IP Telephony and ENUM

APEC TEL 30 – Next Generation Networks

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iDA SINGAPORE

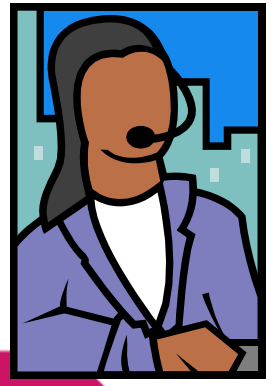
What is Voice over IP?

1010101000010
1001010101010
1001010101010
0101010001001

TCP/IP Packet

1010101000010
1001010101010
1001010101010
0101010001001

Internet/
Private IP Network



1010101000010
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TCP/IP Packet

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VoIP deployments

Phone to Phone
is mainly provided by
Service Provider or
Private Network

PC(Web) to Phone
is mainly provided
by Service Provider

IP Phone to IP Phone
is mainly provided by
Service Provider or
self Managed

Wireless IP Phone
to Wireless IP Phone
will be provided by whom?

IP Telephony

ITU Definitions

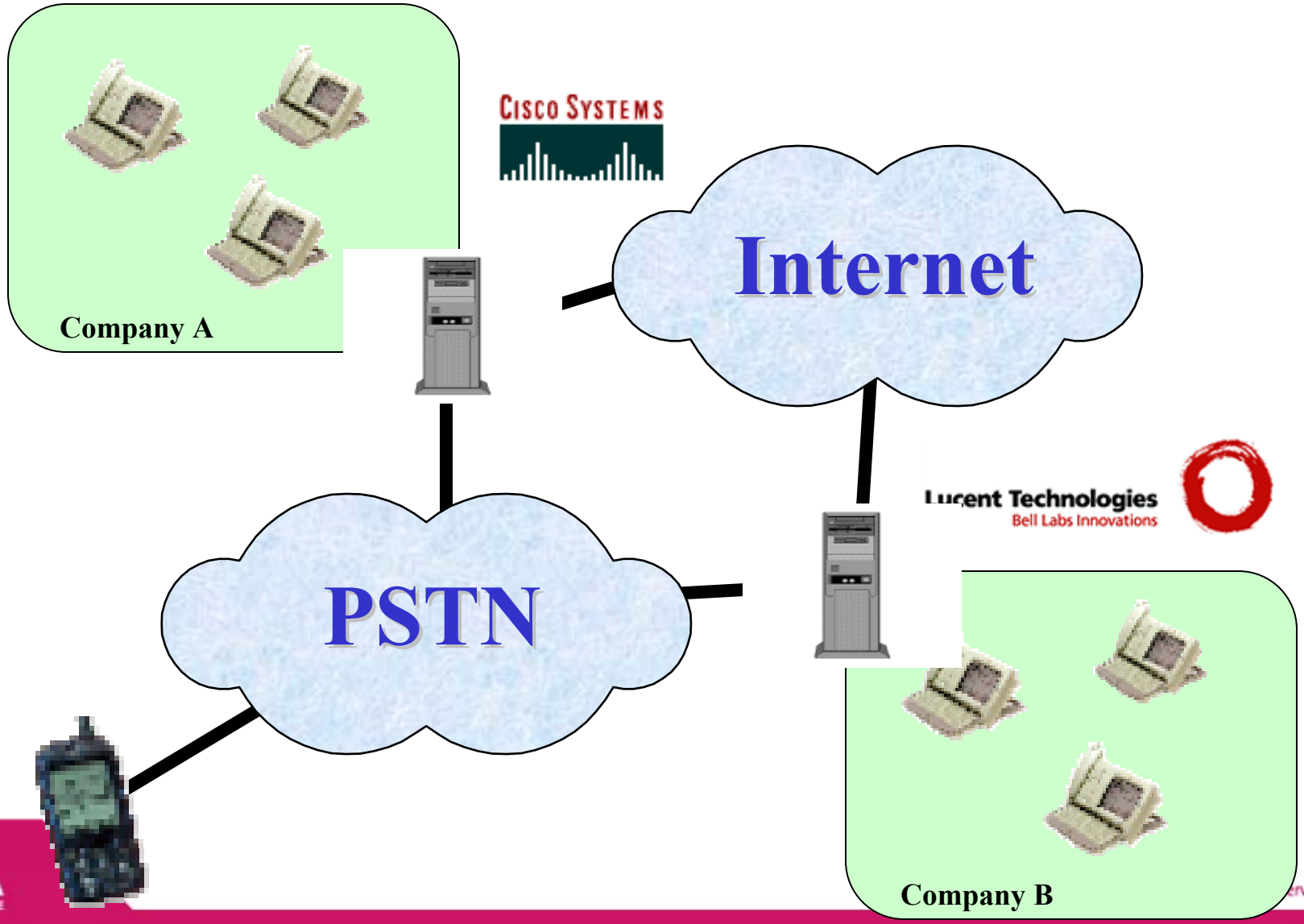
VoIP : Use of Private Networks
Internet Telephony : Use of Public Network
IP Telephony : VoIP + Internet Telephony

