Large Scale SIP Platform Based on P2P

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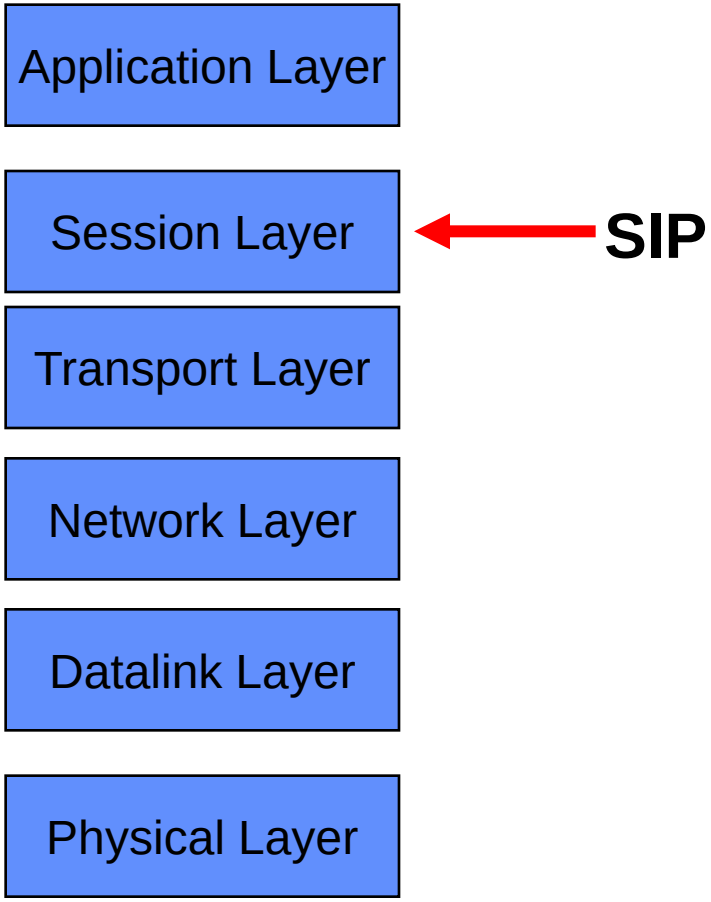
Introduction

- **Session Initiation Protocol**
- **Mobility**
  - **Terminal mobility**
  - **Personal mobility**
  - **Service mobility**
  - **Session mobility**



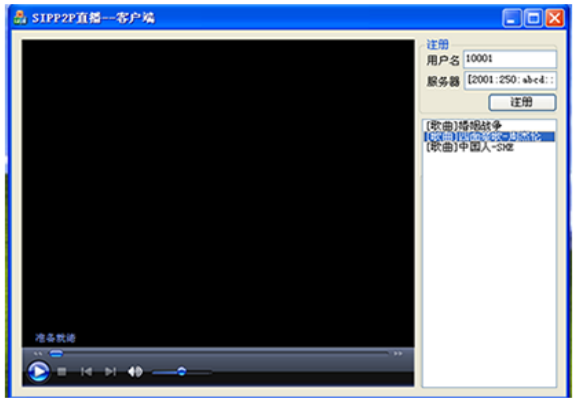
Background and motivation

- **SIP6: An IPv6 based large scale SIP platform with more than 15000 users from various universities in China**

- **CNGI08: Pre-commercial large scale communication applications based on wireless broadband**

