SIP.edu in a Nutshell

APAN / Internet2 VoIP Summit

http://voip.internet2.edu/SIP.edu/

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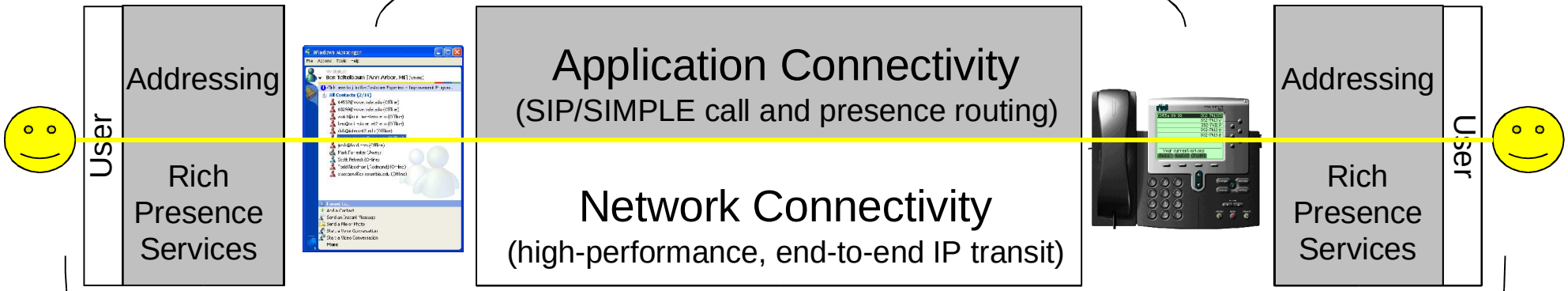
Why us?

Internet2's Secret Sauce

- Demographics
  - ~3.8 million students (tech-savvy, talk a lot, adapt easily)
  - And, by the way, they graduate (tech-transfer à la email)
- Institutional Commitments
  - Internet2 members have committed to advance IP communications and promote collaborative apps
  - Many are looking for ways to reverse eroding voice revenues
- Connectivity
  - Great networking connectivity
    - High-bandwidth, low-loss, low-jitter
    - End-to-end transparency (few NATs)
    - IPv6 and multicast too!
  - Emerging middleware infrastructure for AuthN/Z
  - Need to build on this to connect users with each other!

Connectivity is Key!

Application connectivity:
Are there protocols and call routing infrastructure to establish connections between communicating applications?



Network connectivity:
Can connections be established between communicating IP addresses with high-performance and high-availability?

User connectivity:
Can I reach you?

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What's "SIP"?

SIP: Session Initiation Protocol (RFC 3261)

SIP

- Signalling protocol for creating, modifying, and terminating real-time internet media sessions
- SIP (and its extensions) support traditional telephony features as well as instant messaging and presence

First, a few caveats…

- This is **not** a SIP tutorial
  - **For a good SIP tutorial see: http://iptel.org/sip/**
- This is **not** a SIP versus H.323 comparison
  - **There are a number of good comparisons out there**
  - **In any case, the protocol war is over**

SIP Attributes

Component protocol that provides

- User registration and mobility
- Call routing, setup, tear down, and redirection

Makes heavy use of existing standards

- SDP • RTP • MIME • DNS • UDP • TRIP

Easy and familiar feel

- Textual encoding • Email-style headers • HTTP-style error codes • URL addresses

Signaling and media paths separate

- Proxy signaling for mobility and call services
- Media on direct path for low RTT

SIP Components

User Agent (UA)

- Hard or soft phones that initiate and receive calls
- Media to exchange is negotiated P2P between UAs

Registrar Server

- Authenticates and accepts registration requests
- Maintains UA location presence

Proxy Server

- Routes calls (possibly through a chain of proxies)
- Usually keeps no session state (for scalability)

Redirect Server

- Replies to calling UA with a redirect

Server functionality is typically bundled

SIP Happens

Vigorous standards activity

- SIP (core protocol and extensions) • SIPPING (applications) • SIMPLE (instant messaging and presence) • not just IETF, 3GPP too!

