iptel.org

Fraunhofer FOKUS Institute for Open Communication Systems

SIP Operation in 2003

Iptel.org – builders of SER

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http://www.iptel.org/

About iptel.org

iptel.org is a SIP know-how and deployment organization -- it created world's most unique open-source SIP server with premium service creation flexibility and performance. The server has been powering iptel.org's public services as well as services of iptel's customers.

iptel.org spun off from Germany's national research labs, Fraunhofer, home of MP3 and very first implementations ever of mobile IP and IPv6 applications – see www.fokus.fhg.de.

iptel.org provides software, consultancy and technical support to both operators and vendors in the SIP area.

2003 SIP Landscape

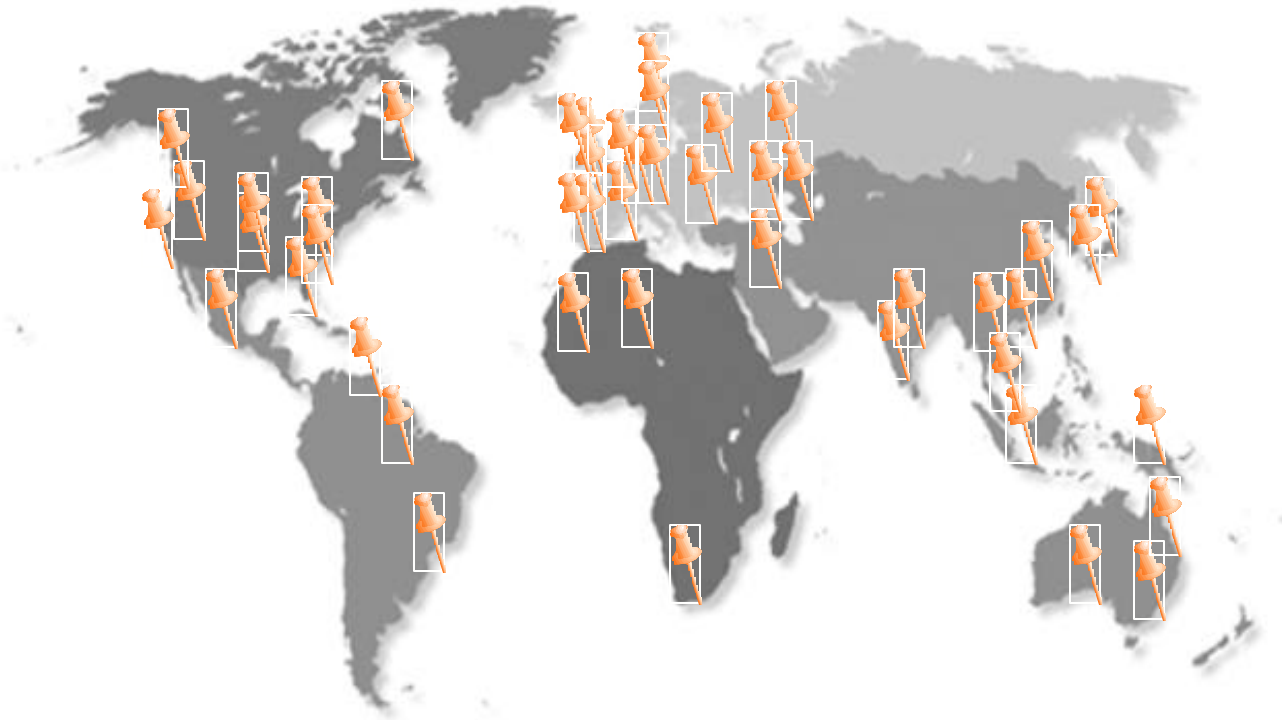
- **Construction is Over – Operation Began, Perfection on Agenda**

Pre 2003

2003

Deployment Roadblocks Vanished ...