Current Applications

- **Voice(both PC and PDA), IM, PC2Phone, Video, SIP P2P, File sharing**



SIP P2P

- **P2P video using SIP platform**

Registration Users

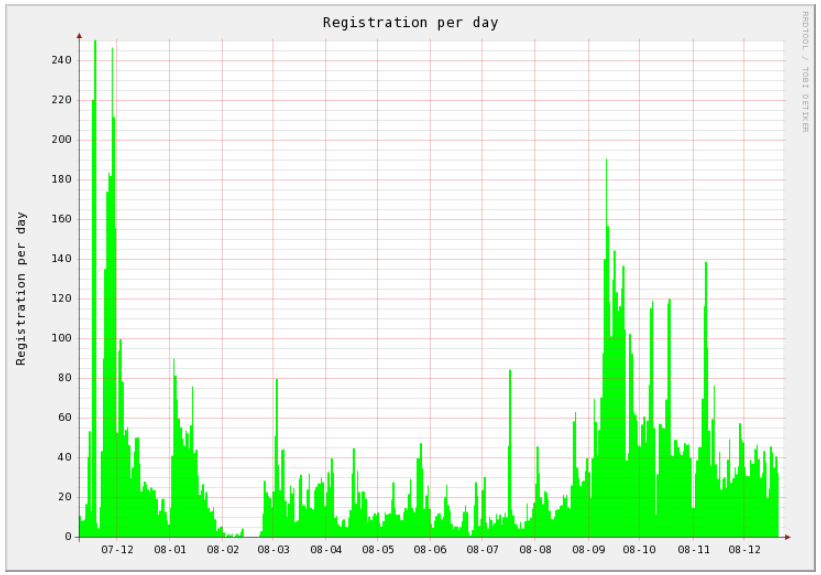
- **More than 14,000 users from different universities in China**
- **No advertisement yet**

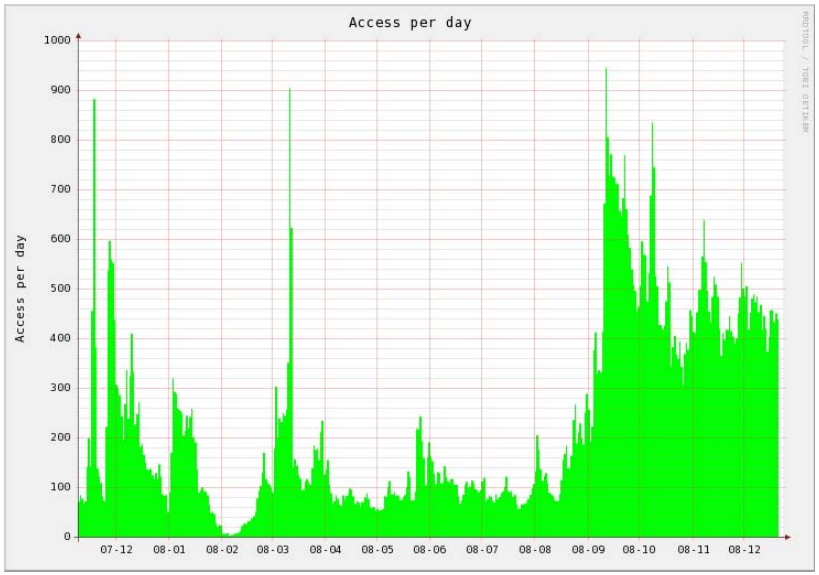
SIP - Microsoft Internet Explorer

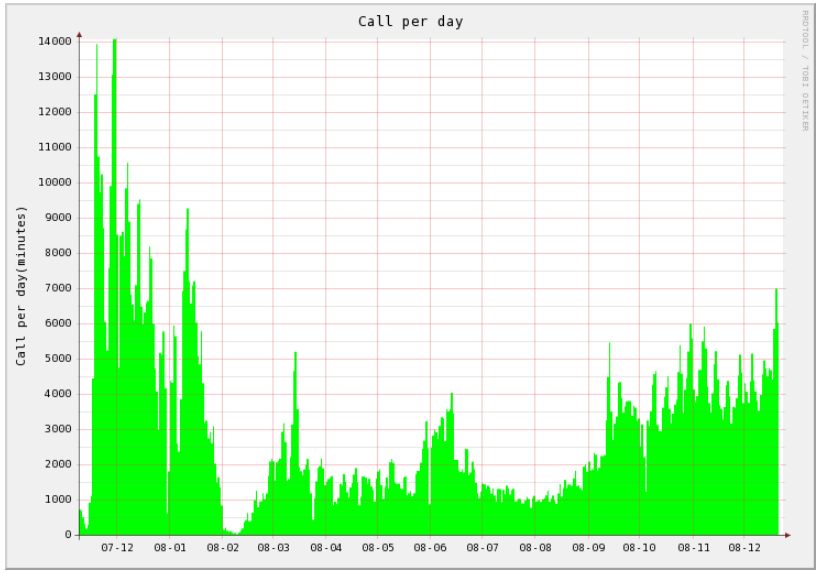
http://noc.sip6.edu.cn/cgi-bin/demo4_school.pl

