

SIP and Unified Communications

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Unified Communications

- Let's think about how people may communicate 100 years later
 - People may have a device (an embedded chip in the brain?) they can use for talking to other people remotely, reading and sending email, sending and receiving pictures, videoconferencing, sharing thoughts and feelings, etc



No Question about Convergence

- It is certainly easier to implement the future in the converged network where data, text, voice and video traverse the same network and the same layer
- It is clear that we will move toward Unified Communication (UC)
 - UC is more than unified (integrated) messaging
 - UC provides choice of communication methods
 - UC supports asynchronous as well as real-time communication

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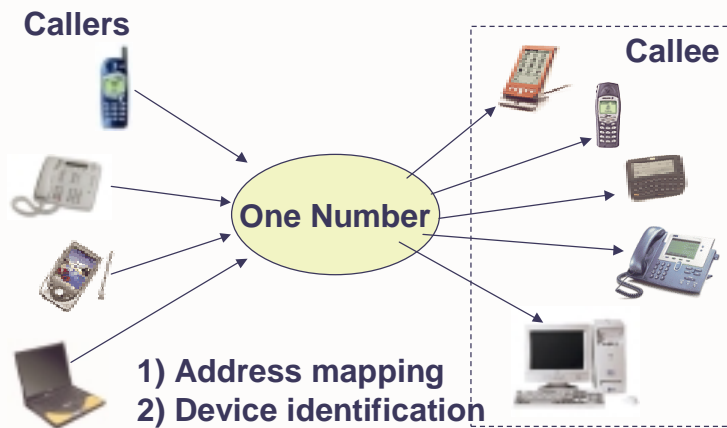
UC Features in Near Future

- All the communication tools for one user may be represented by one ID (e.g., one number)
- A device may handle multiple functions including phone, email, videoconferencing, etc
 - Called party may select an appropriate device automatically when there is an incoming call
- Different modals can communicate with each other (e.g, email and voicemail)

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One Number Service



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ENUM

- Map E.164 (International Telephone Numbering Plan) to Web addresses or uniform resource locators (URL)
- IETF Telephone Number Mapping (ENUM) WG
- RFC2916: E.164 and DNS
- An example

```
$ORIGIN 0.7.7.1.1.7.3.2.1.5.1.e164.arpa.  
IN NAPTR 100 10 "u" "sip+E2U" "!^.*$!sip:info@ipdialog.com!" .  
IN NAPTR 102 10 "u" "mailto+E2U" "!^.*$!mailto:info@ipdialog.com!" .
```

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ENUM (cont'd)

- ENUM would enable a user to store contact information, such as fax, voice, voice mail, e-mail, Web and home address information
- ENUM Forum: Countries with North America Numbering Plan to implement RFC 2916
- Privacy Issue: ENUM may become a tool of marketers, and spammers. There are no specific laws in the U.S. governing privacy in cyberspace.

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Modal Conversion

- Conversion between voice and text
 - Forward voicemail to email (VPIM)
 - Play voicemail in email (VPIM)
 - Reply to email with voicemail
 - Forward email to voicemail (text-to-speech)
 - Reply to voicemail with email
 - Convert speech to text for hearing impaired

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Multi-modal in SIP

- Audio and video are identified in SDP
 - m=audio 49170 RTP/AVP 0
 - m=video 51372 RTP/AVP 31
 - m=application 32416 udp wb
- Instant message (proposed extension)
 - MESSAGE method in SIP
 - Proposed SDP extension
 - m=message 5060 sip sip:jmaeng@ipdialog.com