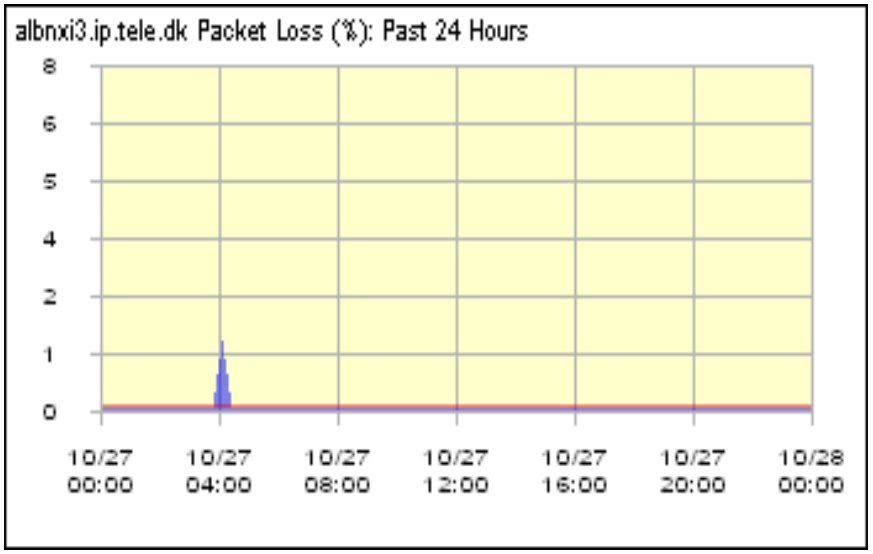
- Affordability:
  - 2003 – the first SIP telephones bellow $100 marketed
  - Scalable network solutions available (picture shows installations of SER, www.iptel.org/ser/ in early 2003)

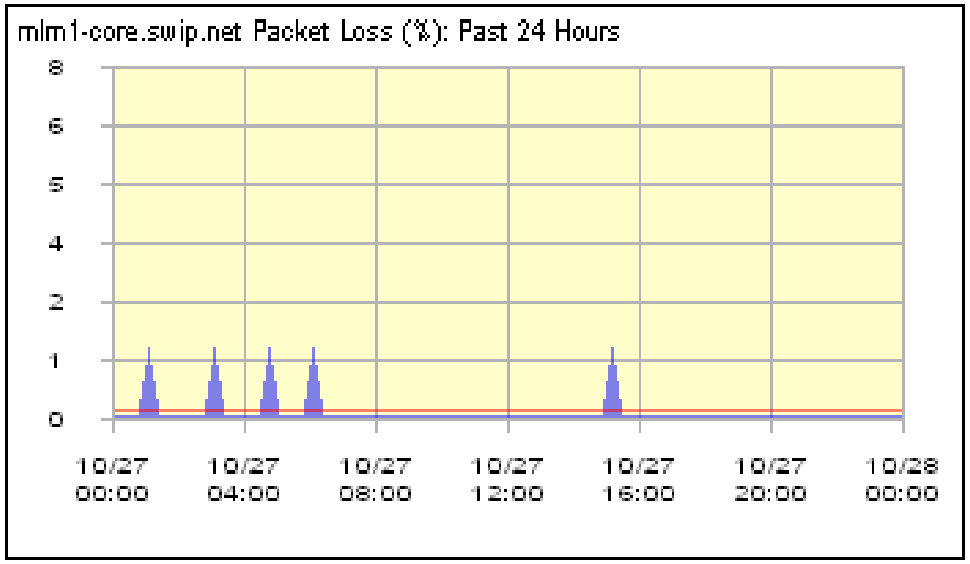


… Deployment Roadblocks Vanished

- Solutions for technological headaches matured:
  - Number #1: NATs (in average 20% of population behind hard-to-traverse symmetric NATs) – technology to traverse NATs exists and is deployed
  - Interoperability proven: variety of compliant devices
  - Application building matures and replaces naïve or monstrous API concepts.
  - Scalability: SER/discount PC offer capacity to power Bay Area.
  - QoS Issues: Where Are Thou?

QoS ?





- See pictures for example of packet loss measurements in Scandinavia
- Modern end-devices can cope with QoS distortions

Use Case

- ITSPs and ISPs offering IP telephony on top of IP access; telephone line no longer needed.
- Business model changes seat order: initial investment barrier small enough to be overcome by a variety of competitors.