Enthusiastic industry adoption

- Phones (Microsoft, Cisco, Pingtel, Snom, ...)
- Servers (Cisco, Microsoft, Broadsoft, ...)
- Conferencing (eDial, RADVision, ...)
- Services (Level3, WorldCom, Vonage, ...)

Open source software

- Servers: SER (iptel.org) • VOCAL (vovida.org)
- Soft Phones: Linphone • KPhone

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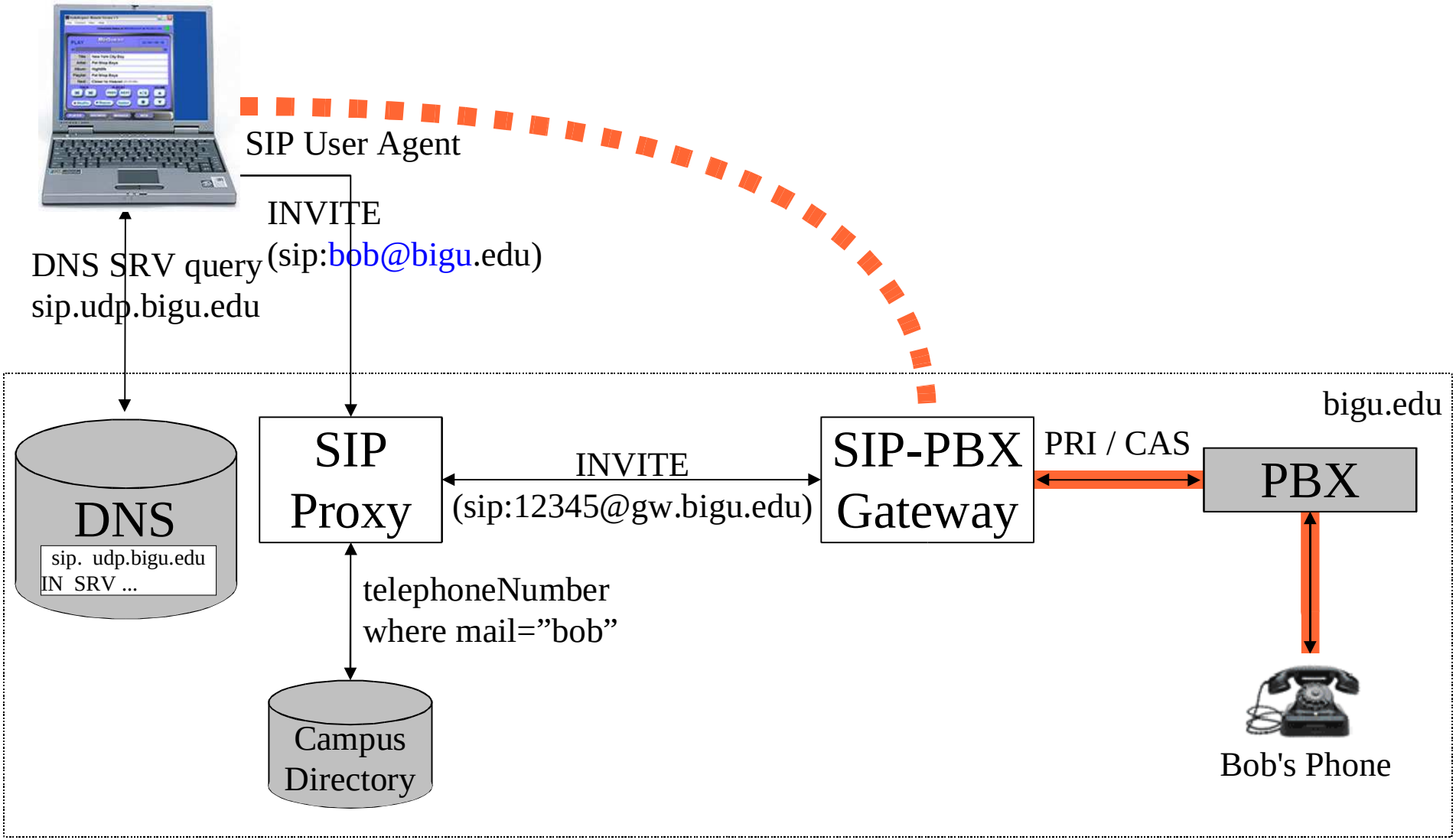
- Fearless Leader
  - Dennis Baron <dbaron@mit.edu>
- Goals
  - Grow number of SIP connected users
  - Increase value proposition for end-user SIP adoption
  - Promote convergence of voice and email identity
  - Low entry-cost means for campuses to...
    - Provide a useful service
    - Start getting their feet wet with SIP
- Means
  - “SIP.edu cookbook” available on web site
  - Partnering with vendors (Cisco working with 6 schools)

