The Future of Presence
"Presence is the dialtone
of the 21st century..."
Oct. 10 2008, The Hague (NL)

Welcome to Our World

"Presence and International VoIP Networks:
A Carrier's Perspective"

Alan R. Bugos

Vice President of Advanced Technology and Engineering

iBasis

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Agenda

- **About iBasis: An International VoIP Carrier**

- **Market Trends**

- **Can VoIP Networks and Presence Converge?**
  - **IM with VoIP Client Synergies**

- **ENUM linked to Presence Engines**

- **Call Diversion to IP End Points**

- **Summary**

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Voice Industry in Motion

- **International wholesale voice business becoming more dependent on scale and efficiency**

- **Sector consolidation well under way**
  - **Ongoing business combination of international telco companies who want to play a key role in the market**

- **Migration to IP technology critical to competitive success**

- **Growth in mobile and consumer VoIP expanding wholesale market**

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Welcome to the New iBasis

- **October 2007, iBasis merged with KPN Global Carrier Services**
- **One of the world's largest carriers of international voice traffic: 24 billion minutes of int'l voice traffic in 2007**
- **Financially strong**

Among the Largest Carriers

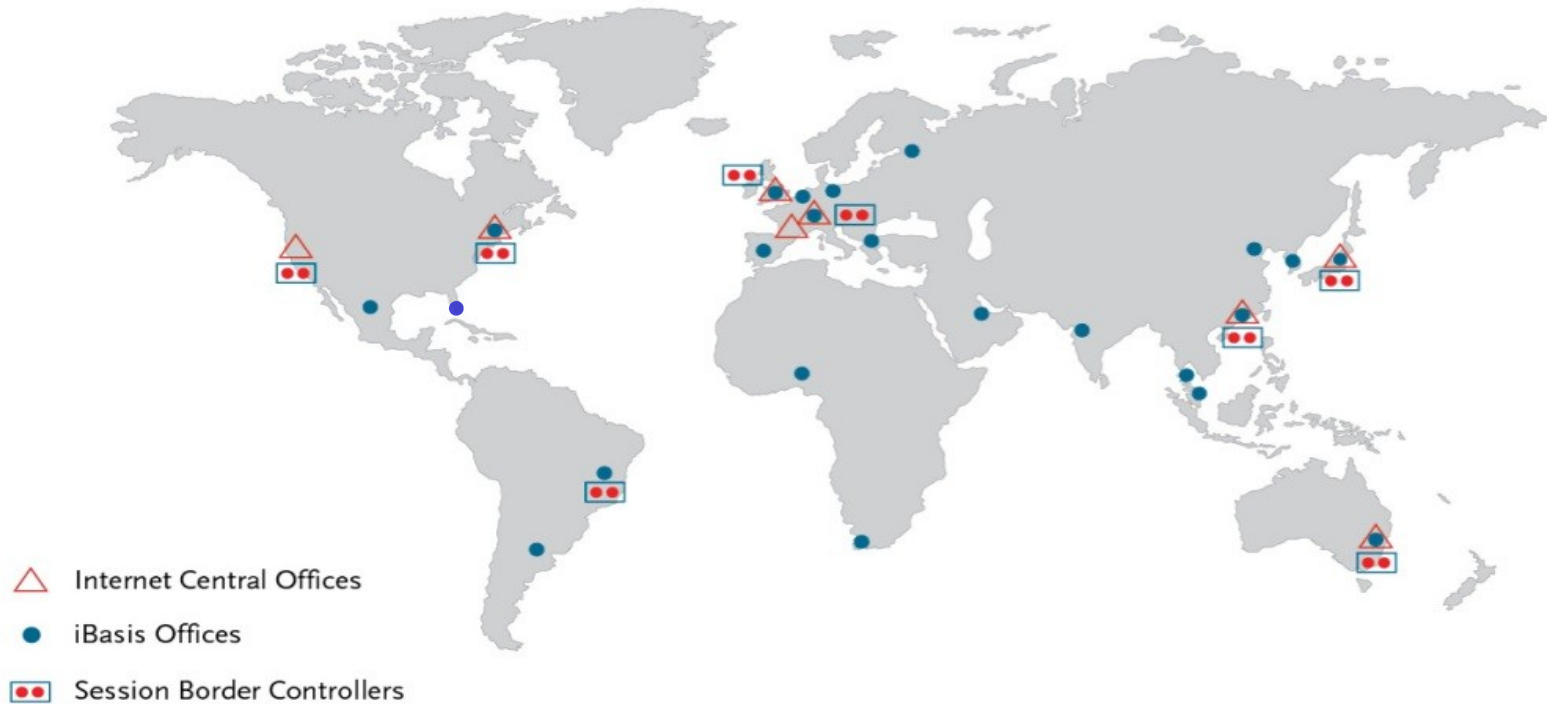Traffic Volume Carried by Selected Multinational Carriers, 2006
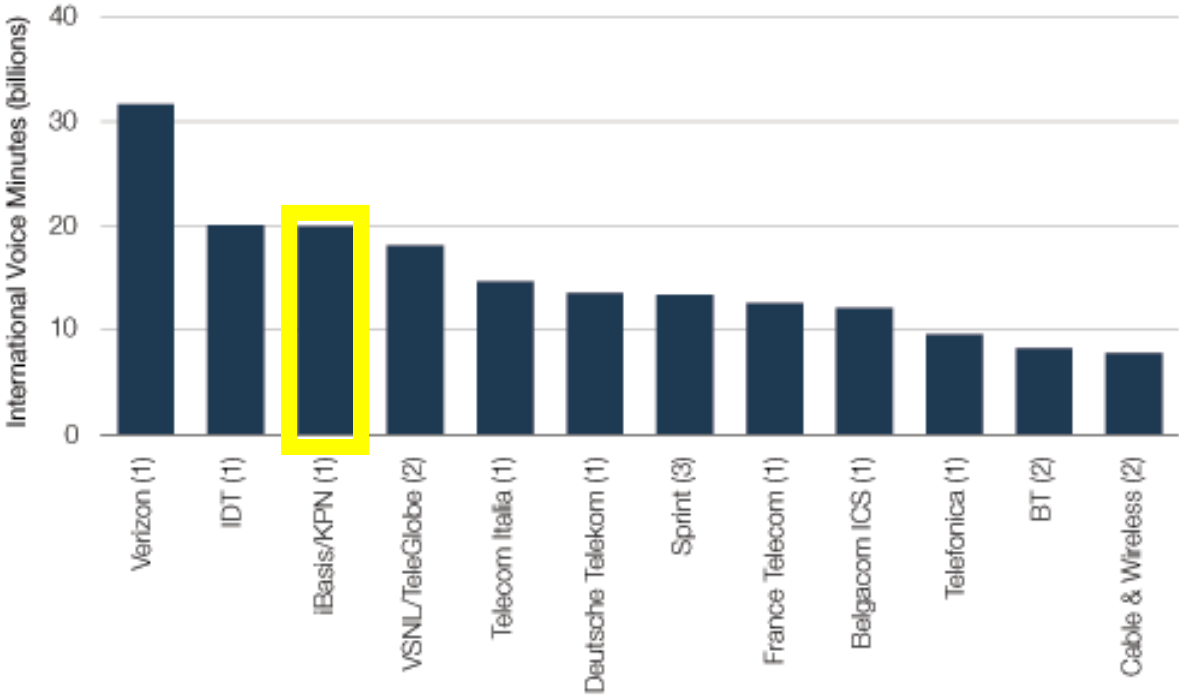
More Than 1000 Customers

A New Company for the New Era

- **iBasis joins world's largest international voice carriers**

- **First pure-play VoIP carrier**

- **1000 customers from all segments of telecom**

- **Best-positioned to serve all segments of international voice market – Fixed, Mobile and VoBB**

- **Strong platform for further industry consolidation**
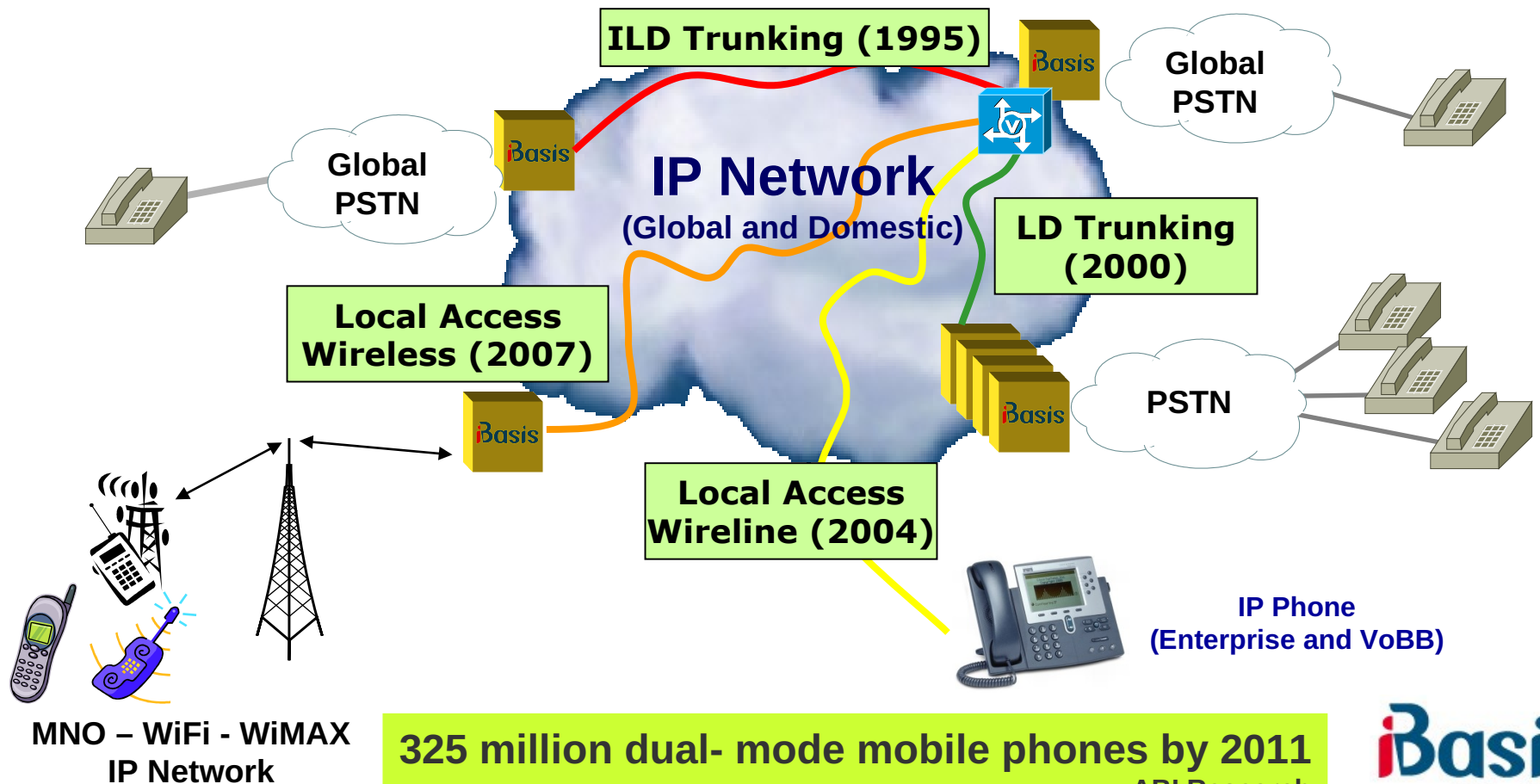
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A New Type of Network

