

SIP Status and Directions

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Overview

- SIP perspective
- SIP IETF standardization work
- SIP bake-offs
- SIP-H.323 interworking

What is SIP good at?

- session setup = “out of band”
- resource location via location-independent identifier (“user@domain”, tel)
- particularly if location varies rapidly or filtering is needed (i.e., is inappropriate for DNS and LDAP)
- real-time: faster than email
- reach multiple end point simultaneously or in sequence = *forking*
- possibly hide end-point location
- delayed final answer (“ringing”) \longleftrightarrow RTSP

What is SIP not meant for?

- bulk transport: media streams, files, pictures, ...
- asynchronous messaging (“email”)
- resource reservation
- high-efficiency general-purpose RPC

SIP and Corba

| | SIP | Corba |
|------------|---------------------|------------------|
| data | optional fields | versioning hard |
| | two-level hierarchy | general, C-like |
| hiding | dynamic | directory-based |
| multiple | forking proxy | no |
| transport | UDP, TCP, ... | TCP |
| strength | inter-domain | inter-domain |
| generality | session set-up | RPC, events, ... |

SIP servers can benefit from Corba *locally* for user location and service creation

SIP and XML

- XML will play increasing role in SIP-enabled systems:
 - call processing language (CPL)
 - presence information for SIP as presence protocol
 - device configuration, buddy lists
 - possibly, future version of Session Description Protocol (SDP)
 - back-end for proxy services (e.g., Parlay over SOAP)
- but not appropriate everywhere:
 - can be verbose
 - hard to parse without generic (bulky) parser

Current SIP efforts

- SIP to Draft Standard
- QoS and security preconditions
- inter-domain AAA and billing
- session timer for liveness detection
- early media (PSTN announcements)
- SIP for presence / instant messaging
- SIP-H.323 interworking
- reliable provisional responses
- DHCP configuration for finding SIP servers
- SIP for firewalls and NATs
- caller preferences
- services (transfer, multiparty calls, home)
- ISUP carriage

Status

- Proposed Standard, Feb. 1999 – RFC2543
- bakeoffs every 4 months → cross-vendor interoperability tests

| | host | when | companies |
|---|---------------------|---------------|-----------|
| 1 | Columbia University | April 1999 | 16 |
| 2 | pulver.com | August 1999 | 15 |
| 3 | Ericsson | December 1999 | 26 |
| 4 | 3Com | April 2000 | 36 |
| 5 | pulver.com | August 2000 | |
| 6 | Sylantro | December 2000 | |
| 7 | ETSI | April 2001 | |

SIP implementations

Roughly in order of maturity:

- proxies and redirect servers for service creation
- PC-based user agents – Windows and other OS
- Ethernet phones
- softswitches (Megaco/MGCP/...) “crossbar”
- protocol analyzers
- firewall and NAT enhancements
- SIP-H.323 gateways
- unified messaging

On-going SIP implementations

3Com

AudioTalk Networks

Broadsoft

Catapult

Cisco

Carnegie-Mellon University

Columbia University

Delta Information Systems

dynamicsoft

Ellemtel

Ericsson

Hewlett-Packard

Hughes Software Systems

Indigo Software

Iwatsu Electric

Komodo

Lucent

MCI Worldcom

Mediatrix

Microappliances

Netergy

Netspeak

Nokia

ObjectSoftware

Nortel

Nuera

Pingtel

RaveTel

Siemens

Telogy

Ubiquity

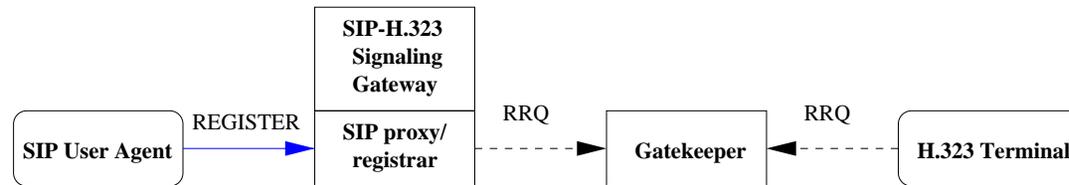
Vegastream

Vovida

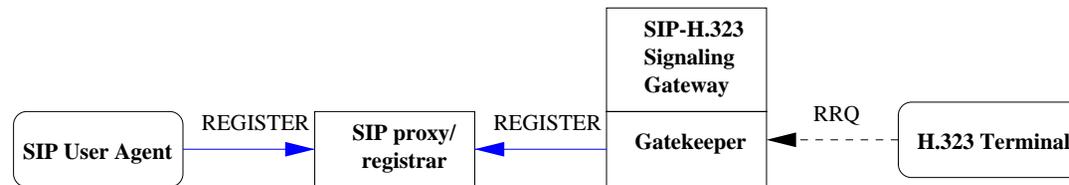
SIP-H.323 interworking

- media translation – not necessary → much better scaling
- signaling translation – easier as H.323 version increases...
- user registration:
 - enum (DNS) – per host only, requires awareness
 - export registrations in either direction
- advanced services – not yet clear

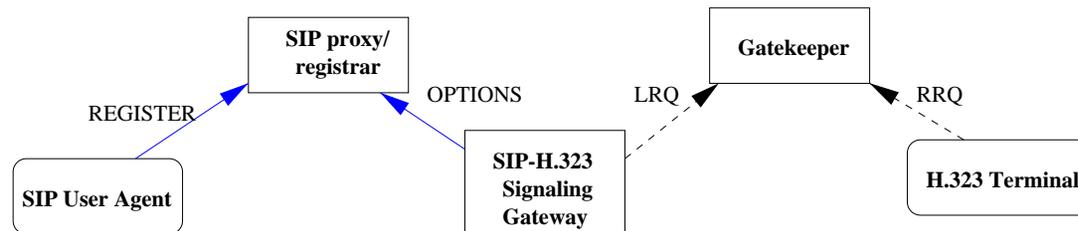
SIP-H.323 interworking



(a) Signaling gateway contains SIP proxy



(b) Signaling gateway contains an H.323 gatekeeper



(c) Signaling gateway is independent of proxy or gatekeeper

-----▶ H.323 message
 —————▶ SIP message

LRQ = Location request
 RRQ = Registration request

Conclusion

- SIP is ready for large-scale deployment
- wide diversity of implementations, rapidly moving from bake-off to buyable
- focus on interoperability
- emphasis on one core version with negotiated extensions – no SIP versioning, profiles, ... → goal: every SIP-powered device and software can interwork with any other
- extensions for QoS, ISUP carriage, events
- some services, such as transfer, need finishing up
- leverage event model for remote pick-up and other advanced services

For more information...

SIP: <http://www.cs.columbia.edu/sip>

RTP: <http://www.cs.columbia.edu/~hgs/rtp>

Papers: <http://www.cs.columbia.edu/IRT>