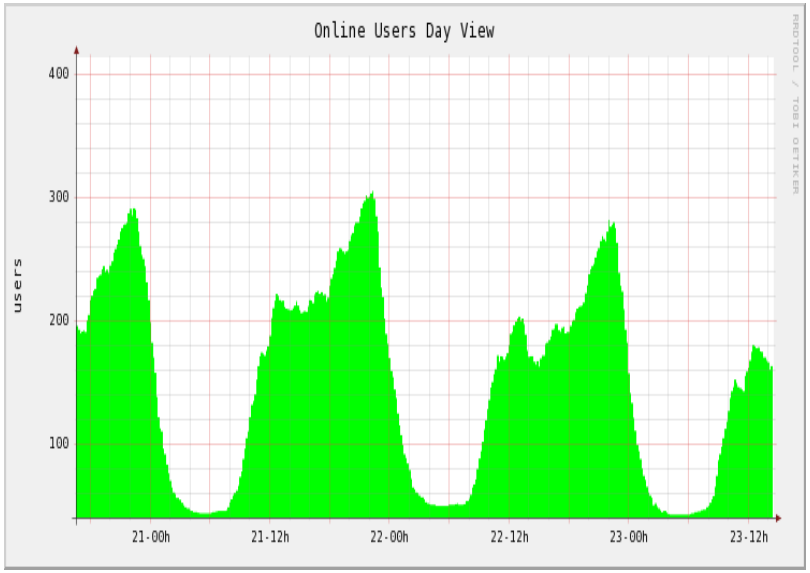
学校	用户数
用户总数	14726
西南大学	2902
南京农业大学	1171
上海交通大学	926
北京交通大学	866
浙江大学	781
清华大学	757
河南科技大学	659
北京工业大学	540
黄石理工学院	478
桂林医学院	414
中科院	378
北京邮电大学	313
北京师范大学	294
北京化工大学	200
河海大学	185
南开大学	95
山东大学	94
中国石油大学	93
华东理工大学	92
重庆大学	90
中国科技大学	85
华南理工大学	81
北华大学	78
电子科技大学	77
南京大学	72
华中科技大学	58
北京大学	55
合肥工业大学	45
苏州大学	45
淮海工学院	44