Case #1: Affordable ITSP w/PSTN Connectivity

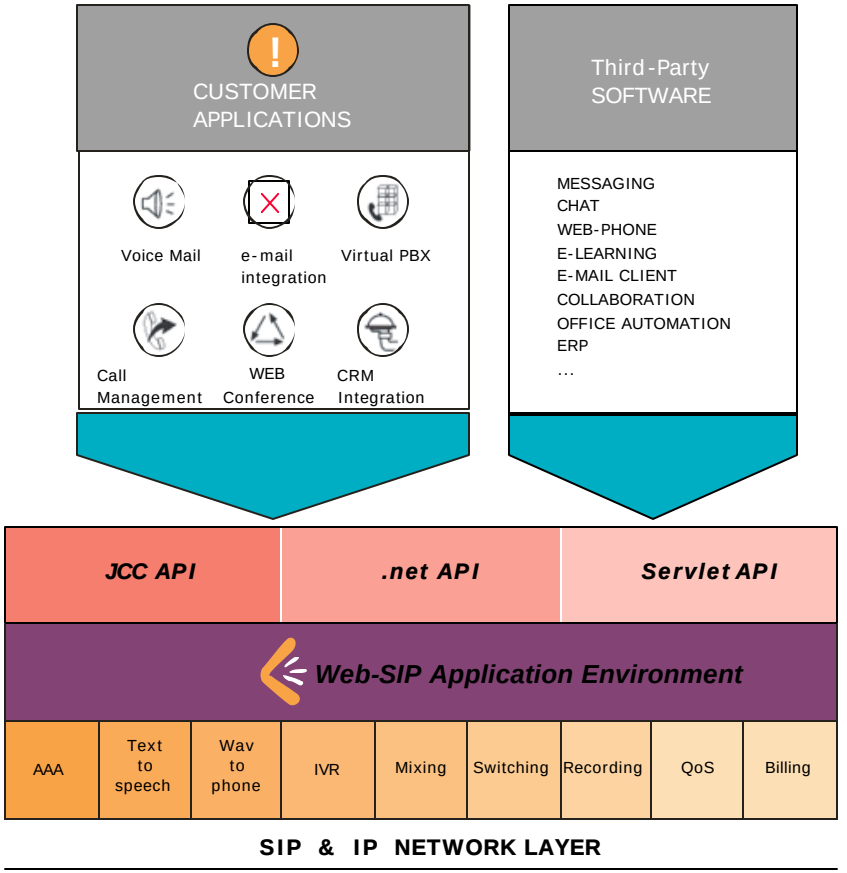
- addeline.com: Texas-based ITSP with focus on affordable telephony; cost-effective deployment powered by Linux PCs; free basic service, subscribers may receive PSTN telephone number in any of 17 areas, calls follow their SIP devices; international minute rates between $0.060 (Buenos Aires, Austria, Australia, Belgium, China, …) and $1.807 (Thuraya, satellite); monthly fee $12.95 includes 1000 local and 200 continental minutes, additional minutes at $0.03 per minute.

Case #1 in .DE

- In 2004, first SIP deployments began in Germany too: sipgate.de, freenet.de
- freenet service:
  - National calls to PSTN for 0.01 EU
  - PSTN termination offered only to ISP subscribers
  - On-net calls for free

Case #2: ASP

- VozTelecom: Spain-located SIP-based ISP
- Premises: value is in novel applications, innovation of telecom technology blocked by infrastructure cost and closed service model -> move to VoIP!
- Answer: Web-SIP Network Architecture which opens up creation of services to third parties

