

# P2P SIP Topics

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# Introduction

- Session Initiation Protocol (SIP) is widely used protocol for session management.
- Forms of person to person communications are also emerging to the peer-to-peer networks.
- Gatewaying, evaluating DHTs, mapping of SIP, security issues, ...

# Gatewaying between SIP networks and P2P communication networks

- There's a clear need for gatewaying, although person to person communications aren't so evolved in the P2P domain.
- Scope: concentrate on those high level principles that can be stated from the gatewaying already today.

# Evaluation between centralized SIP network and decentralized P2P network

- Most notable difference: Centralized vs. partly or fully decentralized.
- Scope: Evaluate the differences between these two ways of communication.

# Mapping of SIP transactions to P2P networks

- SIP methods (REGISTER, OPTIONS, INVITE, BYE, REFER, ...) enable communication in centralized environment
- Scope: How these methods could be mapped to P2P networks, and how SIP messages itself need to be changed.

## Topic #4

# Security possibilities and challenges in P2P networks for person to person communications

- Security is a concern in peer-to-peer network, but they also offer some security related possibilities for person to person communications.
- Scope: Examine the security properties of peer to peer networks from the perspective of person to person communications. Plus some suggestions on supplementary security mechanisms.

# Suitable students

- Student that is already familiar, or is willing to learn, about SIP and DHTs.
- Main focus on literature review part, but a bit of creativity is required.

# Information sources (1/2)

- Homepage of P2P-SIP at the Columbia University.  
<http://www1.cs.columbia.edu/~kns10/research/p2p-sip/>.
- Homepage of P2P SIP, made by David A. Bryan.  
<http://www.p2psip.org/>.
- IETF oriented P2P SIP's mailing list.  
[p2psip@cs.columbia.edu](mailto:p2psip@cs.columbia.edu).
- J. Rosenberg et al. SIP: Session Initiation Protocol.  
RFC 3261.



# Information sources (2/2)

- R. Sparks. The Session Initiation Protocol (SIP) Refer Method. RFC 3515.
- I. Stoica, R. Morris, D. Karger, M.F. Kaashoek, and H. Balakrishnan, Chord: A Scalable Peer-to-peer Lookup Service for Internet Applications, ACM SIGCOMM 2001, San Deigo, CA, August 2001, pp. 149-160.
- B.Y. Zhao, L. Huang, J. Stribling, S.C. Rhea, A.D. Joseph, and J. Kubiawicz, Tapestry: A Resilient Global-scale Overlay for Service Deployment, IEEE Journal on Selected Areas in Communications, January 2004, Vol. 22, No. 1.
- S. Ratnasamy, P. Francis, M. Handley, R. Karp, S. Shenker, A Scalable Content-Addressable Network, In Proceedings of ACM SIGCOMM 2001.