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 $\longrightarrow$ 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

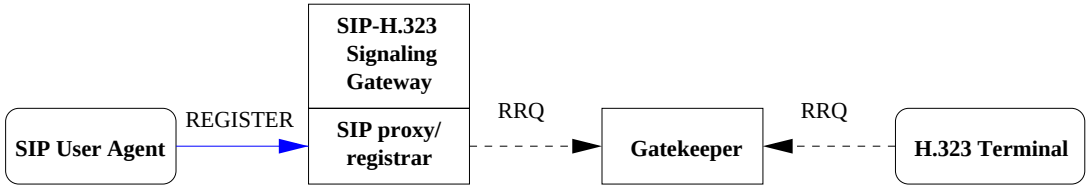
On-going SIP implementations

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

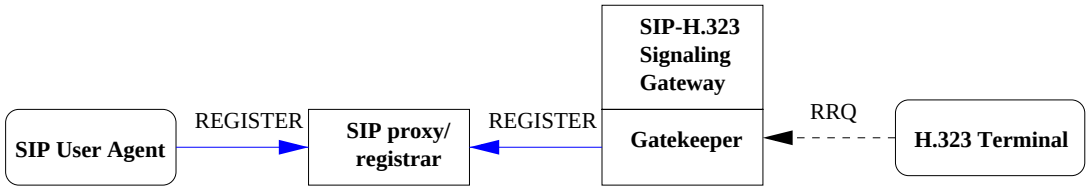
SIP-H.323 interworking

- media translation – not necessary $\longrightarrow$ 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

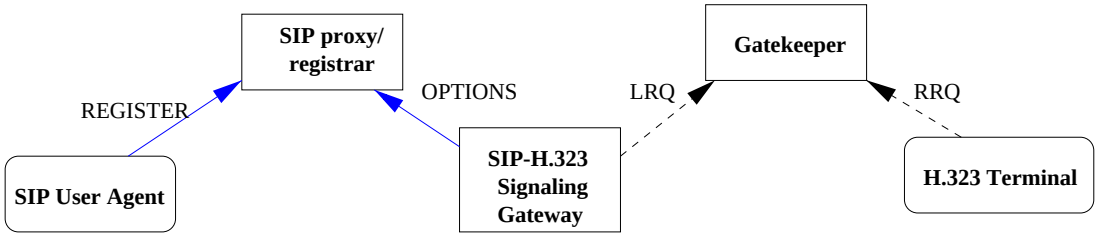
SIP-H.323 interworking



(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, . . . $\longrightarrow$ 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