SIP.edu

• Goals
  – Grow SIP connectivity on the Internet
  – Increase value proposition for end-user SIP adoption
  – Promote converged identity - email-style addressing
  – Provide a useful service; while supporting enhanced campus services and experiments

• Means
  – Publishing “cookbook” with several alternative “recipes”
  – Obtaining corporate sponsorship and promotional pricing
    • Cisco, Avaya, Pulver.com so far
  – Build community of SIP practitioners
Why Phone NUMBERS?

- Users should not be burdened with device addresses, when it’s **people** they really care about
- Addresses should be mnemonic and empower enterprises to manage the identities of their users
  
  \[\text{sip:dbaron@mit.edu}\]

- It’s time to put E.164 phone numbers behind us!
- A.G. Bell did **not** say:

  “+1-617-252-1232, come here. I need you!”
INVITE (sip:bob@bigu.edu)

DNS SRV query
sip.udp.bigu.edu

SIP User Agent

INVITE (sip:12345@gw.bigu.edu)

telephoneNumber
where mail="bob"

SIP Proxy

SIP.edu Architecture (Phase 1)

SIP-PBX Gateway

PRI / CAS

Campus Directory

Bob's Phone
SIP.edu Architecture (Phase 2)

If Bob has registered, ring his SIP phone; Else, call his extension through the PBX.

DNS SRV query
sip.udp.bigu.edu

INVITE (sip:bob@bigu.edu)

SIP User Agent

Bob's SIP Phone

SIP Proxy

INVITE (sip:bob@207.75.164.131)

REGISTER (Contact: 207.75.164.131)

location DB

SIP Registrar

Bob's SIP Phone

bigu.edu
SIP.edu Components

• DNS Server
  – Add SIP SRV records to existing servers
• SIP Proxy Server
  – Also acts as SIP registrar
  – Can support “aliases” for legacy phone numbers
  – Mimics campus dial plan
• LDAP Server (or other source of directory data)
  – Has mapping of email to phone number
• SIP Gateway
  – Connects to existing PBX or Centrex
  – Could also connect to proprietary VoIP system
SIP.edu Call Flow Example

- SIP DNS lookup for MIT.EDU points to SIP proxy
  - Sends INVITE to dbaron@MIT.EDU to proxy
- SIP proxy checks MIT directory
  - Maps call to PBX extension – eg. 21232@mit.edu
- SIP proxy checks dial plan
  - Routes call to PBX gateway
- PBX rings phone
SIP.edu Configuration

SIP user wants to call dbaron@mit.edu
DNS SRV Lookup

SIP Server

DNS Server

LDAP Server

Campus Network

Internet2

DNS SRV

DNS lookup for MIT.EDU

SIP/PRI Gateway

PBX

PSTN

DNS SRV Lookup

DNS lookup for MIT.EDU

SIP Server

DNS Server

LDAP Server

Campus Network

Internet2

DNS SRV

DNS lookup for MIT.EDU

SIP/PRI Gateway

PBX

PSTN
LDAP Lookup

SIP Server

LDAP Server

DNS Server

Campus Network

Internet2

SIP/PRI Gateway

PBX

PSTN

LDAP lookup for dbaron – returns x21232
Call Sent to PBX Gateway

Internet2

SIP INVITE to x21232 via Gateway

SIP/PRI Gateway

PBX

PSTN

SIP

SIP Server

DNS Server

LDAP Server

Campus Network

Call Sent to PBX Gateway
Media Stream via Gateway to PBX

SIP user talks to dbaron@mit.edu at x21232

SIP Server

DNS Server

LDAP Server

Campus Network

Internet2

PBX

PSTN

RTP
Sip to SIP Calling

SIP user talks to dbaron@mit.edu at his SIP phone
SIP to PBX and PSTN Calling

- Campus SIP user calls 21232 or 912129990000
PBX and PSTN to SIP Calling

- SIP Server
- Campus Network
- Internet2
- SIP/PRI Gateway
- PSTN
- PBX

PSTN user calls +16172521232 or PBX user calls 21232
SIP.edu Reachable Users

SIP.edu Reachable Users (cumulative)

Reachable Users

Date

01/03 04/03 07/03 10/03 01/04 04/04 07/04 10/04 01/05 04/05

0 20000 40000 60000 80000 100000 120000 140000 160000 180000 200000

mit.edu

upenn.edu

columbia.edu

ethz.ch

hawaii.edu

ucla.edu

uv.es

valencia.edu

harvard.edu

indiana.edu

iupui.edu

iu.edu

colostate.edu

SIP.edu Reachable Users

Dennis Baron, June 5, 2005

Page 17
SIP.edu Quotes

• “This project was initiated by the need to provide reliable, IP based phones for the Toolik Lake research station located north of the Brooks Range.” *University of Alaska Fairbanks*

• “sipETH: Internet Telefonie for the ETH Zurich: This project has been inspired by the Internet2 SIP.edu initiative. During the exploration process many new ideas have led to a new vision for our project.” *ETH Zurich*

• “Our SIP.edu infrastructure has allowed us to utilizing our Internet2 connections to reestablish the telephone tie lines connecting out two institutions.” *MIT and WHOI*
SIP.edu – Just do it!

Questions?