Remember, It's People We're Connecting

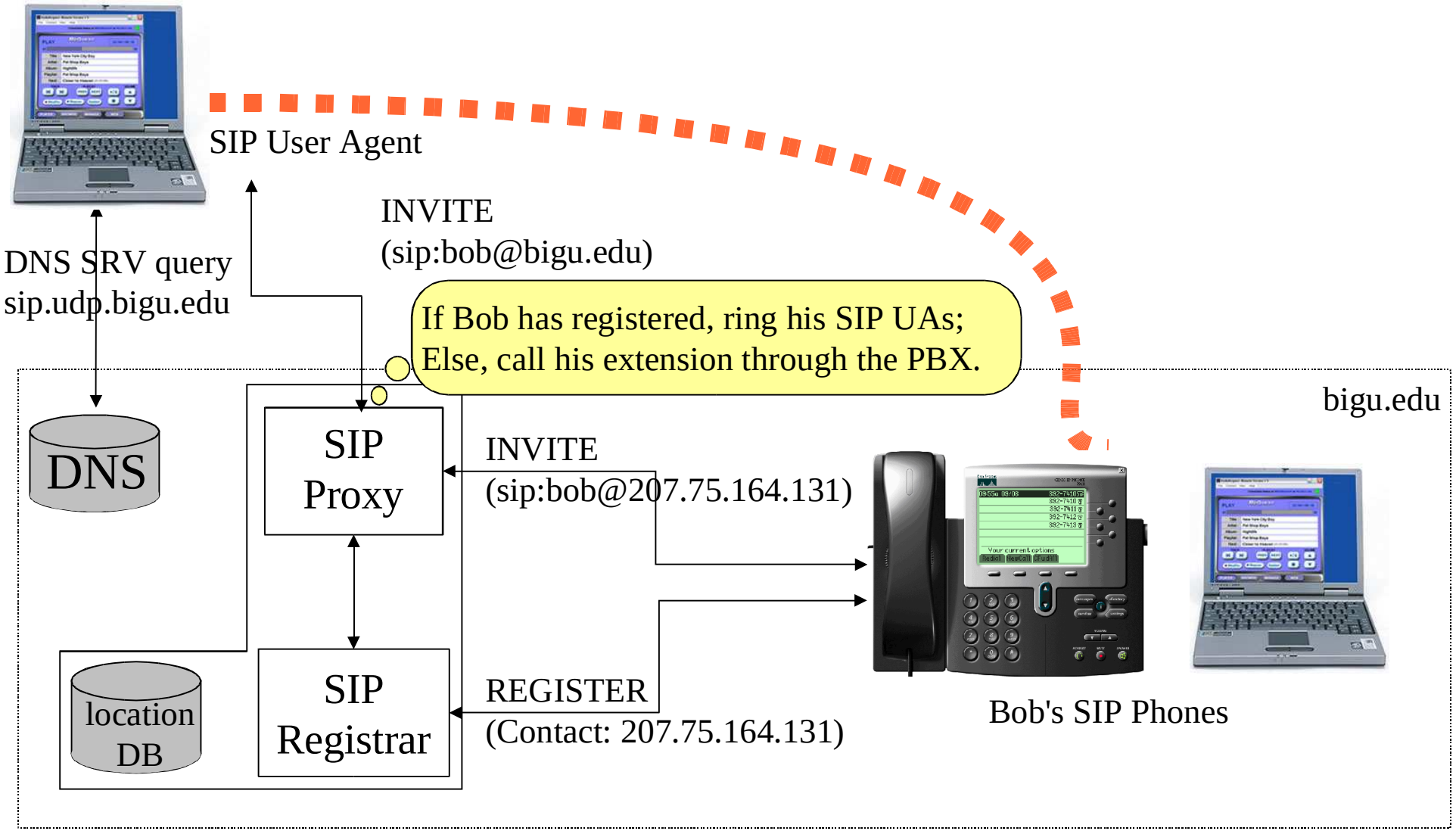
- Addressing
  - Users should not be burdened with device addresses, when it's **people** they really care about
  - Addresses should be mnemonic and empower enterprises to manage the identities of their users
    - **`sip:ben@internet2.edu`**
  - It's time to put E.164 phone numbers behind us!
  - A.G. Bell did **not** say:

