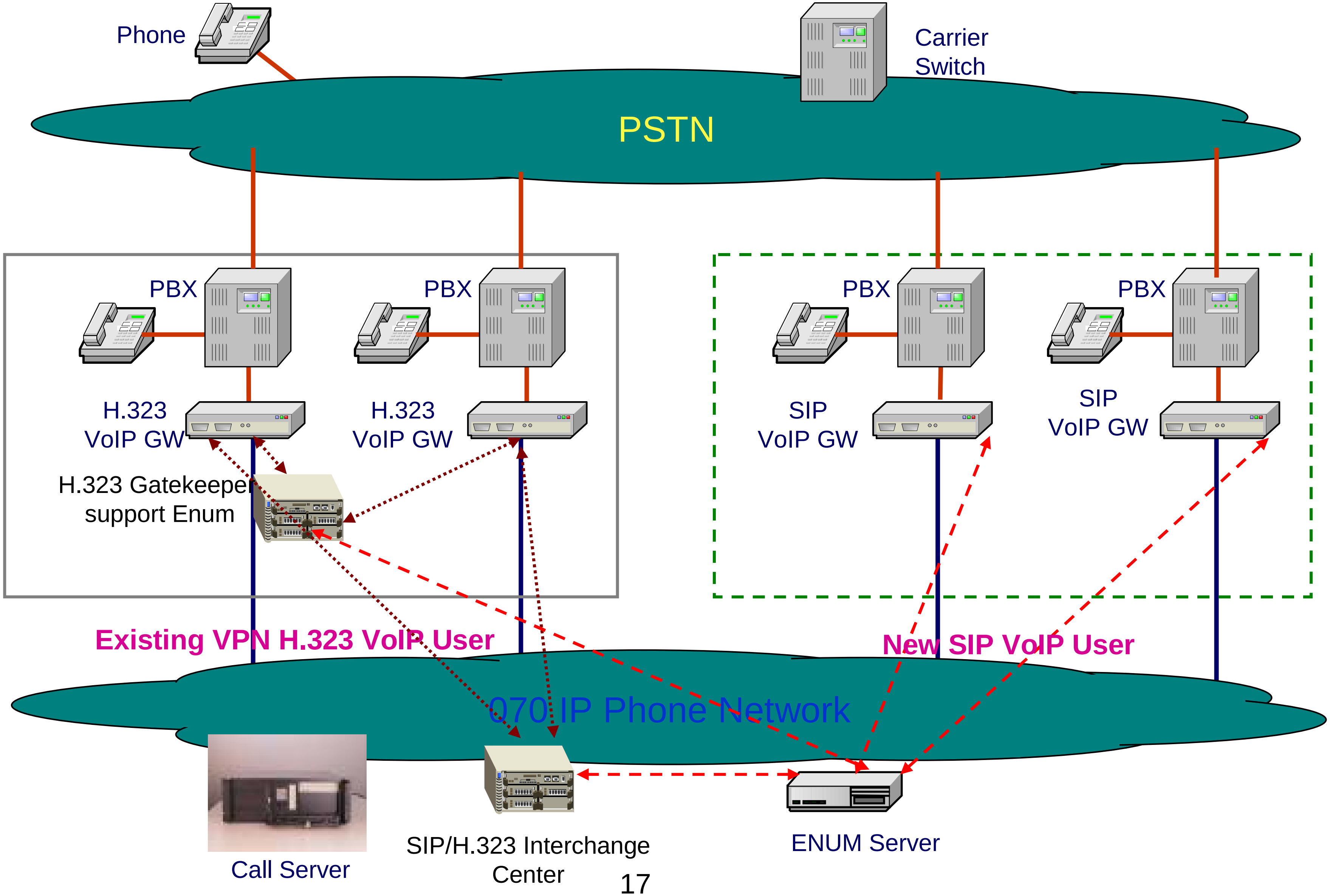
Major goals of IPOX

- As an initiative of triggering the merge of Telecomm and Internet Services through promoting IP Phone services to general public.
- The tentative goal of IP phone deployment are
  - At least 3 local ISP will provide “070” based SIP IP Phone services before the end of 2003
  - The total number of IP Phone subscriber may exceed half million by the end of 2004.
- Provide new growth momentum for local Broadband Internet Access
  - Quantity, penetration rate, access speed and QoS
- Brought up IP Phone local market in order to leverage the already booming VoIP manufacturing industry
  - Service Provider and Maker collaboratively improve competitiveness and added value to the manufacturing industry.

IPOX Strategies

- ISP, TANet, GSN multi-peer IP Phone Interchange cooperation
- Targeted at IP Intra-net, avoid IP-PSTN issues
- Promote Personal/Enterprise VoIP simultaneous
  - Personal VoIP
    - Mimic Japan model
  - Enterprise VoIP
    - Adaptive approach
    - Integrate existing VPN closed VoIP install base
- SIP/Enum standard
  - SIP/Enum standard will be adopted as much as possible
  - H.323/SIP inter-working mechanism needed for integrating H.323 install base