Internet Central Offices

iBasis Offices

Session Border Controllers

1,000 + Points of Presence in >120 Countries
Sales & Operational Support in 20 Countries

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VoIP Progression

- **VoIP technologies and services have progressed from the Core to the Edge of IP Networks**

ILD Trunking (1995)

Global PSTN

IP Network
(Global and Domestic)

Global PSTN

LD Trunking (2000)

Local Access Wireless (2007)

PSTN

Local Access Wireline (2004)

IP Phone (Enterprise and VoBB)

MNO – WiFi - WiMAX IP Network

325 million dual- mode mobile phones by 2011
**- ABI Research**

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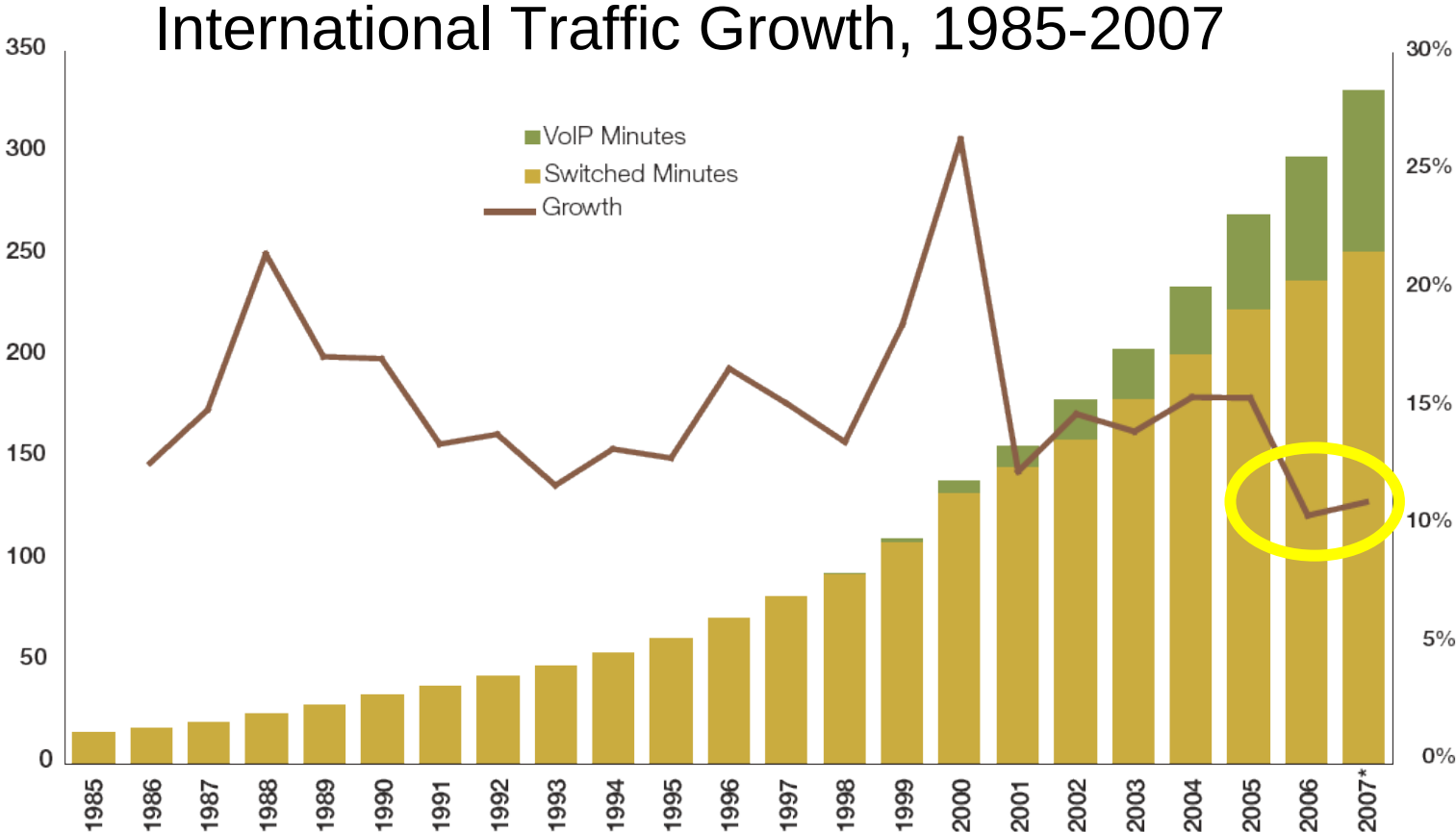# Preferred Carrier of Consumer VoIP Providers

- **iBasis serves the entire VoBB market:**
  - **Pure-play VoIP, web portals, Cable MSOs, and incumbents**

- **All-IP network features**
  - **Distributed Session Border Controller architecture – for the highest quality voice**
  - **DirectVoIP™ interconnection for fast/simplified VoIP interconnections and enhanced call signaling**
  - **DirectSIP Interconnection – for flexible, low cost interconnection, multi-codec support, wholesale Click-to-Call**

- **Flexible Pricing/ Flexible Product**
  - **Access to industry leading termination customizable to your needs**

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Strong Expertise in Serving Mobile Operators

- **More than 100 mobile operator customers**

- **Highest Quality of Service:**
  - **CLI (OCN/RDN) and Roaming (MSRN)**
  - **Direct routing with managed overflow**
  - **24/7 monitoring & service**
  - **SLA possibility**

- **Mobile Matrix Enhanced Services**
  - **Signaling & Data services for mobile operators**
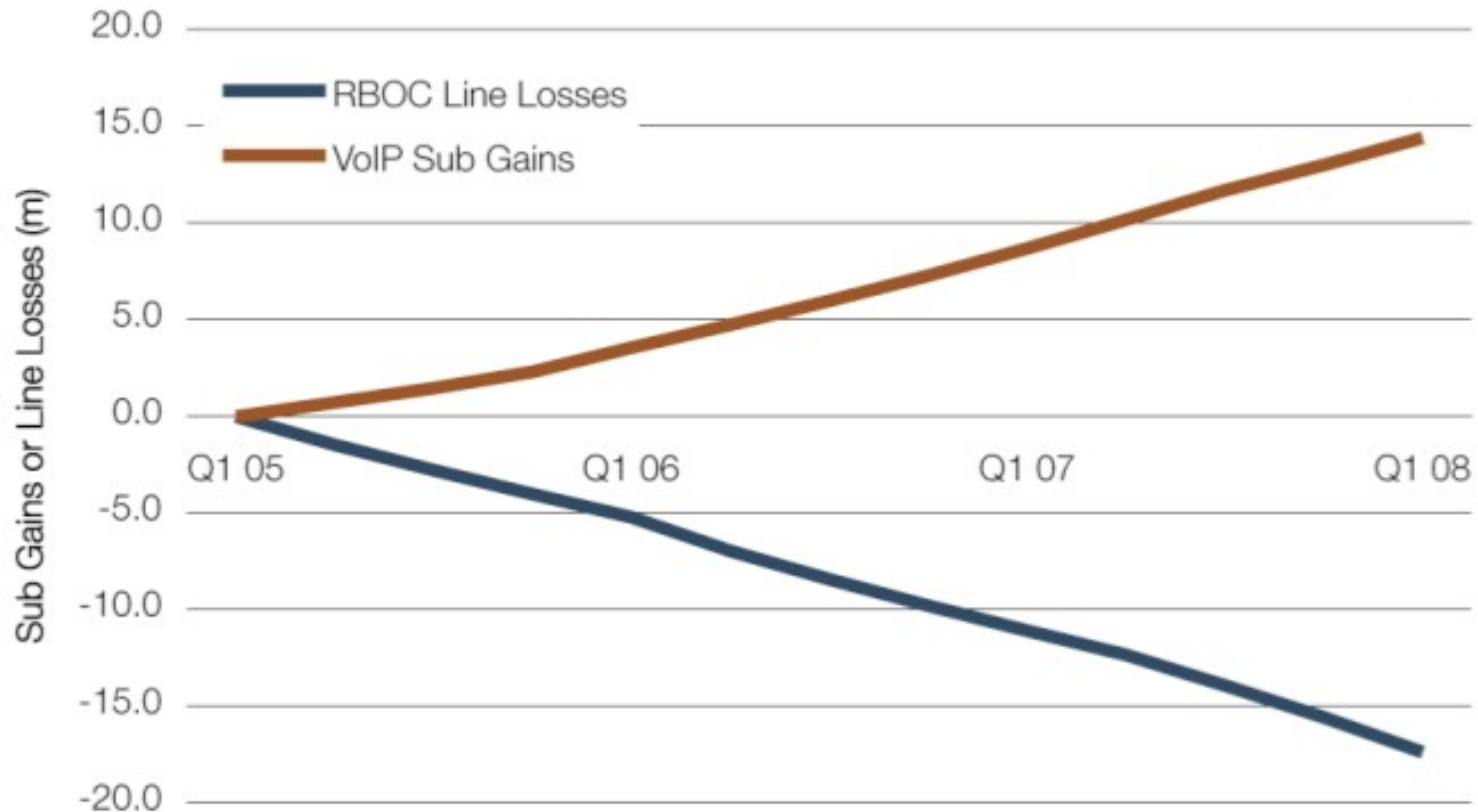 - **SMS, MMS, GRX, IPX**
  - **3G Services**

