P2P Conversational Services

Sipping Peer-to-Peer Ad-Hoc , IETF #64

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Outline

- P2P Services Dilemma
- Conversational Services Digest
- P2P SIP Basic Service Requirements

P2P Services Dilemma

- Public network operators should not look at P2P as a threat only …
  - OK, free E2E services with only little operator lock-in seems bad
  - End device based dynamic innovation is a difficult business environment
  - How to impose regulatory and service integrity issues in case of lost admin control
- … but take also the chances of a new technology:
  - Self-organization of distributed cheap resources may bring better scalability, robustness and lower cost
  - Overlays above IP allow for new concepts e.g. for cross technology mobility, redundancy, …
  - New valuable services beyond call control
  - Richer end-user communication

Conversational Services Digest

- Not apps, but services ;-)
- Not classified into centralized – decentralized
- Domain and user authority
- Basic and supplementary call services
- Directory (searchable) beyond DHT
- Buddy list / presence
- NAT traversal or trans-coding relays
- *Interconnection of domains*
- *GW to legacy services/networks (FAX, PSTN, SMS/MMS, PLMN, …)*
- *Service peers handling preferences, mail box, conferencing, SPIT filter*
- E2E Encryption
- *Emergency call handling (with location information)*
- *Intelligence support (invisible to users, for public service only)*
- Interfaces to transport network: QoS, location, …

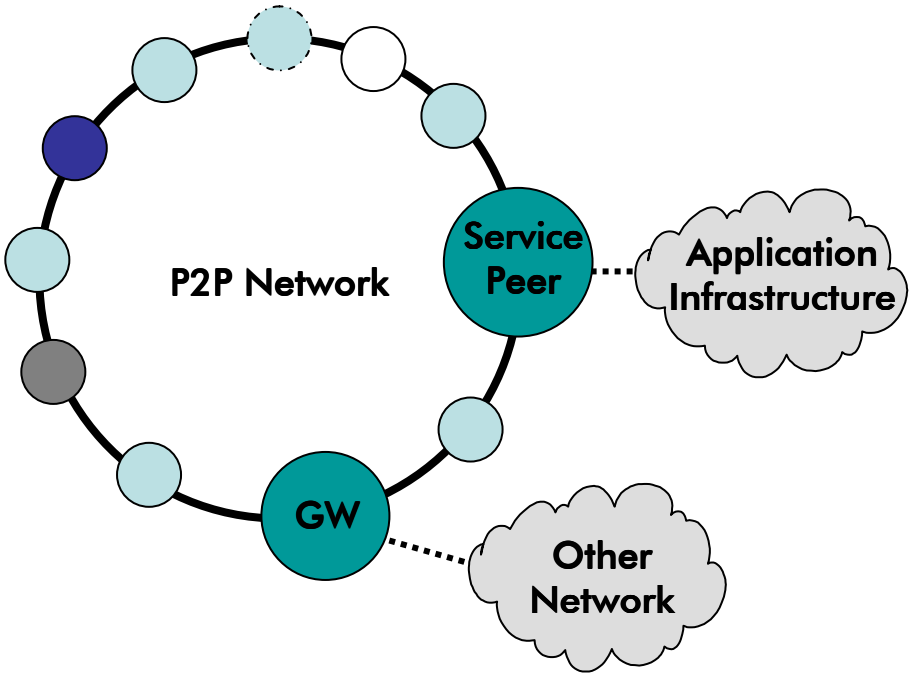
- And what's the relation to a P2P SIP protocol ?

Open P2P Communication System

- In contrast to closed proprietary systems around, an open standardized proposal requires at least:
  - Trusted strong identities
  - Sophisticated security means against system abuse
  - Concept for administrative domains
  - Variable architecture concepts for different use cases
  - Standardized well known selected services definition
  - Open extendibility, leaving room for evolution
  - Anticipation of regulatory issues

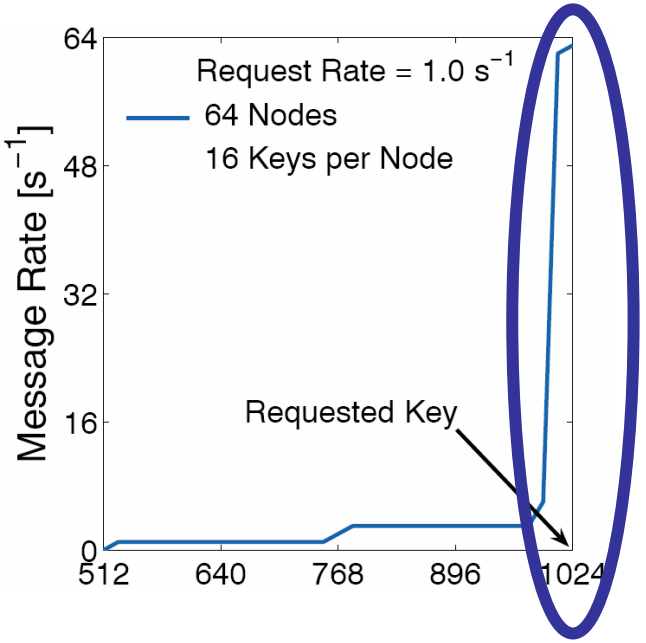
P2P SIP Basic Requirements

- 1. Handling of heterogeneity
  - Centralized – decentralized services
  - Different device capabilities
    - Processing power
    - Storage
    - Access link
    - Availability
    - Load
    - Service description
    - User preferences
    - Policies and roles



