

Survey on Approaches of Provision VoIP Service



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Outline

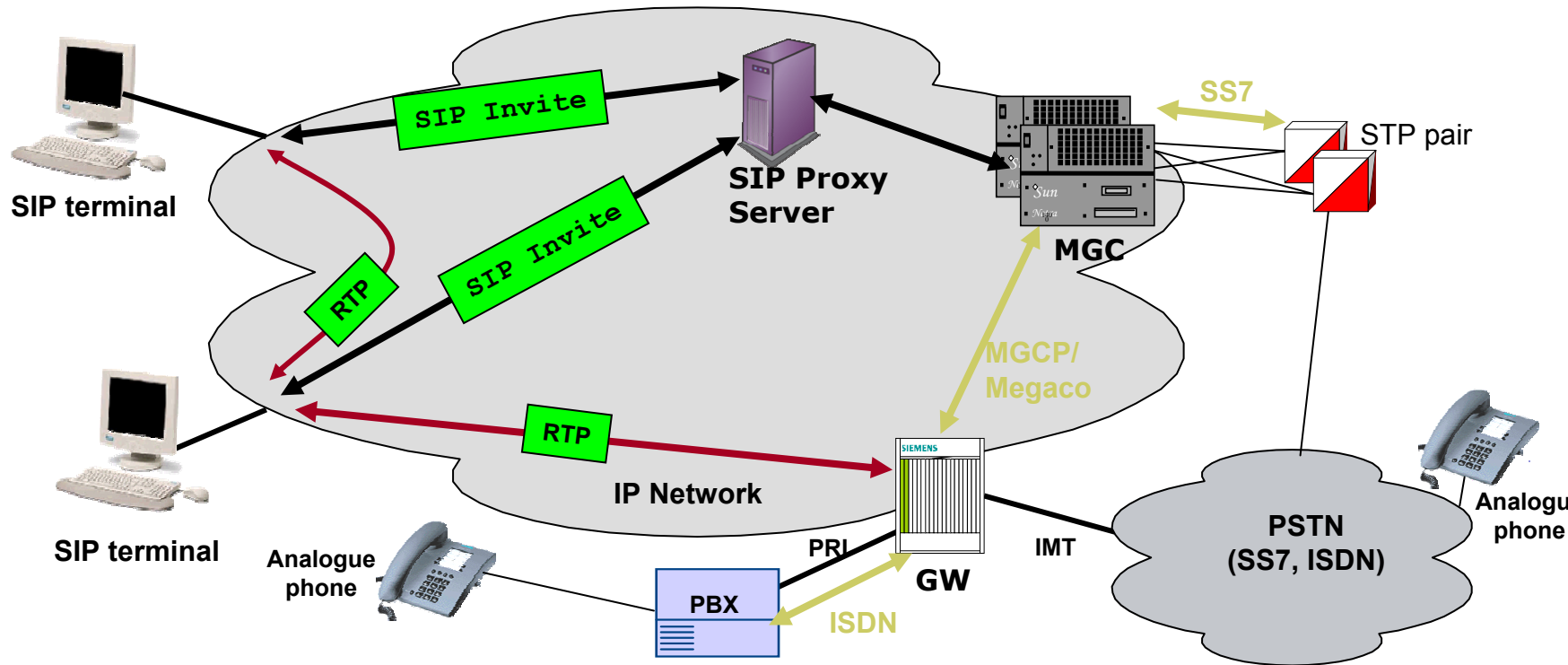
- Introduction
- Different Approaches of VoIP Provision
 - AT&T CallVantage
 - Vonage
 - Teleo
 - Skype
 - FWD
 - fwdOUT
- Comparisons
- Issues Discussion

Introduction

□ Approaches of VoIP application

- Fee-based PSTN replacement / enhancement service
e.g. AT&T CallVantage, Vonage
- Internet communication service with a fee-based PSTN connection
e.g. Skype, Teleo
- Internet communication service
e.g. FWD, most IM service
- Free network service with the capability of reaching PSTN --- fwdOUT