Mobile operator

Fixed operator

Mobile operator

Mobile operator

CLI, MSRN, Fax Capabilities

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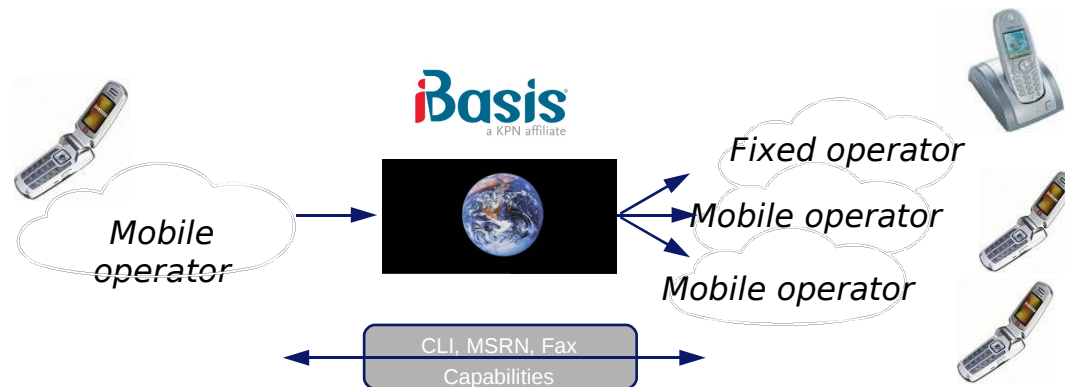
Traffic Growth Slowing

International Traffic Growth, 1985-2007

VoIP is Displacing Fixed Lines

13
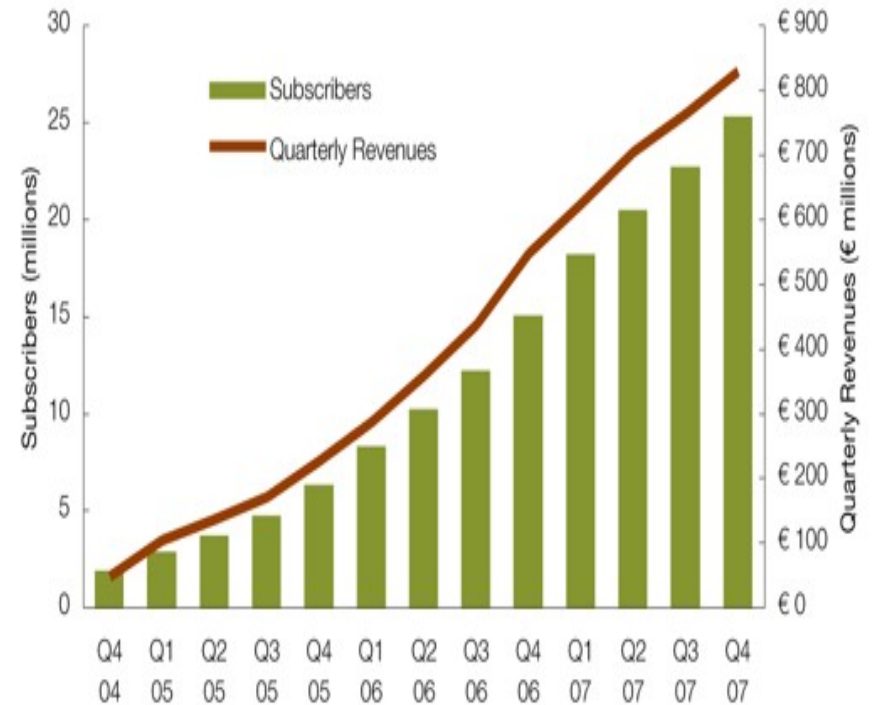
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Consumer VoIP is Growing Fast

Europe Faster than U.S.
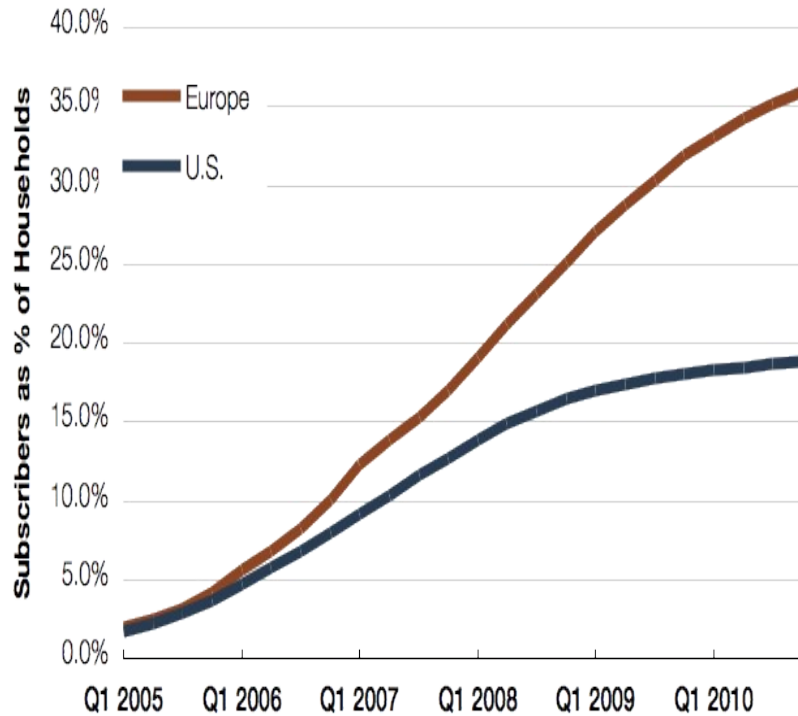
Europe Subs & Revenue

US Residential VoIP Subscribers
(No. of Subscribers and % of broadband households)

15
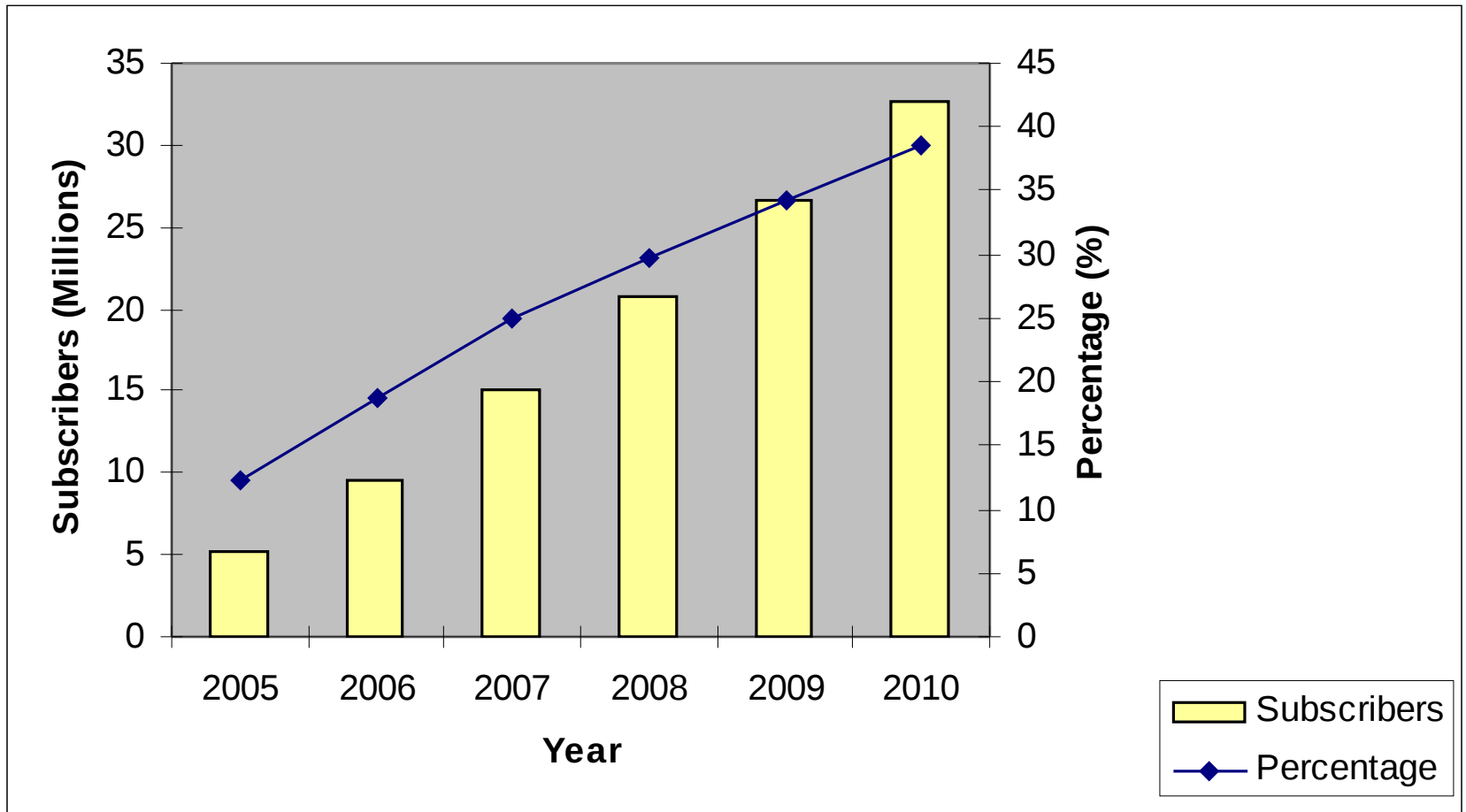
Incumbents on the VoIP Bandwagon

Source: Telegeography 2008   © 2007 PriMetrica, Inc.