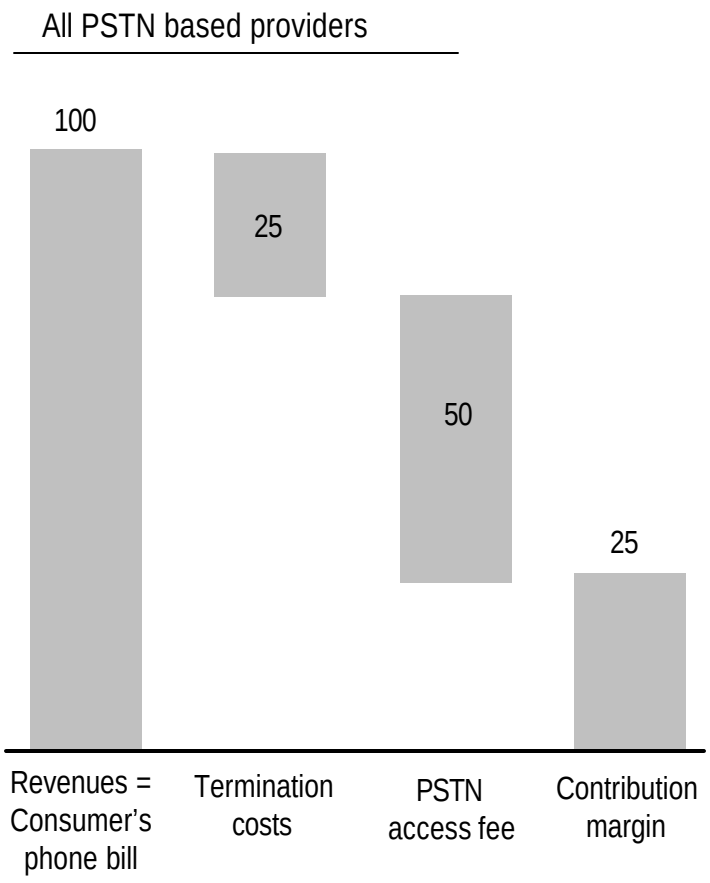


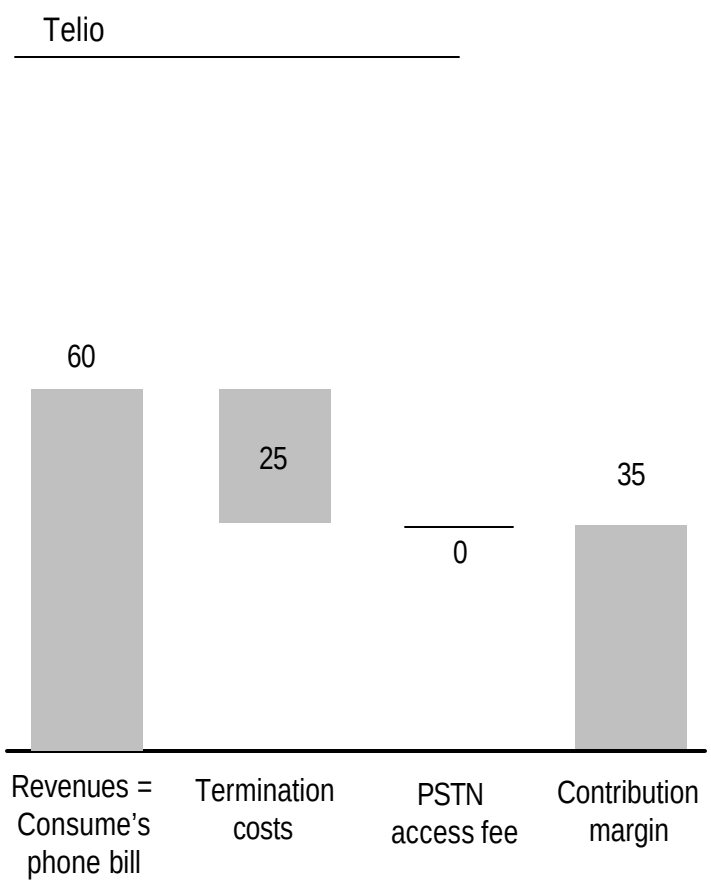
TELIO

Case #3: Replace Phone Line with DSL/SIP

- Situation: Deregulation of the Norwegian telecom market, number portability obligation for incumbent, termination at regulated cost based prices: **consumer can use copper for ADSL without having PSTN subscription**
- Competative price structure (next slide)

Telio.no – Advantage in Cost Structure





Case #4: Campus Networks

- Premises: cost-effective migration from Centrex to integrated IP services
- Yale University Scope:
  - Altogether about 90,000 calls
  - Assuming three minute hold, about ¼ million minutes
  - 50-100 phones
  - Serving phones located nationally
  - Phones = Cisco, Pingtel, Mitel and Grandstream
  - Softclients = Messenger, SIPc, Session, Xten, etc.
  - About 15,000 aliases used in SER that make every telephone (IP and circuit switched) at Yale reachable by URL dialing.

Bringing SIP to Perfection

- Integration: like many other markets, VoIP is moving from commodities (solutions, hardware, service components, …) to where the hard part is: services (integration, accomplishing availability, service building, etc.). Problems: integrators don't have routine experience yet, SIP devices not yet very PnP, no standards for device provisioning.
- Seamless bridging to PSTN: ENUM protocol up and running but not yet widely adopted
- Architectural Sanity: Keep the network design managable

More to Tune

- Security. There is no widely deployed interdomain trust model yet. Problems:
  - Spam: Do really European subscribers wish to receive calls from US telemarketers at 3 AM? (“Want to make some money”, “Add 3+ Inches Today”, “Don’t gain the winter weight”)
  - Identity and Fraud Prevention: If a user from a domain terminates to PSTN via another domain, how does the terminating domain learns a trustworthy Caller-ID to propagate to PSTN and charge to?
  - Solution: use web-proven TLS to establish Internet-wide trust.
- Keep interoperability manageable:
  - SIP Forum Testing Group: focus on interoperability issues known to cause troubles in field and interoperability events
  - ETSI: focus on formal verification (TTCN)

Final Observations

- SIP began penetrating in 2003 – most deployments aim at cost-effectiveness which is easy to achieve through very low introductory cost barrier.
- Sign of raise: The technological market begins to mature from commodities to services.
- Still on the agenda: making SIP easy-to-integrate, plug-and-play, establishing security and trust interdomain models.
- Political concerns: canibalization, regulation, etc.

Acknowledgments and Disclaimers

- Acknowledgments: useful information has been provided to presenter by courtesy of iptel.org, telio, voztele, and addaline.
- Statements made in the presentation may or may not be shared by the respective companies.
- Disclaimer: The presentation has been focused on technology: remember politicians still keep power to spoil what technologists have done.

Information Resources

- Email: jiri@iptel.org
- IP Telephony Information: http://www.iptel.org/info/
- SIP Services: http://www.iptel.org/user/
- SIP Express Router: http://www.iptel.org/ser/