Backup: Handling of heterogeneity

- Problem:
  - asymmetric / unbalanced behavior
  - creates hot zones in the P2P network
- ➔ high load at the requested peer and at some nodes forwarding queries

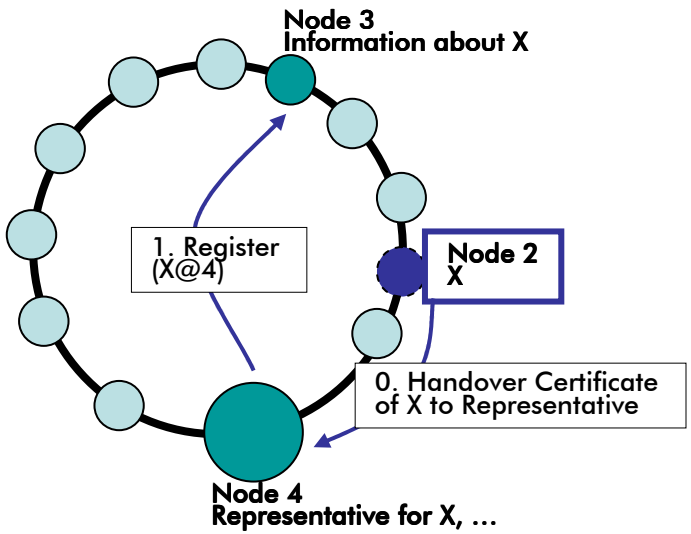


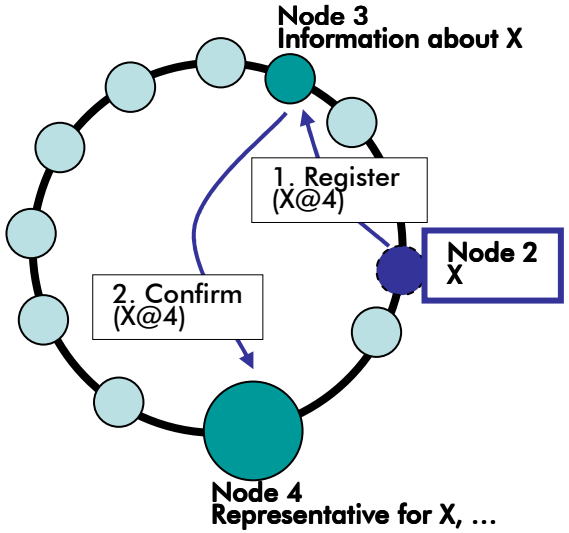
CHORD simulation results: hot spot with very high messages rates

- Careful design of P2P protocol to avoid hotspots nearby massively loaded service peers
  - careful service peer positioning in the P2P structure
  - load balancing or caching mechanisms

P2P SIP Basic Requirements

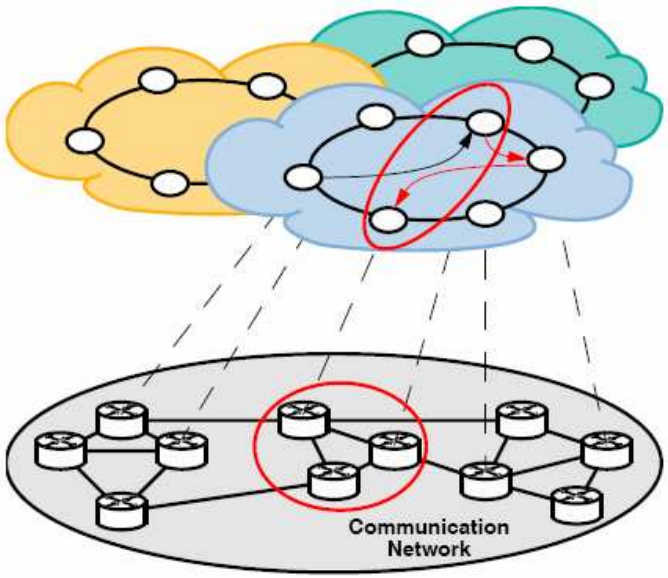
- 2. P2P trust – beyond identity management: Secured data base operations
  - Controlled access to DB entries and integrity of DB content
    - Particularly third party access (read, write, create, change, …)
    - Security against misbehaving DHT nodes
- Size of DB storage





P2P SIP Basic Requirements

- 3. Domains
  - By administration
  - By topology
  - By geography
  - By resources or roles
  - By contract
  - By common interest



- Finally: Regulatory issues
  - Anticipate killer requirement for any public conversational service
  - Support of emergency calls and ways to deliver location information
  - Support of CALEA / LI (at least: CDR)

Proposals

- Revise requirements draft where required
  - DHT access rights and data size
  - Heterogeneity
  - Domain concept
  - Regulatory issues
- Narrow scope
  - Focused on simple basic system
  - Offering basic services
- Analyze re-use of sip/sipping work on services

- Thanks! Questions?