SIP-based Network Architecture



- An incoming SIP-signaled call could also have as an outgoing leg:
 - MGCP create connection that ties RTP stream to IMT trunk (ISUP)
 - MGCP create connection that ties RTP stream to PRI B-channel (ISDN)

CallVantage & Vonage Calling Plan

AT&T CallVantage

	AT&T CALLVANTAGE SM SERVICE PLAN ¹	AT&T CALLVANTAGE SM LOCAL PLAN ²	AT&T CALLVANTAGE SM SMALL OFFICE PLAN ³
	SELECT THIS OFFER	SELECT THIS OFFER	SELECT THIS OFFER
Phone Service			
Price/month	\$29.99	\$19.99	\$49.99
Local Service	Unlimited Local	Unlimited Local	Unlimited Local
Long Distance	Unlimited Long Distance	.04 Per Minute	Unlimited Long Distance
International	50% savings on international calls	50% savings on international calls	50% savings on international calls

Vonage

\$24.99 Premium Unlimited
Calls to anywhere in the US & Canada

\$14.99 Basic 500
500 minutes anywhere in the US & Canada

\$49.99 Small Business Unlimited
Calls to anywhere in the US & Canada

\$39.99 Small Business Basic
1500 local & long distance minutes anywhere in the US & Canada

Sign Up

\$24.99 Premium Unlimited

What's included
All Calls Anywhere in the US and Canada

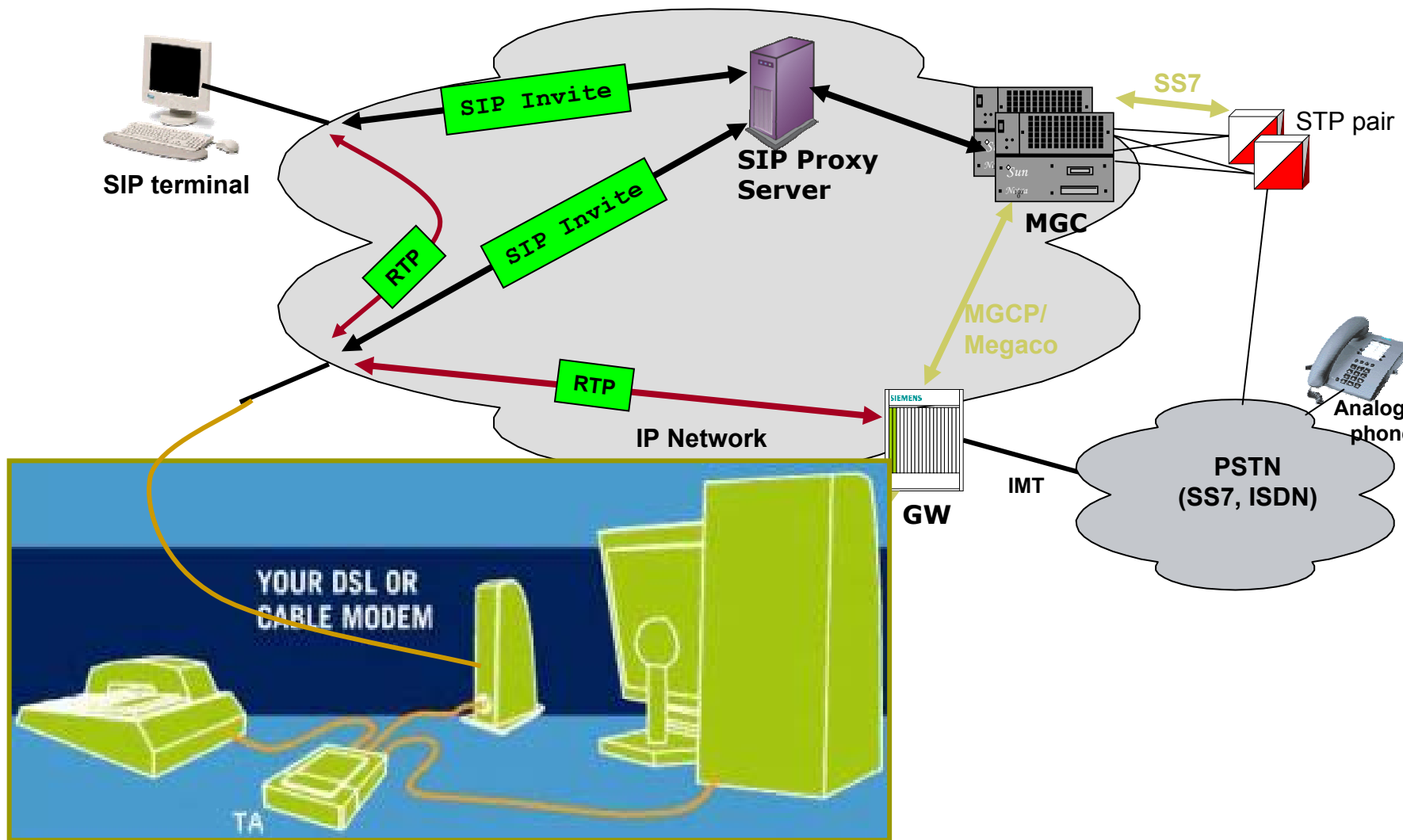
Free Features You See Here >

No Contracts

more ▶

- > Voicemail
- >> Caller ID with Name
- >> Call Waiting
- >> Call Forwarding
- >> 3-Way Calling
- >> Free In-Network Calling
- >> Take Vonage with You
- >> Area Code Selection
- >> Call Transfer
- >> Click-2-Call
- >> Call Return (*69)
- >> Repeat Dialing
- > More Great Features!

Access AT&T CallVantage via TA



AT&T CallVantage Service Features

- Conference Calling
- Voicemail
- Call Log
- Phone Book
- Locate Me
- Speed Dial
- Do Not Disturb
- 3-Way Calling
- Emergency 911 Dialing
- Call Forwarding
- Call Waiting
- Caller ID
- Safe Forward Number
- Fax and Modem Support
- Directory Assistance

Vonage Features

