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”) ⟷ 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

<table>
<thead>
<tr>
<th></th>
<th>SIP</th>
<th>Corba</th>
</tr>
</thead>
<tbody>
<tr>
<td>data</td>
<td>optional fields</td>
<td>versioning hard</td>
</tr>
<tr>
<td></td>
<td>two-level hierarchy</td>
<td>general, C-like</td>
</tr>
<tr>
<td>hiding</td>
<td>dynamic</td>
<td>directory-based</td>
</tr>
<tr>
<td>multiple</td>
<td>forking proxy</td>
<td>no</td>
</tr>
<tr>
<td>transport</td>
<td>UDP, TCP, ...</td>
<td>TCP</td>
</tr>
<tr>
<td>strength</td>
<td>inter-domain</td>
<td>inter-domain</td>
</tr>
<tr>
<td>generality</td>
<td>session set-up</td>
<td>RPC, events, ...</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>host</th>
<th>when</th>
<th>companies</th>
</tr>
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<tbody>
<tr>
<td>1 Columbia University</td>
<td>April 1999</td>
<td>16</td>
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<tr>
<td>2 pulver.com</td>
<td>August 1999</td>
<td>15</td>
</tr>
<tr>
<td>3 Ericsson</td>
<td>December 1999</td>
<td>26</td>
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<tr>
<td>4 3Com</td>
<td>April 2000</td>
<td>36</td>
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<td>5 pulver.com</td>
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<td></td>
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<tr>
<td>6 Sylantro</td>
<td>December 2000</td>
<td></td>
</tr>
<tr>
<td>7 ETSI</td>
<td>April 2001</td>
<td></td>
</tr>
</tbody>
</table>
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
Microapologies
Netergy
Netspeak
Nokia
ObjectSoftware
Nortel
Nuera
Pingtel
RaveTel
Siemens
Tely
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

LRQ = Location request
RRQ = Registration request

SIP message
H.323 message
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