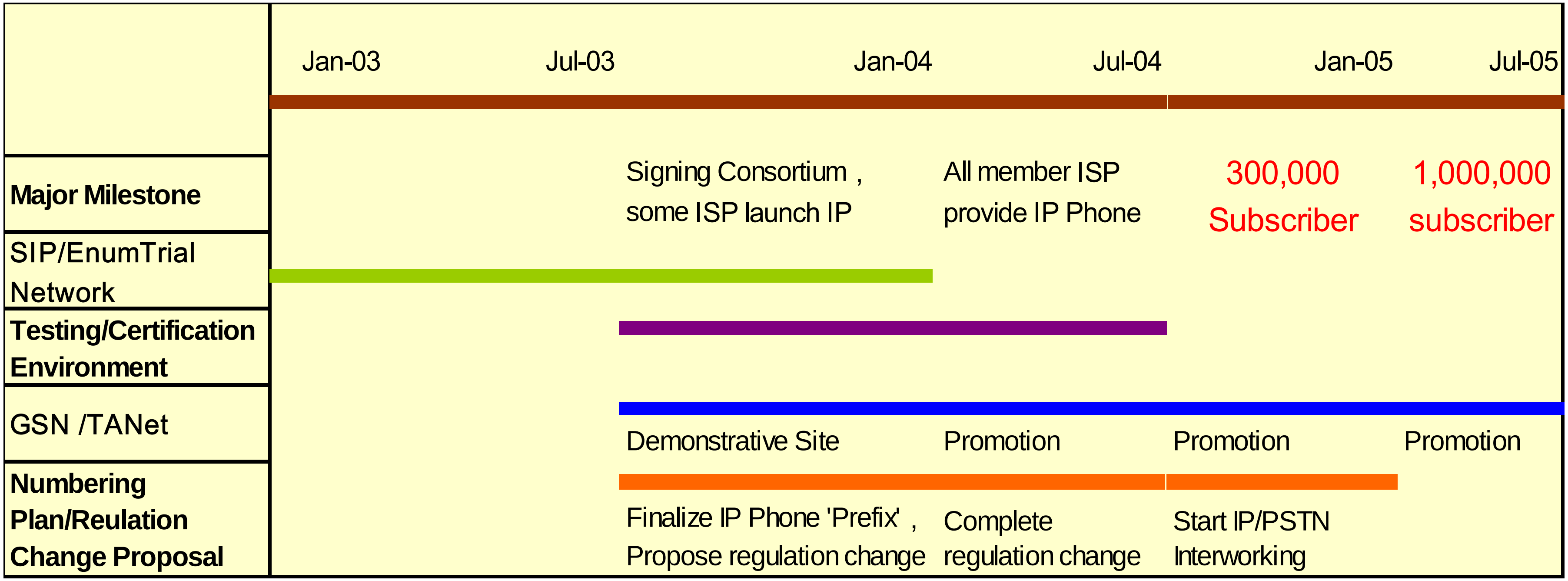
Dual Network Approach for Enterprise User


Phone
Carrier Switch
PSTN
PBX
PBX
PBX
PBX
H.323 VoIP GW
H.323 VoIP GW
SIP VoIP GW
SIP VoIP GW
H.323 Gatekeeper support Enum
Existing VPN H.323 VoIP User
New SIP VoIP User
070 IP Phone Network
Call Server
SIP/H.323 Interchange Center
ENUM Server

Difference btw IPOX and what happened in Japan

	Japan	IPOX
Market Trigger	Fired by Yahoo! BB, followed by other ISP	Initiated by Government sponsored promotion project
Scope of 'Intra-net' call(IP free phone)	Some ISP formed 'free phone' consortium	Intend to invite almost all of local ISP
Market biasing	Personal market initially	Parallel develop Personal/ Enterprise Market
Adoption of SIP/Enum standard	Not applying initially	Adopt SIP/Enum as much as possible

IPOX Tentative Progress Schedule



Signing Consortium , some ISP launch IP

All member ISP provide IP Phone

300,000 Subscriber

1,000,000 subscriber

Demonstrative Site

Promotion

Promotion

Promotion

Finalize IP Phone 'Prefix' , Propose regulation change

Complete regulation change

Start IP/PSTN Interworking

IPOX Phase I

- Forming a multi-ISP consortium jointly promote SIP/Enum IP Phone services
    - including new type 1 operator,TANet (Educational Internet), GSN(Government Services Network)
    - R&D institute and VoIP manufactures
    - operation of IPOX consortium may will be very similar to VoIP Development Council in Japan.
- Three WG will be formed under IPOX consortium
    - Common Numbering and SIP/H.323 Interworking, Interop/ QoS/ Testing and Regulation.
- Several promotional activities, including VoIP Topic booth in related exhibitions, technological proliferation, seminar, etc.

The 「070」Ad hoc IP Phone Prefix

- The 「070」prefix have been proposed by the consortium
    - The prefix will be applied by member ISP to deploy IP Phone Services
- SIP/Enum standard should be adapted for IP Phone Services interoperation(“the core”), H.323 subsystem should be gateway to SIP/Enum inter-operation network.
- The 「070」prefix will be applied for IP Phone 『intra call』only, interconnection of 「070」 with PSTN will be adapted only after related regulation have been modified

IPOX Phase II

- QoS Criteria and Evaluation Environment
- Conformance and Interop Testing
- SIP Video Phone Services
- Wi-Fi SIP Phone Services
- Enum Value Added Services/Services Capability
- Promotional/Interop Demonstration

Q & A