- ❑ Allow multiple phone numbers on any Vonage account -- fax lines, Toll Free Plus Numbers, Virtual Phone Numbers and SoftPhones
- ❑ Need 90-Kbps bandwidth from broadband connection for each phone in use

Cool Options

▶ [Add a Line](#)

Add multiple phone numbers to your Vonage account.

▶ [Virtual Phone Number](#)

Virtual phone numbers are secondary numbers from any available area code for your primary Vonage line.

▶ [SoftPhone](#)

Give your laptop its own phone number and get 500 local and long distance minutes included.

▶ [Toll Free Plus](#)

Have your own toll free number for only \$4.99 per month. 100 incoming minutes included.

▶ [Fax Service](#)

Customers can get a dedicated fax line for only \$9.99 per month.

▶ [Enhanced 411 Dialing](#)

For just 99¢ per call, you get access to any listings in the US, Canada and Puerto Rico.

Great Benefits

▶ [911 Dialing](#)

▶ [Keep Your Phone Number](#)

▶ [Great International Rates](#)

▶ [Billing Information](#)

▶ [Online Account Management](#)

▶ [Money-Back Guarantee](#)

▶ [Live Customer Support](#)

▶ [Special Customer Deals](#)

▶ [Network Availability Number](#)

▶ [311 Dialing](#)

▶ [Bandwidth Saver](#)

▶ [Free Phone Adapter](#)

▶ [Calls to Canada](#)

▶ [Refer-A-Friend](#)

Teleo Calling Plan

Free Trial



25 PSTN minutes included
(based on 2¢ per minute)

Free for 30 Days
(No credit card required)

Try Teleo and discover how easy VoIP service can be.

Teleo



250 PSTN minutes included
(based on 2¢ per minute)

\$4.95 per month
(billed semiannually at \$29.70)

Get a real phone number that rings on your PC desktop.

Teleo Lite



150 PSTN minutes included
(based on 2¢ per minute)

\$2.95 per month
(billed semiannually at \$17.70)

Great for PC-to-PC calling and outbound PSTN calls.



Inbound from any Number

Give your PC a phone number and receive calls anywhere you connect.



Call Forwarding

Forward calls to any other number when busy or offline.