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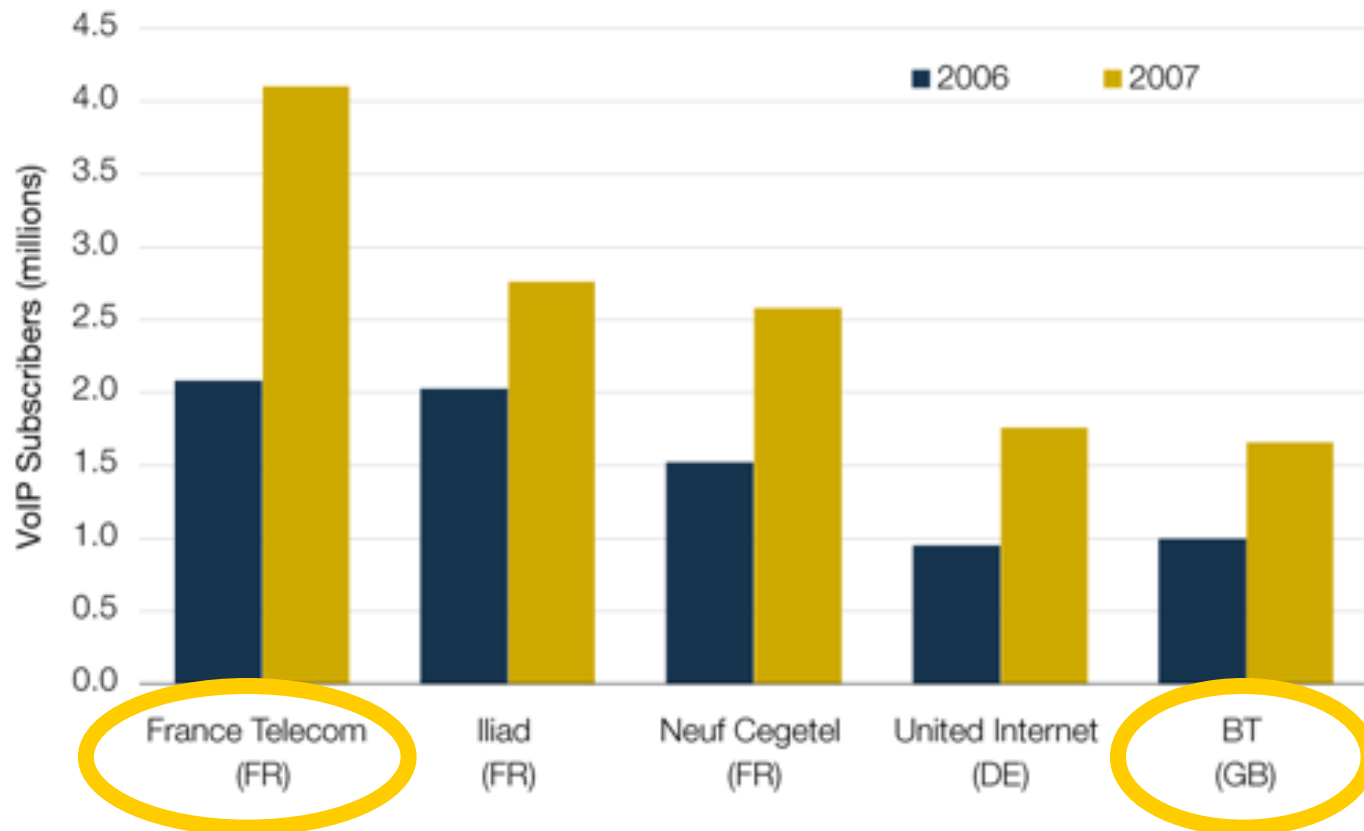
Skype not Hype

Skype-to-Skype
(MOU in billions)

In the Range of U.S. Outbound

Q3 '07   Q4 '07   Q1 '08   Q2 '08
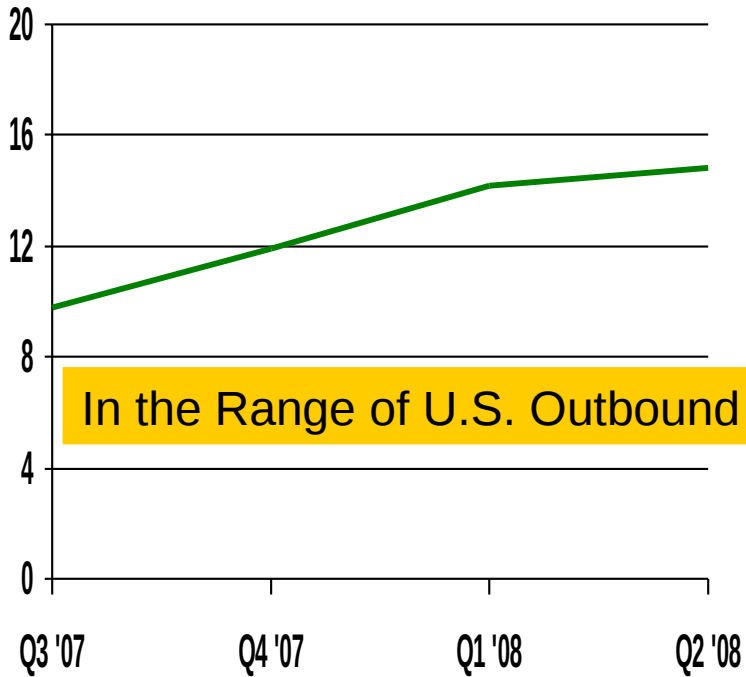
Skype Out
(MOU in billions)

Equal to Spain Outbound

MOU

Q3 '07   Q4 '07   Q1 '08   Q2 '08

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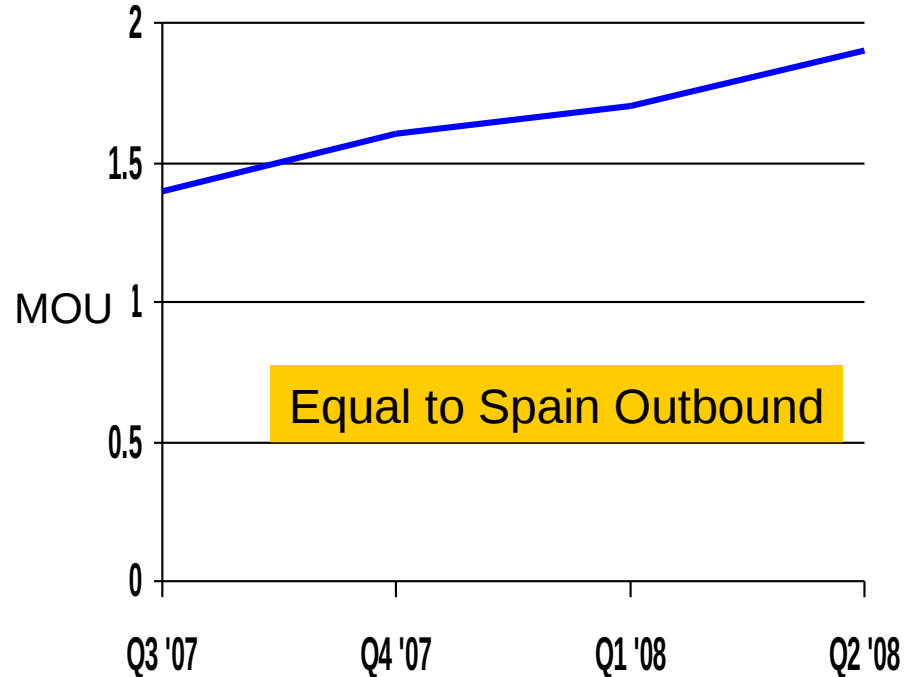
Benefits of Presence

- **Presence engines can drive information from applications, PBXs, and other SIP, IMPS, and XMPP network devices**

- **Integrated presence services enable users, applications, and processes to exchange information in real time**

- **Presence enables differentiation in service offerings and go-to-market strategies, perhaps in the VoIP carrier networks**

