SIP.edu Architecture

Internet2 VoIP Workshop

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Outline

• SIP.edu motivation
• SIP.edu architecture
• SIP.edu components
• SIP.edu call flow
SIP.edu

• Goals
  – Grow SIP connectivity in Internet2
  – Increase value proposition for end-user SIP adoption
  – Promote convergence of voice and email identity
  – Low entry-cost means for campuses to...
    • Provide a useful service
    • Get their feet wet with SIP

• Means
  – Publishing “cookbook” with several alternative “recipes”
  – Obtaining corporate sponsorship and promotional pricing
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

    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!”
SIP.edu Architecture (Phase 1)

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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)

REGISTER
(Contact: 207.75.164.131)
SIP.edu Call Flow Example

• SIP DNS lookup for MIT.EDU points to SIP proxy
  – Sends INVITE to bob@mit.edu to proxy

• SIP proxy checks MIT directory
  – Maps call to PBX extension – eg. 37669@mit.edu

• SIP proxy checks dial plan
  – Routes call to PBX gateway

• PBX rings phone
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
  – Has mapping of email to phone number

• SIP Gateway
  – Connects to existing PBX or Centrex
  – Could also connect to proprietary VoIP system
SIP.edu Configuration

Diagram:
- Internet
- Internet2
- Campus Network
- SIP Server
- DNS Server
- LDAP Server
- PBX
- PSTN
- SIP/PRI Gateway
DNS SRV Lookup

- DNS SRV
- SIP Server
- DNS Server
- LDAP Server
- Campus Network
- Internet
- Internet2
- SIP/PRI Gateway
- PBX
- PSTN
SIP INVITE
LDAP Lookup

- Internet
- Internet2
- SIP Server
- LDAP
- DNS Server
- LDAP Server
- Campus Network
- SIP/PRI Gateway
- PBX
- PSTN
Call Sent to PBX Gateway

- SIP
- SIP Server
- DNS Server
- LDAP Server
- Campus Network
- Internet
- Internet2
- SIP/PRI Gateway
- PBX
- PSTN
Media Stream via Gateway to PBX

Internet

Internet2

Campus Network

SIP Server

RTP

DNS Server

LDAP Server

SIP/PRI Gateway

PBX

PSTN
SIP.edu Configuration

Diagram showing the connections between SIP Server, DNS Server, LDAP Server, Campus Network, PBX, SIP/PRI Gateway, Internet, Internet2, and PSTN.
SIP to PBX and PSTN Calling
PBX and PSTN to SIP Calling
Questions?