SG Definitions

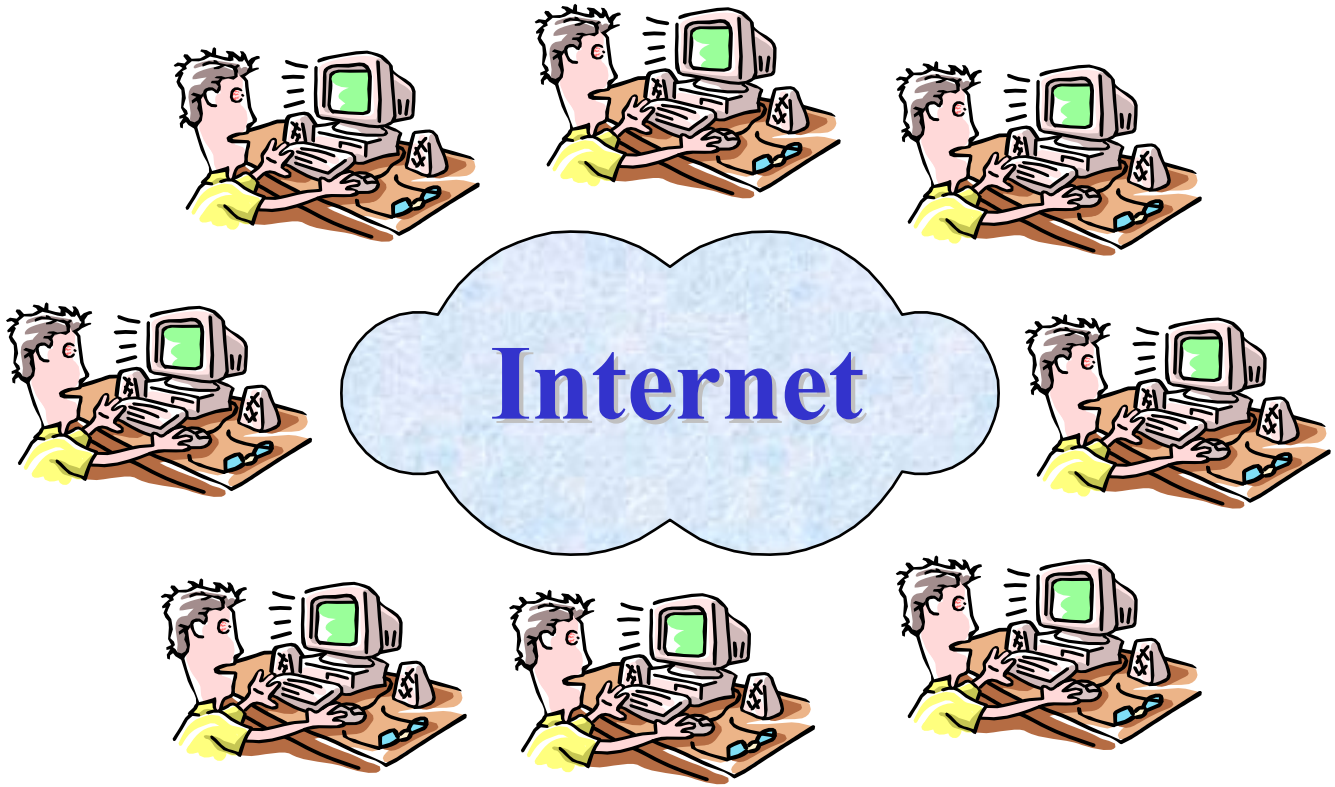
This deployment is VoIP

IP Telephony when end-points are IP

IP Telephony Deployment 1