US Web Portals with IM/VoIP Clients

US Web Portals Customers
Source: Nielson/NetRatings

Chart showing Customers (Millions):
- Yahoo: 99.3
- MSN: 89.4
- Google: 79.4
- AOL: 72.5
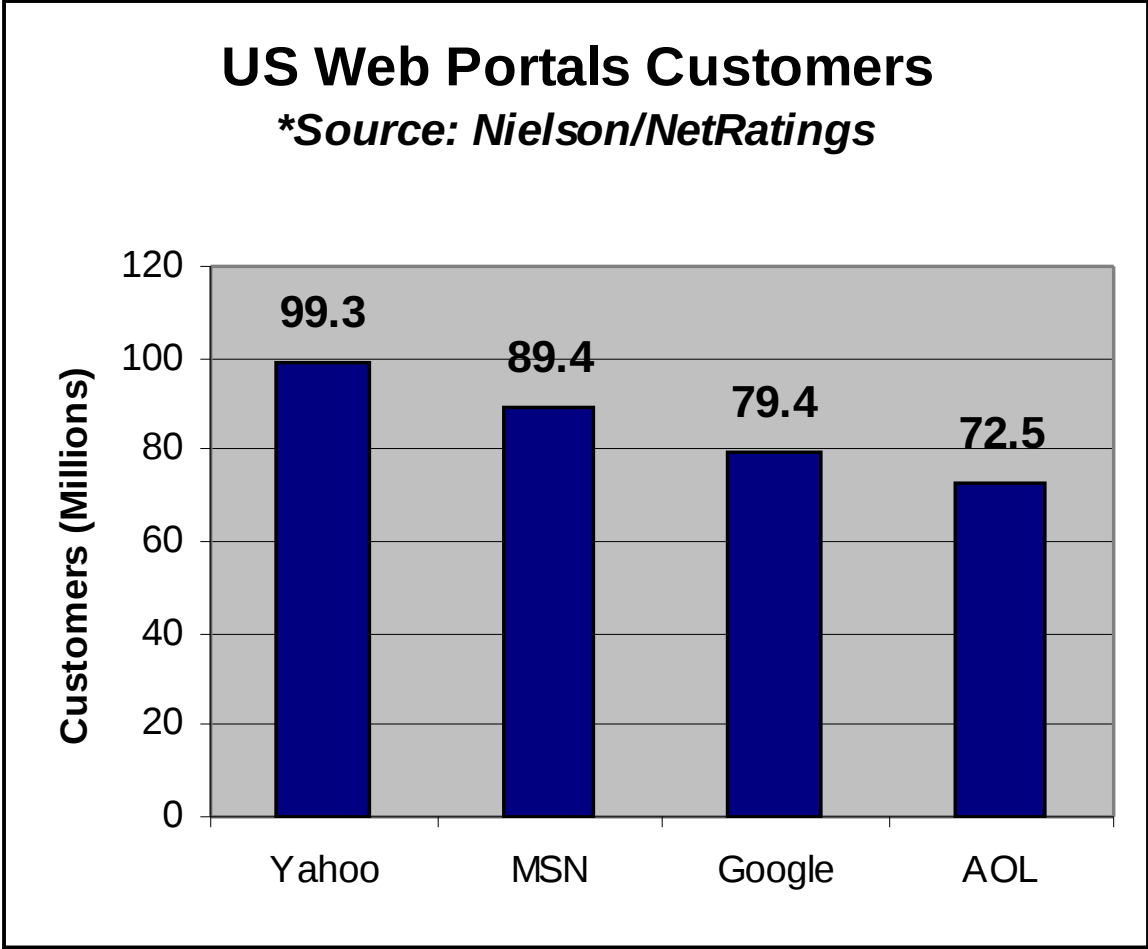
IM Market

IM Clients

- **MSN Messenger - most used client, garnering 61 percent of the worldwide market.**
- **Microsoft's IM client is still neck and neck with AOL Instant Messenger in the United States, however, with Yahoo! Messenger trailing closely behind.**
- **MSN Messenger has a strong hold over the market thanks to 90 percent reach in Latin America and 70 percent in Europe and Asian Pacific markets.**
- **Skype is used by 14 percent of all instant messenger users worldwide.**

IM by Region

- **82 million people in Europe use instant messaging software, amounting to 49 percent of the online population.**
- **In the United States only 69 million of people use IM, or 37 percent of the online population.**
- **Latin America had the highest IM penetration covering 64 percent of Web users.**
- **Asia Pacific has the most voice chatters, with Skype being used by 26 percent of that region's active IM population.**

Voice-enable IM Clients are Increasing
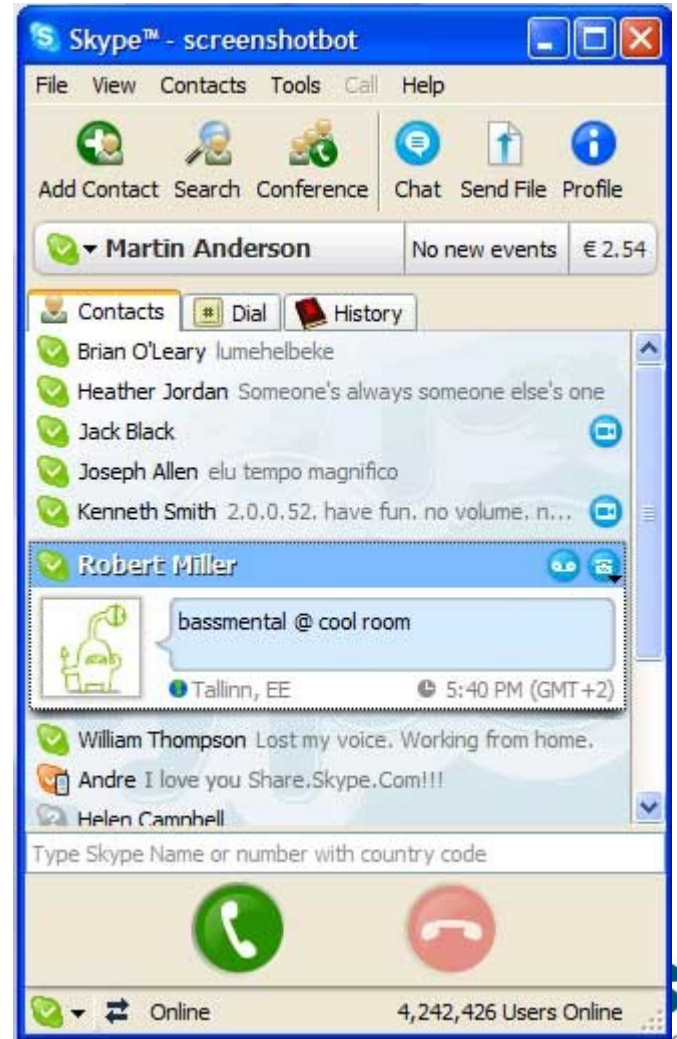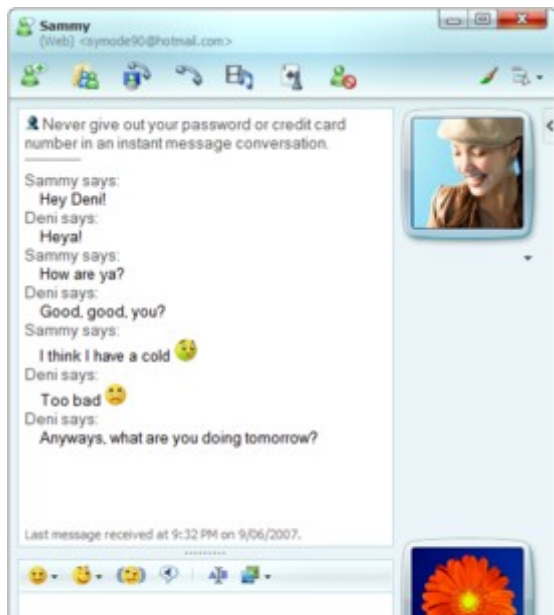
Devices and Applications with IM/VoIP Clients Increasing….

Presence Elements for Carriers

- **Elements of Presence**
    - **Are you available?   Yes or No**
    - **Where are you? Location Coordinates**
    - **What network are you on, what are your capabilities? IP or data GSM network, voice-enabled, video-enabled, codecs, protocols, etc**

- **Location Presence**
    - **The carrier may have the location information but may not be able to share due to privacy issues**
    - **Which location information, voice services can be route-optimized for best voice quality**

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IP, Peering, and ENUM Benefits

- **Capitalizing on the "Trend is our Friend" Model (TDM → IP migrations) within the carrier industry**

- **Reduction in circuit MRC**

- **Reduction in CapEx (GW and DACS ports, A/C, colo space, maintenance costs, etc.)**

- **More use of SBCs (SBC ports are less expensive)**

- **ENUM Address resolution is simple (DNS-like) and can scale highly**

- **Use of ENUM services to enable direct IP end point termination (at significantly lower costs)**

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Use of ENUM and VoIP Peering Networks