"+1-617-637-8562, come here. I need you!"

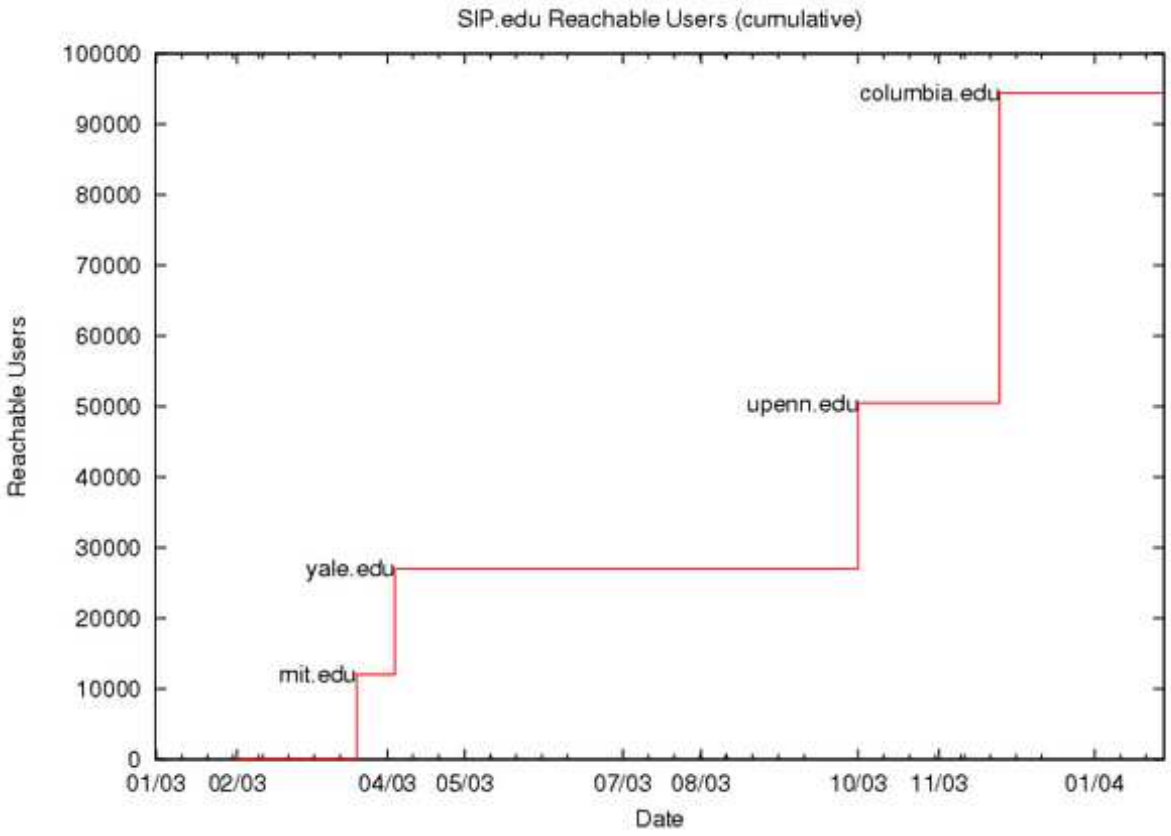
SIP.edu Architecture (today)



SIP.edu Architecture (real soon)



SIP.edu Growth



>8 other schools looking seriously at it

SIP SRV Records

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