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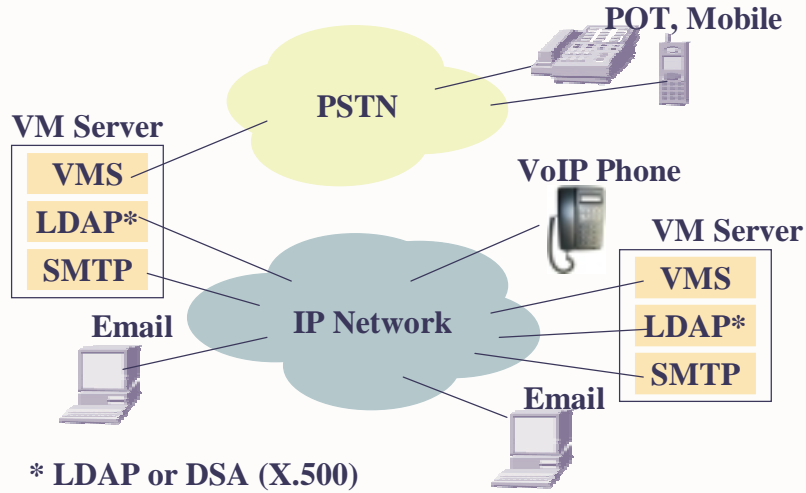
Voice Profile for Internet Mail

- VPIM: IETF working group
- Version 1: Experimental RFC 1911, Feb 1996
- Version 2: RFC 2421, Sep 1998
 - VM <-> VM
 - Revision 2 is being defined to clarify V2
- Draft version 3: Internet Voice Mail (IVM)
 - VM <-> Email
 - Play VM in email and respond to VM with VM in email
 - Must conform with the Internet Mail format
 - Must be transmitted in accordance with SMTP

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VPIM Directory Architecture



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An Example of VPIM

```
To: +15123711770@vm1.ipdialog.com
From: "Maeng, Joon" <15123711663@vm2.ipdialog.com>
Date: Mon, 15 April 02 10:10:20 -0700 (CDT)
MIME-Version: 1.0 (Voice 2.0)
Content-Type: Multipart/Voice-Message; Version=2.0;
  Boundary="MessageBoundary"
Content-Transfer-Encoding: 7bit
Message-ID: 123456789@vm2.ipdialog.com
Sensitivity: Private
Importance: High
-- MessageBoundary
Content-type: Audio/32KADPCM
Content-Transfer-Encoding: Base64
Content-Disposition: inline; Voice=Originator-Spoken-Name
Content-Language: en-US
Content-ID: part1@vm2-4321
.....Spoken name data.....
```

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SIP and Unified Message

- SIP VM may use VPIM to send voicemail to email
- SIP presence and IM may be combined with multi-modal SIP endpoints
 - A caller may send an IM message if callee is busy
- SIP voicemail waiting
 - draft-mahy-sipping-message-waiting-02.txt: Sip event package for message waiting indication
 - A phone (or application) uses SUBSCRIBE method to subscribe a VM
 - The VM uses NOTIFY method to inform new messages to the phone or application

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An Example of SIP VM Waiting

NOTIFY sip:jmaeng@jmaeng-phone.ipdialog.com SIP/2.0
To: <sip:jmaeng@ipdialog.com>;tag=7792
From: <sip:jmaeng@ipdialog.com>;tag=4674
Date: Mon, 22 April 2002 09:28:51 GMT
Contact: <sip:jmaeng@vm.ipdialog.com>
Call-ID: 1349882@jmaeng-phone.ipdialog.com
CSeq: 13 NOTIFY
Event: message-summary
Content-Type: application/simple-message-summary
Content-Length: xx
Messages-Waiting: yes
Voicemail: 4/8 (1/2)

To: <jmaeng@ipDialog.com>
From: <plong@ipdialog.com>
Subject: meeting tomorrow?
Date: Mon, 22 April 08:21:01 -0700
Priority: normal
Message-ID: 13523934989@vm.ipdialog.com

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ipDialog VoIPTone™



- ipDialog VoIPTone™ family of IP phones are very affordable OEM phones with SIP, H.323, MGCP and Megaco/H.248 support
- ipDialog demonstrated call set up among multiple protocols
- SIP phone: \$150 each in quantities of 1000 units
- Configuration by the web server in the phone
- Users can download new firmware from a TFTP server
- VoIPTone indicates message waiting
- VoIPTone will include functions required to support ENUM and UC
- Visit booth #3123 at N+I or www.ipdialog.com for info