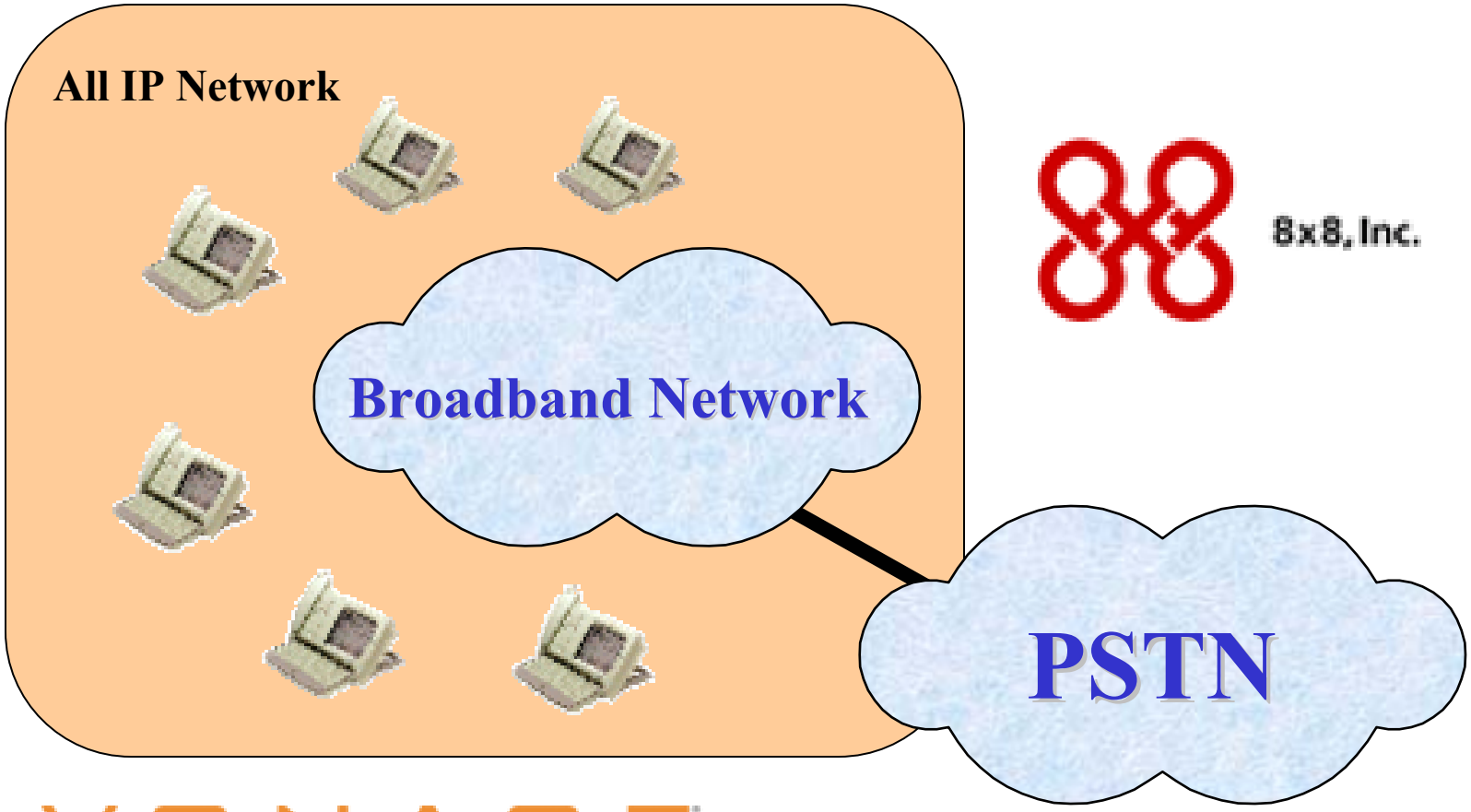


IP Telephony Deployment 2



Download Software
Use Computer as your Phone
e.g. Skype.com - 23M download since 2nd Oct 03 launch