Usage graphs



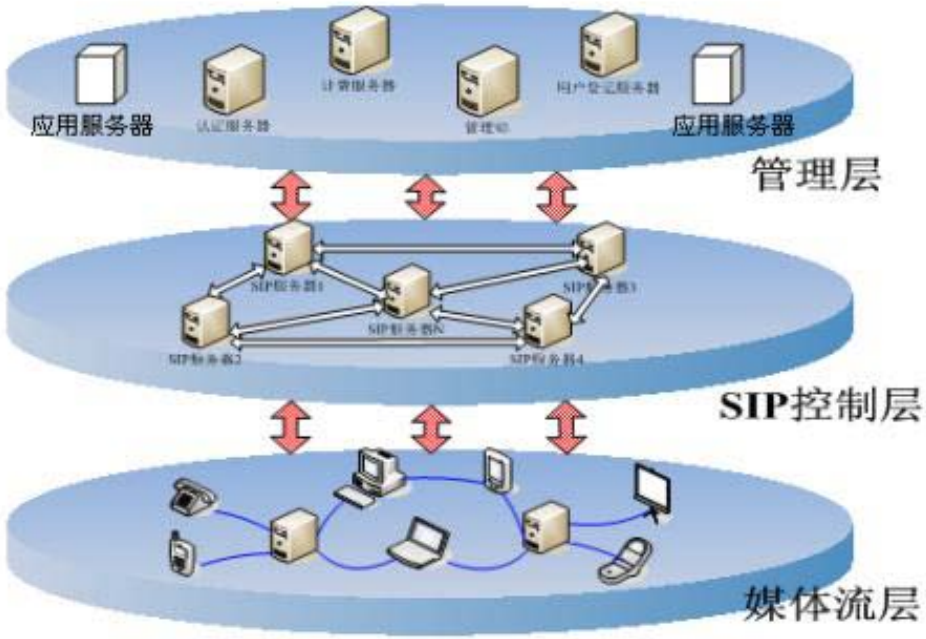


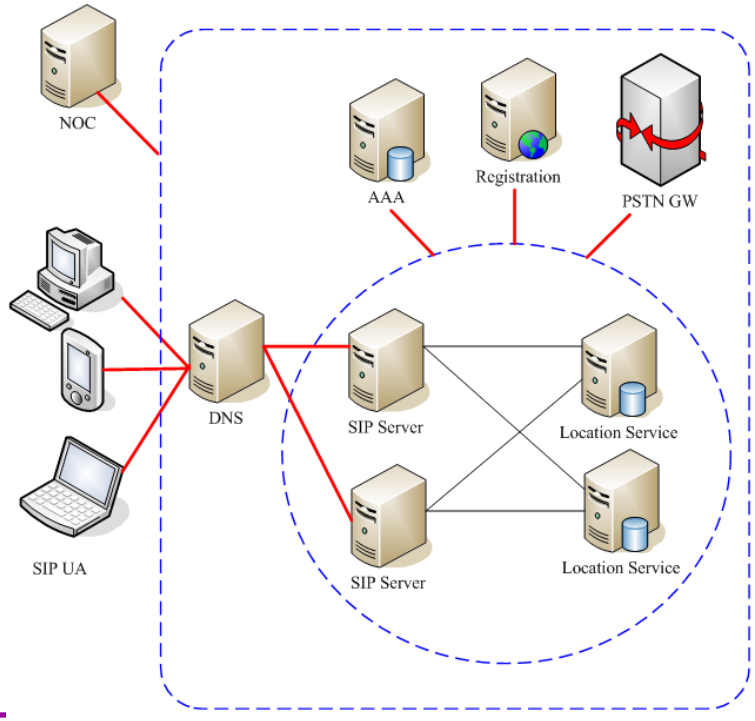




Current system structure

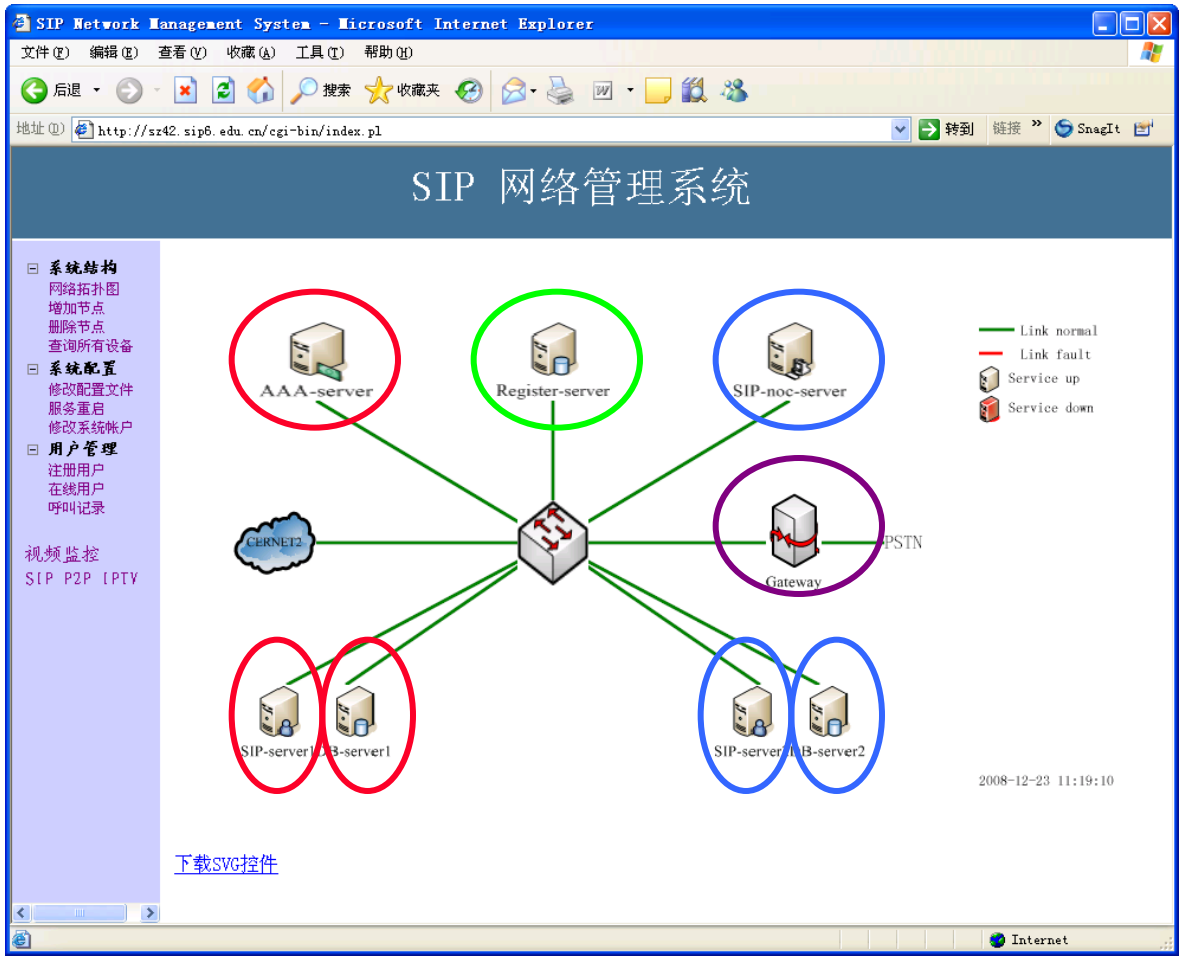
- **6+3:**
  - **6(Signal Control Layer): 3 SIP servers+3 location servers**
  - **3: Authentication server, user registration server, NOC server**
- **DNS SRV for load balance and full backup of DB for high availability**