ENUM Registry

IP Phone

Private ENUM Registry

IP Phone

IP Phone

VoIP Peering Network

SBC

SBC

VoBB Service Provider B IP Network

VoBB Service Provider A IP Network

SBC

SBC

VoBB Service Provider C IP Network

IP Phone

2

3

1

TDM Call

4

Gateway

PSTN

Customer Tandem - Transit Switch
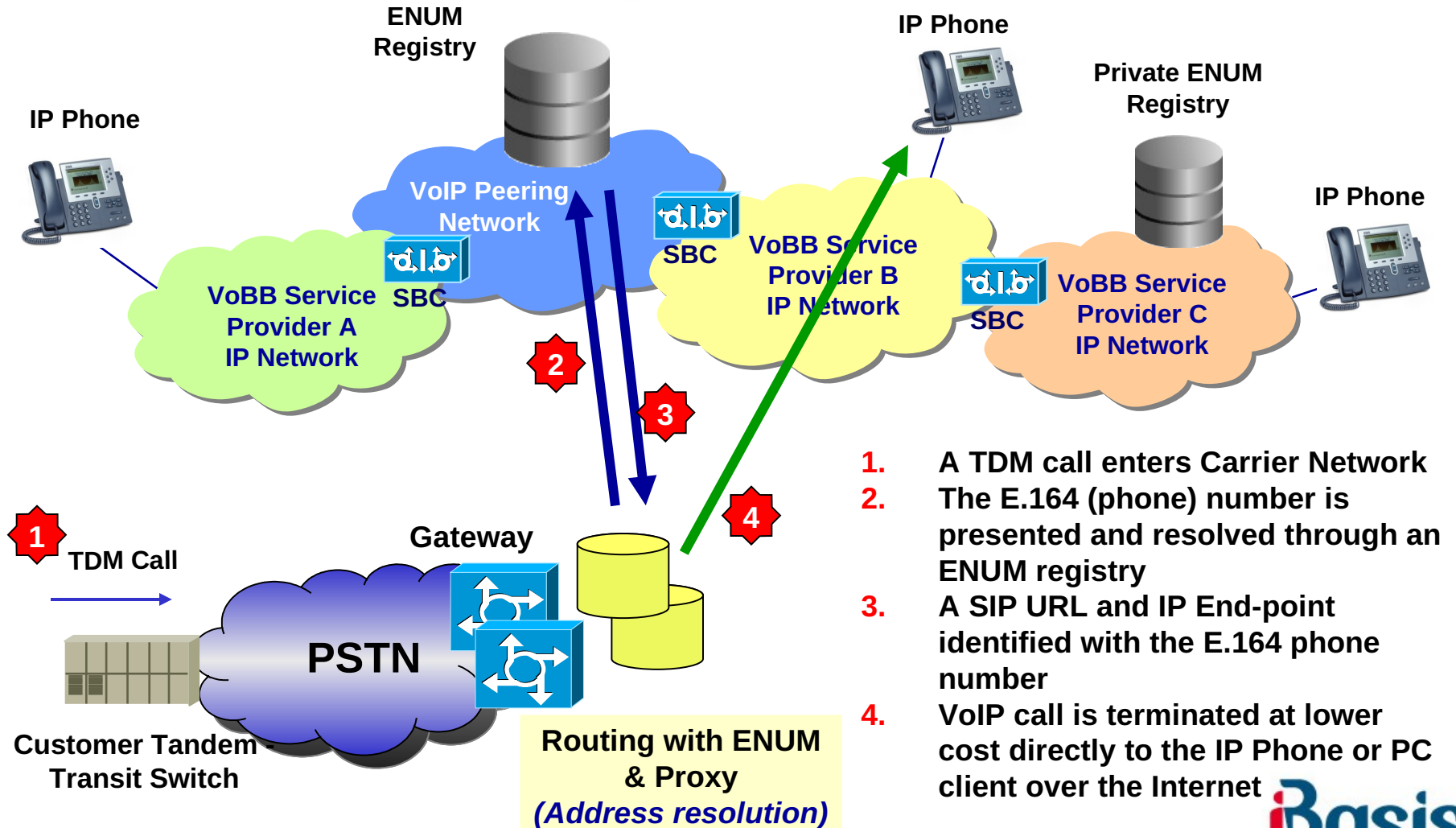
Routing with ENUM & Proxy
(Address resolution)

1. **A TDM call enters Carrier Network**
2. **The E.164 (phone) number is presented and resolved through an ENUM registry**
3. **A SIP URL and IP End-point identified with the E.164 phone number**
4. **VoIP call is terminated at lower cost directly to the IP Phone or PC client over the Internet**

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Cost Reduction using ENUM
(Example: North America Termination)

- **Cost reduction can be significant savings as ENUM registries and databases expand**

- **Example: A carrier terminates 4 Million minutes/day to North America region**
  - **If 1 % of termination points are reached via ENUM and NA termination cost is $0.005 per minute (Average)**
  - **Savings per day: $200.00**
  - **Savings per year: $73,000.00**

- **At 10% address resolution via ENUM , yearly savings increases to $730K!**

iBasis Architecture with ENUM Solution

Least Cost Routing Tools

iRoute

RMS – Billing System

Presence Data

Feed ENUM DB to local ENUM DB

Master Servers (Cluster)

SpiderRegistry

Intelepeer

Neustar

Stealth

ENUM Providers

Populated the DB to Edge Servers

Local Edge Servers

iBasis AQR

4., 5.
ENUM Lookup
To Find the number
E164 <-> SPID

6., 7.

ENUM Lookup to look for destination URI
SPID+E.164 <-> Destination URI

3., 8.
GKTMP

10.

GKs

1.
Call inbound from customers

2.
RAS

9.
RAS

11.
Outbound to desination

H323

Media

iBasis Ingress Devices
(i.e. Cisco GW, SBC and etc)

iBasis Nextone

iBasis Digium

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iBasis Network Architecture for using ENUM providers for Terminating Service with Trans-coding

ENUM Providers are treated as on-net providers in AQR routing table
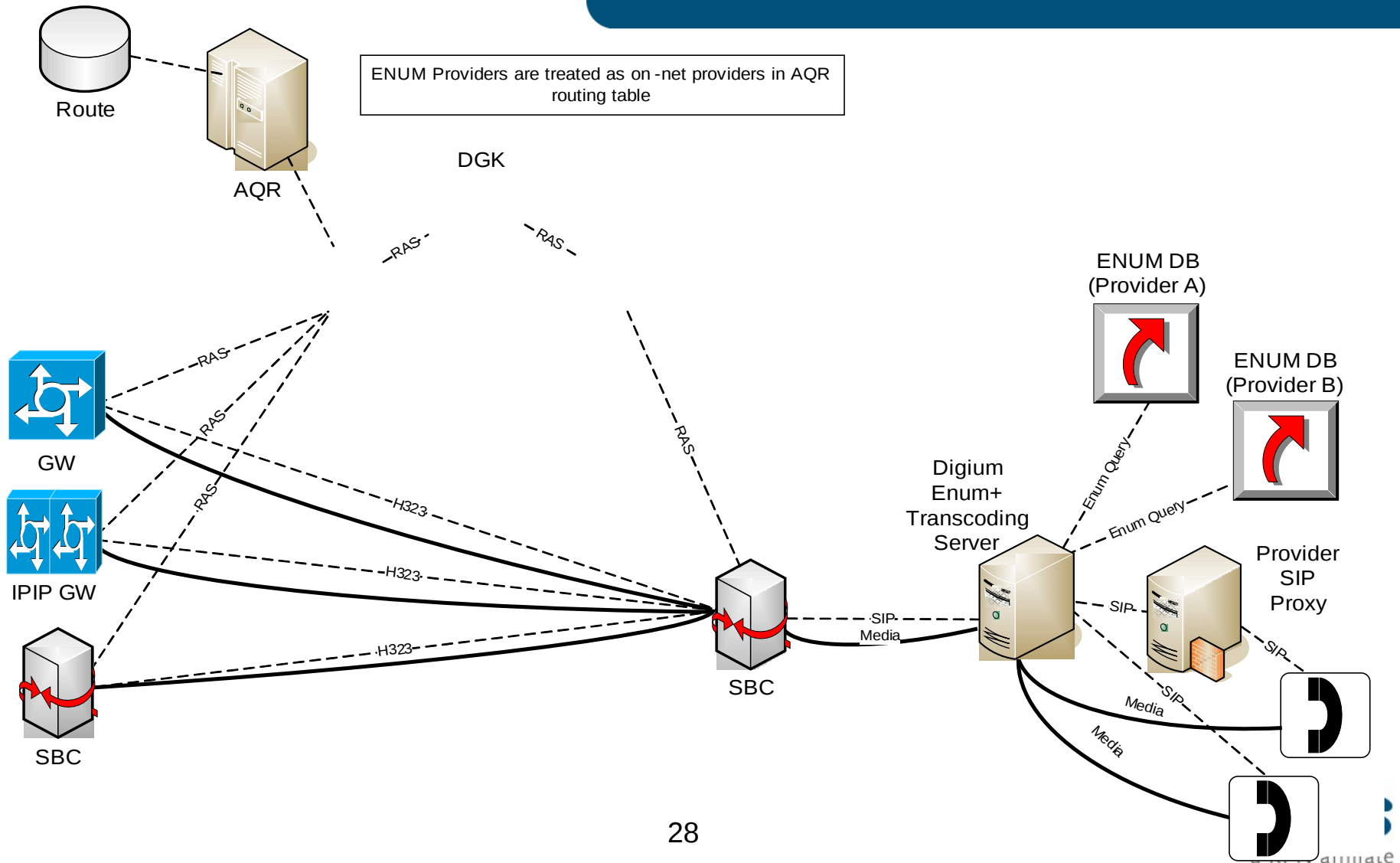
Presence Services tied to International Carriers and Termination

With Presence Indicators tied to E.164 numbers and ENUM registries, new services may be developed:

- Upon Presence and Preference indication, Call Diversion from the PSTN to voice-enabled IP device or client is possible

- Presence database and indicators associated with ENUM registries

- Need for an aggregated ENUM registry and Presence Database (integrated with all voice-enabled IM clients, and/or voice-enabled web portals with presence indication)

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Presence-Controlled TDM - VoIP Call Diversion

Opportunity

- International calls to fixed and mobile phones carry termination rates as high as $0.20 to $0.25 per minute.
- If calls could be intercepted & terminated to a VoIP device/client, it would be possible to significantly reduce termination costs to the originating carrier and still generate significant revenue for the terminating VoIP operator.