Outbound to any Number

Worldwide PSTN calling for as low as 2¢ per minute ([view worldwide rates](#))



Free PC-to-PC Calling

Call other Teleo users or other SIP-based VoIP users for free!



Click-to-Call

Place calls directly from emails, web pages, or your address book.



Unlimited Voicemail

Messages forwarded to you as email with audio attachments (coming soon).

FWD Features

- Directory Service (411)
- Whitepages & Phone Presence
- Call UK
- Broad Interconnects (Peering)
- Internet Phone Calls
- Conference Calling
- Toll Free Calling
- Three Way Calling

FWD Service & Peering

1. Service Numbers

Dial	Service
411	Voice XML Directory Information
511	Conference Bridge
611	Technical Support
612	Automated Time
613	Echo Test (Test quality/latency of your connection)
614	Milliwatt test (For true technical types)
615	Voxeo Tone test (Enter '#' to try a different tone)
958	Number Check
514	FWD Coffee House
55555	Welcome Line (Talk to volunteers around the globe)

2. Toll Free Access Numbers

Dial	Service
*1(8..)...	Call to toll free USA numbers
*31(800)...	Call to toll free Netherlands numbers
*44(800), *44(500), *44(808)...	Call to toll free UK numbers
*47(800)...	Call to toll free Norway numbers
*49(800)... *49(130)...	Call to toll free German numbers
*81 0120...	Call to toll free Japan numbers

3. Partner Service Provider Access Numbers

fwdOUT Features

- ❑ To make a long-distance or international call utilizing fwdOUT network's phone sharing service, one should
 - Be a member of fwdOUT network: with a PC installed Asterisk PBX software
 - Connect both PSTN and Internet
 - Share his local phone number to others
 - Accumulate credits when sharing his line
 - Use credits to place calls through other member's phone
- ❑ fwdOUT Network will
 - Maintains a list of available member phone lines
 - When you place a phone call, it attempts to use all matching lines until your call reaches the PSTN
 - Only supports IAX (Inter Asterisk eXchange) protocol now

Comparisons

	Call Vantage	Vonage	Teleo	Skype	FWD	fwdOUT
Access	TA	Soft Phone	Soft Phone	Soft/Cell Phone	Soft/SIP Phone	Asterisk PBX
Fee	Yes	Yes	2¢ /min to PSTN	€0.017/min to PSTN	No	No
Numbering Plan	PSTN number*	PSTN number*	PSTN number	User ID	FWD number	PSTN number
FW/NAT Traversal	No	No	Yes**	Yes**	Yes	N/A
To PSTN	Yes	Yes	Yes	Yes	No	Yes
From PSTN	Yes	Yes	Yes	No	only UK	Yes
Emergency Call	Yes	Yes	No	No	No	Yes

* Provide PSTN number in north America

** Provide end-to-end voice payload encryption

Issues Discussion

- ❑ No obvious boundary between VoIP service providers and portable number make customer churn easier
- ❑ Bundled service with fixed flat rate is the trend for VoIP application
- ❑ Fixed-Mobile Convergence (FMC) shall enhance the generalization of VoIP application
- ❑ Some critical issues to be addressed
 - Emergency call support (location identification)
 - Lawful interception
 - Voice SPAM filtering
 - QoS and billing negotiation between two inter-connected network / service providers
 - FW/NAT traversal

Several Innovative Ideas

- ❑ Use the remote PSTN phone numbers located at different site (maybe different country) to make local-like calls
- ❑ Portable user account via TA
- ❑ Multiple phone numbers/types mapped to single account
- ❑ Trade the local PSTN idle minutes for long-distance/international VoIP conversation
- ❑ Session Border Controller (SBC) has been promoted to handle critical VoIP issues like NAT traversal, security, network peering, etc.
- ❑ 3GPP's IMS has been accepted as the carrier VoIP network architecture (NGN)

Reference

- Jan Dawson, “AT&T CallVantage – consumer VoIP”
OVUM, Sep. 2004
- <http://www.usa.att.com/callvantage/index.jsp>
- <http://www.vonage.com/>
- <http://www.teleo.com/>
- <http://www.skype.com/>
- <http://www.pulver.com/fwd/>
- <http://www.fwdout.net/web/>