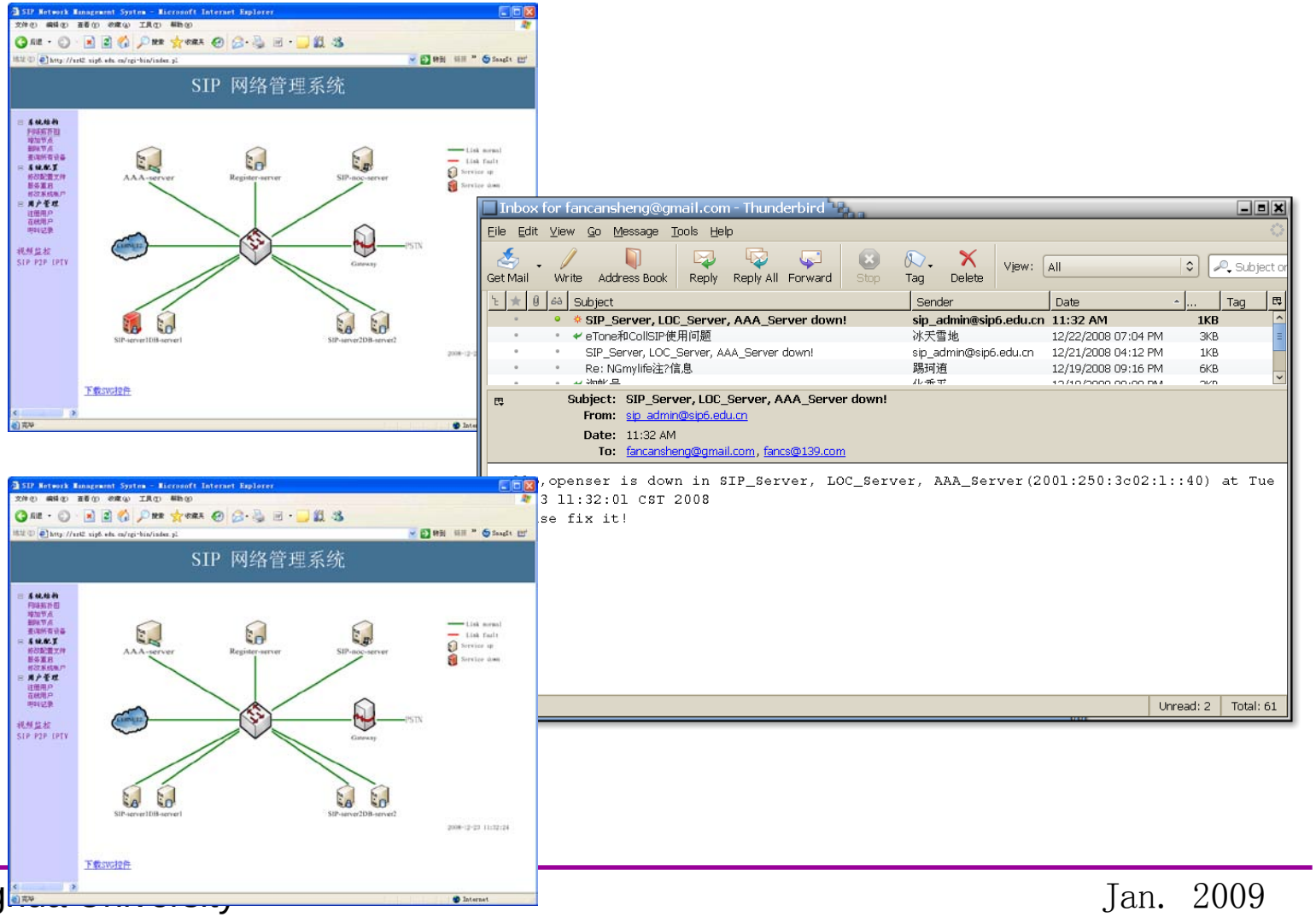
SIP Management System

- **System Topology**



SIP Management System

- **Failure alarm and self-healing**



Huge data for analysis

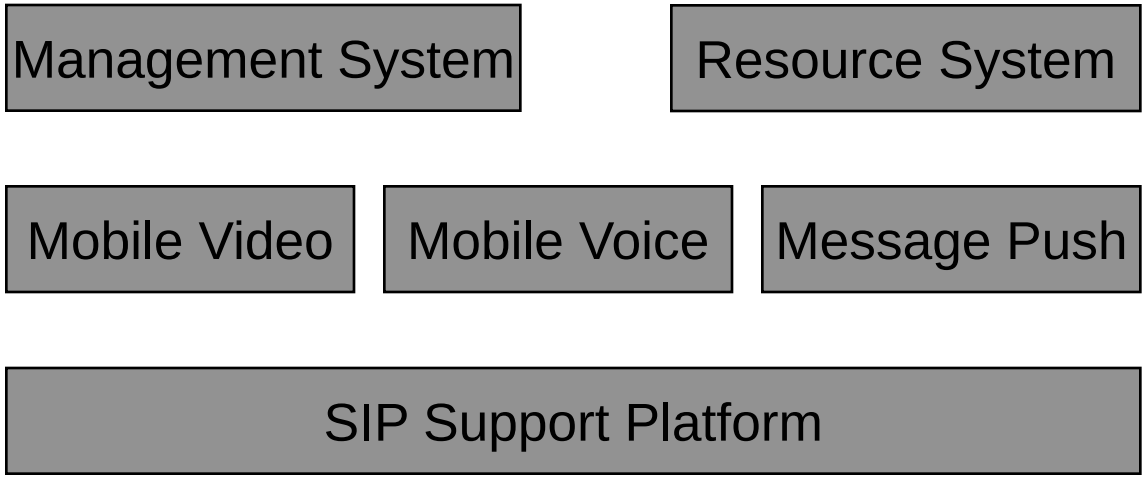
- **More than 919,984 call records from April 2007**
- **More than 3,197,145 SIP message records from April 2007**
- **More than 3,012,132 online records from September 2008**
- **More than 5G to explore**

- **Call pattern analysis, online behavior analysis, server load balance analysis, resource usage analysis…**