Solution

- VoIP IM providers (Skype, AOL, MSN, Yahoo!) allow users to populate their fixed and mobile numbers in addition to presence preference
- Carrier queries ENUM/Presence registry for user's numbers and preference and terminates call to VoIP client
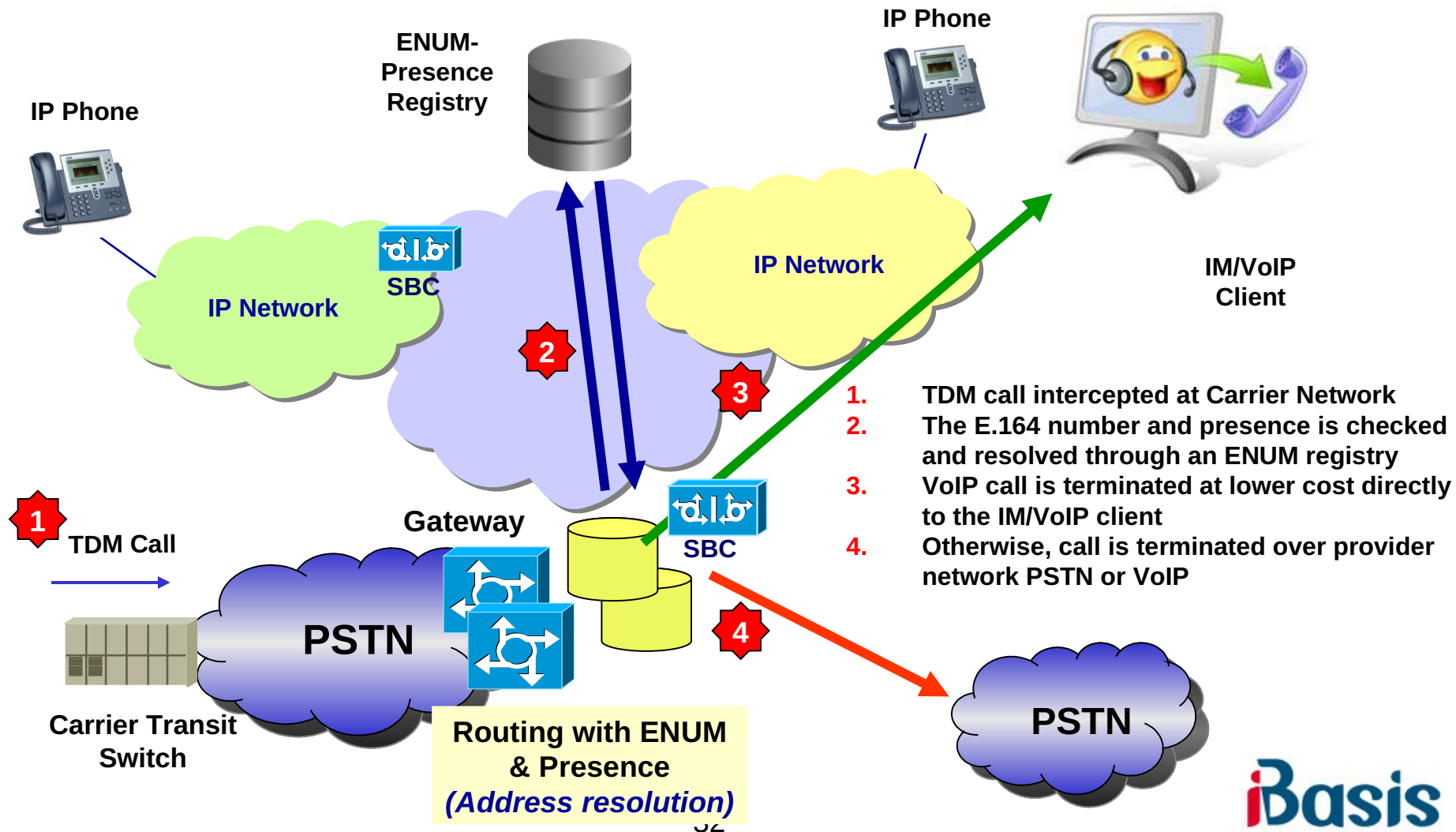
Benefits

- New revenue opportunity with high margins
- Incentives for IM/VoIP Client users to participate
- IM/VoIP providers involvement revenue model, splitting profits with solution provider.

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How it works…..

- **Participating users provide mobile and fixed line numbers in client or portal**

- **IM/VoIP client providers provisions these numbers and presence indication in ENUM Registry**

- **ENUM Registry validates numbers provided by users using SMS or other method**

- **ENUM Registry is made accessible to carriers to query called numbers and confirm presence**

- **For successful queries, carrier could route the call to via VoIP termination to IM/VoIP client provider.**

- **If user is not logged in (Presence ON), IM/VoIP provider rejects the call immediately**

- **If user does not answer after X seconds, IM/VoIP provider rejects call without going to voicemail (preference is to allow fixed or mobile voicemail to answer)**

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Presence-Controlled TDM - VoIP Call Diversion Callflow

ENUM-Presence Registry

IP Phone

IP Phone

IP Network

SBC

IP Network

IM/VoIP Client

2

3

1

TDM Call

Gateway

SBC

1. TDM call intercepted at Carrier Network
2. The E.164 number and presence is checked and resolved through an ENUM registry
3. VoIP call is terminated at lower cost directly to the IM/VoIP client
4. Otherwise, call is terminated over provider network PSTN or VoIP

PSTN

4

Carrier Transit Switch

Routing with ENUM & Presence
(Address resolution)

PSTN

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TDM - VoIP Call Diversion Requirements

Technical and Commercial Requirements

- System or mechanism for users to input their mobile and fixed line numbers

- Automate number provisioning to ENUM registry by IM/VoIP providers

- System to validate numbers provided by users initially and then periodically

- Clarify legal issues within the market and solution

- ENUM/Presence registry would need to be made available to participating carriers via exchanges or through peering agreements

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Considerations and Limitations

- **Requires scale of number and mass participation to work.**

- **Call interception and diversion is only possible when originating or transit operator queries the ENUM/Presence registry**
  - **Calls between intra-network mobile or fixed subscribers could not be intercepted**

- **There may be issues around number and presence privacy and security**

- **Dual-Mode handsets and additional devices may expand market use**
  - **Service may encourage users to install IM/VoIP on mobile and wireless devices**

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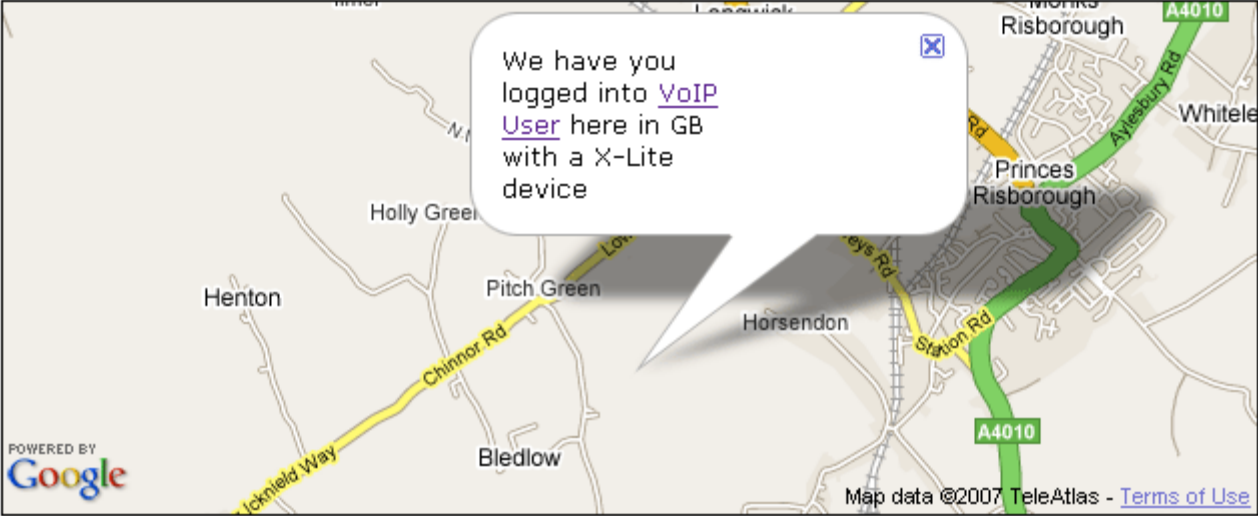# Presence in Portal Applications and Social Networks
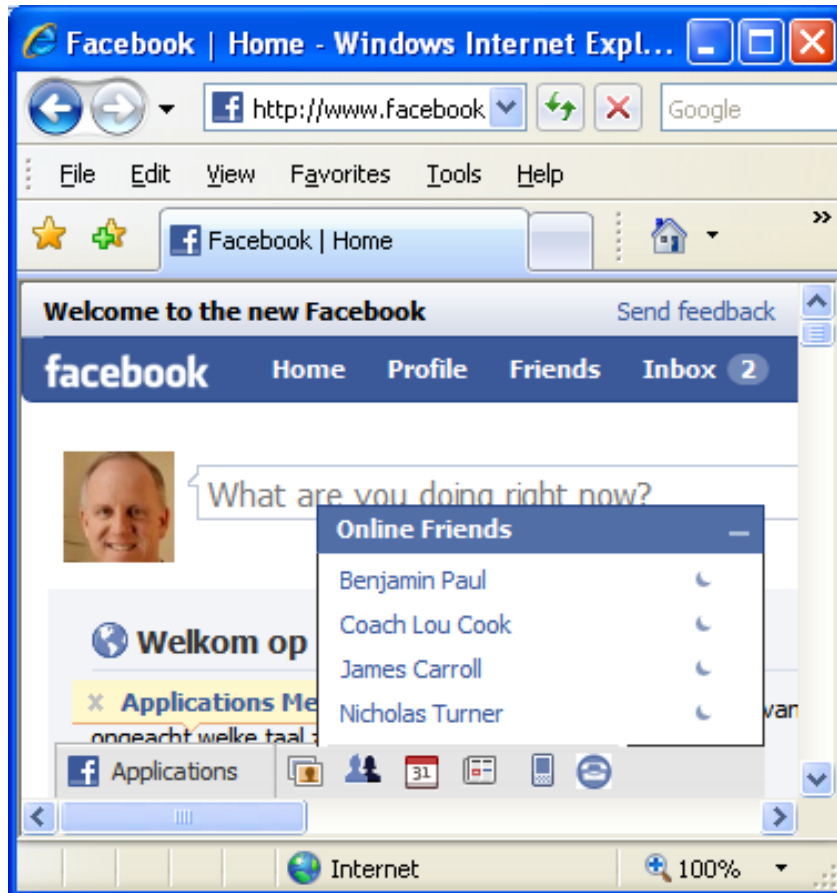
- **Presence indications built into web portal applications, G-Mail, Facebook**

- **Presence can be used to signal network for calling preferences and priority**