IP Telephony Deployment 3

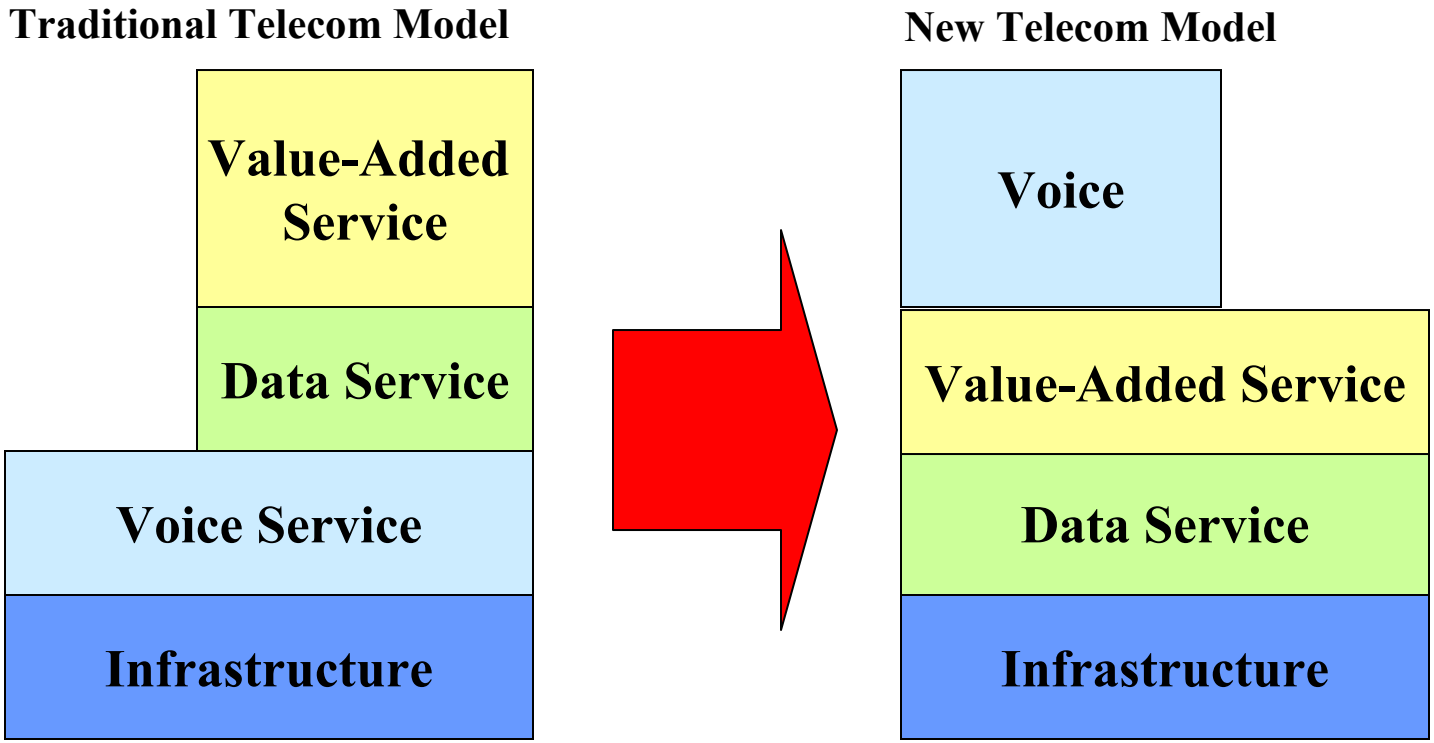


IP Telephony Deployment 4

Qwest
Spirit of Service™

AT&T

Change in Business Paradigm



Voice is becoming just another IP application!

Implications

- Entry barrier for “telephony provider” become lower
  - in thousands of dollars vs. millions or billions of dollars
- Hence more telephony provider in future
  - More competitions => Lower voice revenue
  - Bad news for incumbents, Good news for consumers/businesses
- Competitions in voice will results in more innovation
  - IP Telephony providers will more enhance voice services
- No concept of “local”, “long” or “international” calls
  - Catalyst to bring world businesses closer together
- Additionally, people will invest in infrastructure that carries data rather then voice
  - AT&T and BT are migrating their infrastructure to all IP network

What is ENUM?

ENUM or Electronic Numbering is a technical standard defined by IETF (RFC 2916) that maps E.164 numbers to a network resource.

In Layman Term

ENUM provides a mechanism to assign a phone number to an IP device.

Why ENUM is important?

One of the mechanism to assign phone numbers to IP devices for IP Telephony

ENUM also enable new applications and services that uses phone numbers in new ways

Phone number allocation is one of the many task for a regulator

Questions for regulators

What should we do with this technology trend?

Can we even stop this from happening?

Should we regulate IP Telephony?

What's the balance that will encourage competitions and innovations?

Issues

Classification

How do we classify all the different IP Telephony services?
Are they subjected to similar “regulation”?

Market Studies

What is the economic impact?
How would it change the telco landscape?
(cost to setup IP Telephony service ~= cost to setup Email service)

Licensing

Who needs to apply for license?
What if there is no service provider?

Issues

Interconnection

Who can interconnect to PSTN?
What is the pricing model?

Numberings

What's is the numbering plans for IP Telephony?
How do we assign numbers to these IP Telephony services?
What if there is no service provider?

Universal Service

Is it applicable to IP Telephony?
How about emergency numbers?

Issues

Privacy and Security

How secure is IP Telephony?
What about wiretapping requirements?

Technical Architecture

To achieve maximum interoperability between different IP Telephony,
- What should be the technical common platform?
- What are the technical specifications to adopt?

Quality of Service

What is the QoS for IP Telephony?
How to enforce QoS?

What's happening in Singapore

- Approach IP Telephony with the view *to remove impedances* for the adoptions of IP Telephony
- Obtained +65 ENUM delegation from ITU/RIPE-NCC in Aug 2003
- Formation of *internal* cross-functional Virtual Team comprises of members from Industry Promotion, Policy and Regulation, Strategic Planning and Technology.
- Commission policy studies, doing scenario planning and conducting proof-of-concepts and facilitating IP Telephony Trials
- Formation of Asia Pacific ENUM Engineering Team (APEET) with members from China, Japan, Korea, etc. in Aug 2004
- More announcement during this week…