CNGI08

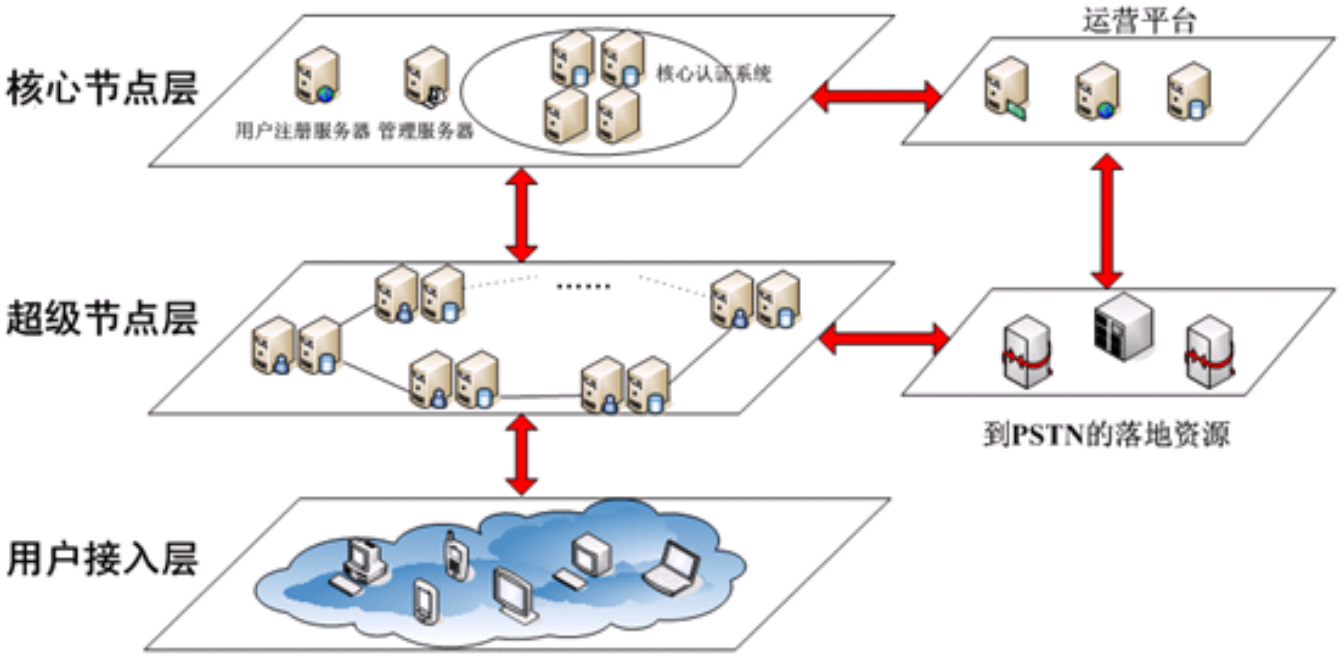
- **Mobile voice: including PC2PC and PC2Phone applications which cost more than 13,000 RMB each month**
- **Mobile video: a SIP P2P based video distribution system. Good for maintenance and copyright protection**
- **Message push: valuable messages will be pushed to the SIP clients to save users' time. Emails, subscribed BBS posts, campus announcements and etc. will be included.**

Structure


Management System
Resource System
Mobile Video
Mobile Voice
Message Push
SIP Support Platform

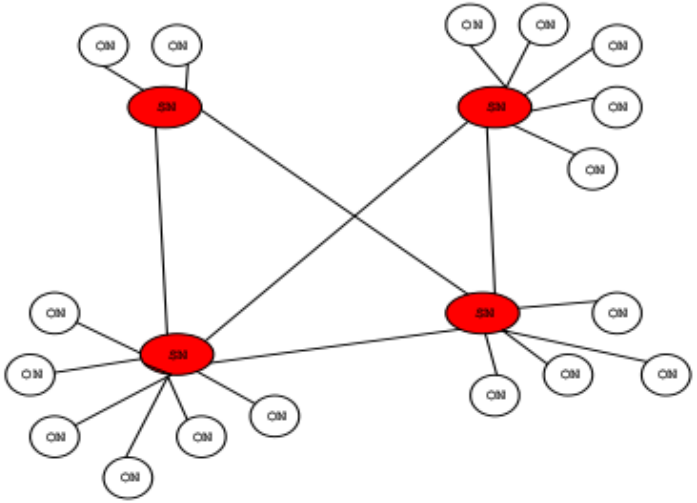
Structure

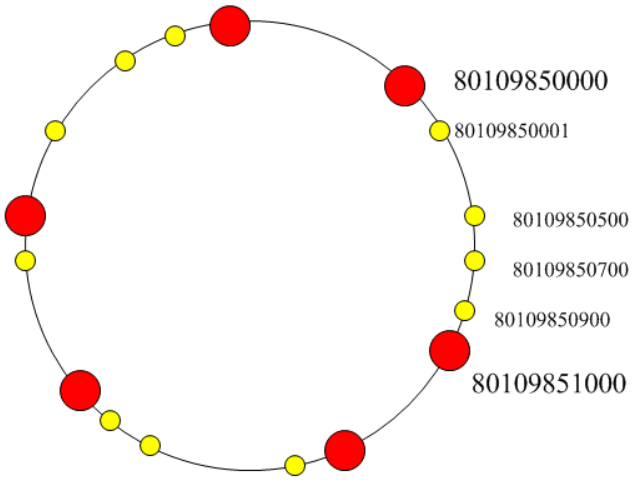
- **Core node layer: for central authentication and management**
- **Super node layer: SIP proxies as access network for end users**



Structure

- **P2P SIP overlay network: SIP proxy server as super nodes**
- **An efficient hash function for efficient message routing**





Thank You