- **"Click to Call"**

Presence in Social Networks with Voice

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Click to Call Opportunity with VoIP Carrier Networks
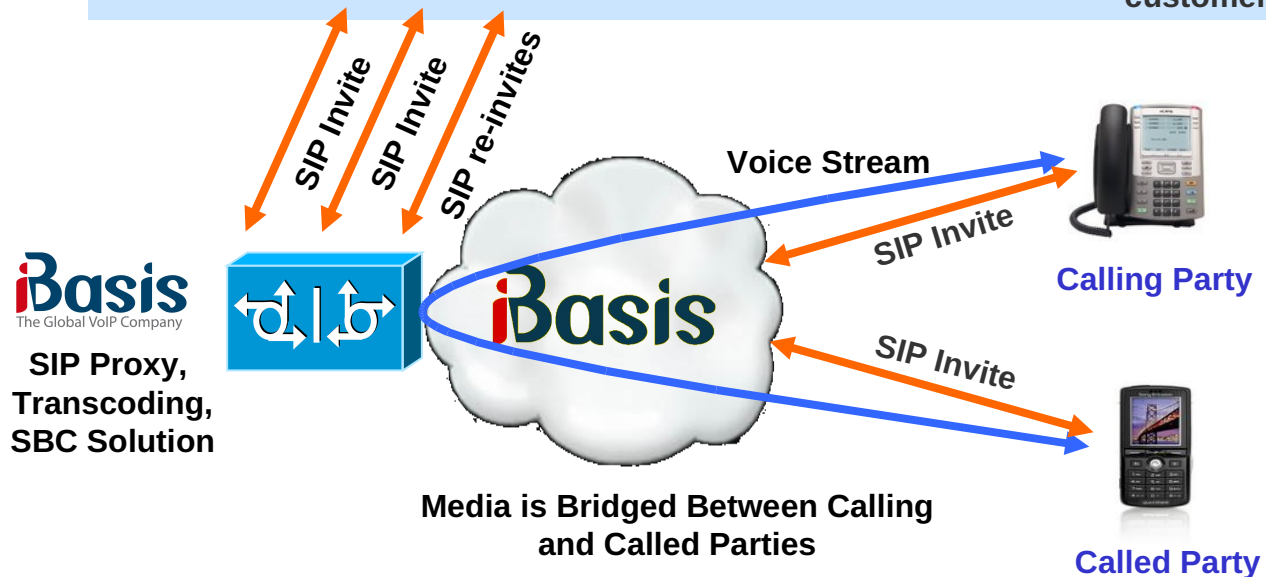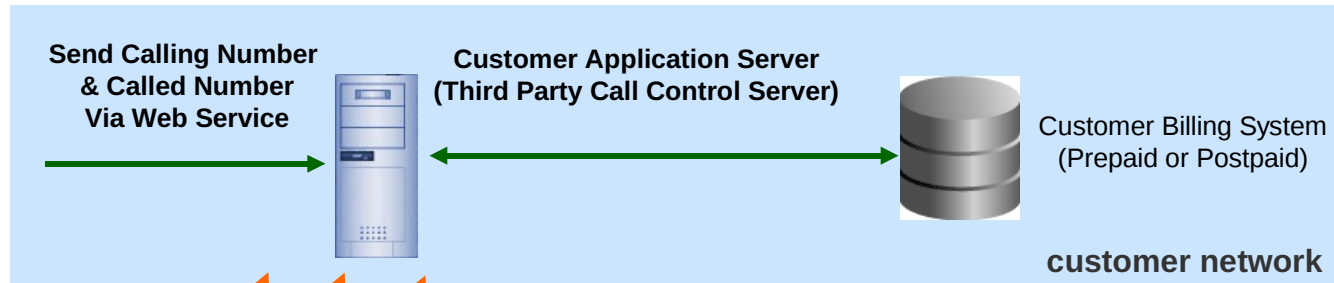
- **VoIP Carrier networks <u>can</u> provide wholesale termination and sell to "Click to Call" web portals, service providers, etc.**

- **VoIP Carrier networks <u>will</u> generate additional revenues and minutes on both legs of the call**

- **"Click to Call" business case and models evolving with the service and application**

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Click-to-Call Call Flow

Your Phone Number: 17813543000
The Number to Call: 17815057500
CALL NOW

Customer Website with "Click to Call"

Send Calling Number & Called Number Via Web Service

Customer Application Server (Third Party Call Control Server)

Customer Billing System (Prepaid or Postpaid)

customer network

SIP Invite

SIP Invite

SIP re-invites

iBasis The Global VoIP Company

SIP Proxy, Transcoding, SBC Solution

Voice Stream

SIP Invite

Calling Party

SIP Invite

Media is Bridged Between Calling and Called Parties

Called Party

→ **Media**
→ **Signaling**
→ **Web Services Requests**

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iBasis Enables Click-To-Call Service Providers

Feature	Benefit
SIP Re-invite	Allows for "Click to Call" setup and initiation within the iBasis Global Network
RTP Media bridging within the iBasis Global Network	Improved call quality with optimized media routing
Flexible Customer Call Flow Requirements	The Click-to-Call service provider has the option of remaining in the media path, if required.
Voice Codecs & DirectVoIP™ Transcoding	Service compatibility with a full range of voice codec options
Security and Back-End	Interconnects are secure; CDRs and other traffic data is provided through web portals

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Mobivox Example: Harvesting Presence with Skype

Hi! Which person would you like to call?

Customer Contacts with Presence

SkypeMe edit ⌄ ✕
11 friends have SkypeMe.
Status: (update now)
✅ I'm online
Change Skype Name | SkypeOut
Share +

Skype Client

M O B I V O X™ beta
Unleash Your Voice!

Call Termination

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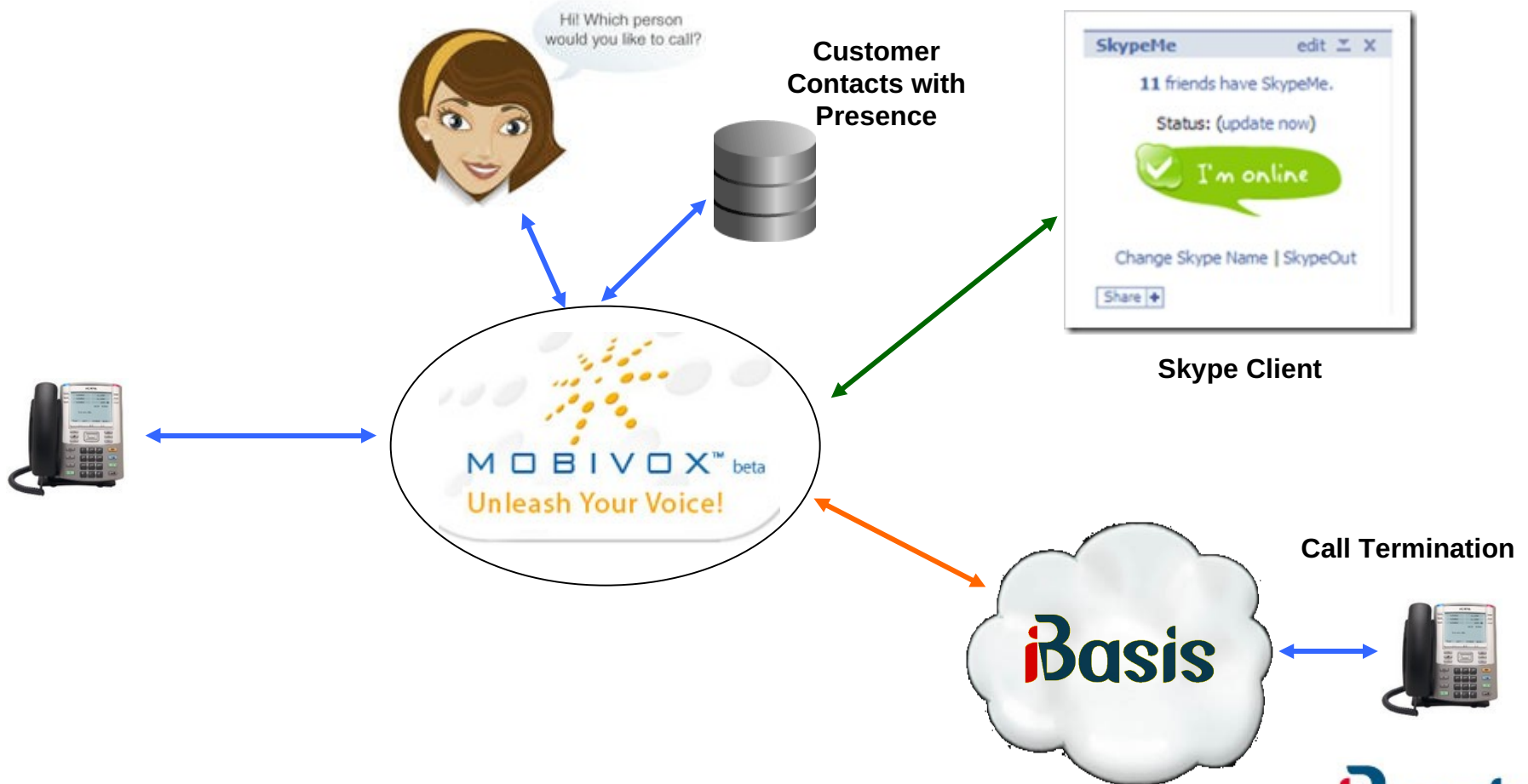
Summary

- **Clients, Portals, Applications, and Devices are becoming more "presence-enabled"**

- **If presence indicators and preferences can be integrated with ENUM registries, telecom service providers with VoIP capabilities can re-direct calls to customer IP devices, reducing cost of termination.**

- **Additional "new" voice applications and services may be created that harvest and react to presence indications.**

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Welcome to Our World

Thank you!

abugos@ibasis.net