**CNNIC**

# IPv6 In China

**CNNIC — Wendy Zhao**

# *Contents*
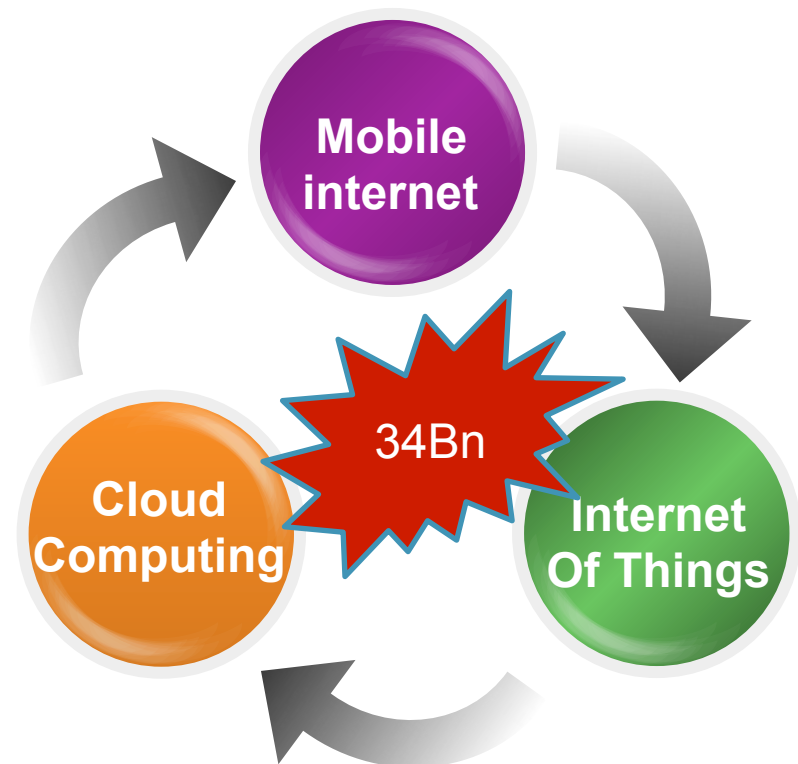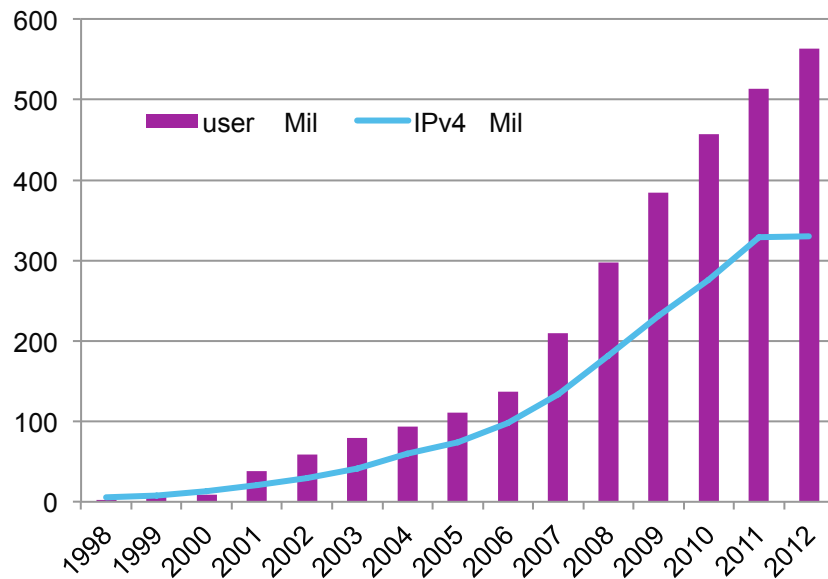
Local network status

State driving

Industry support

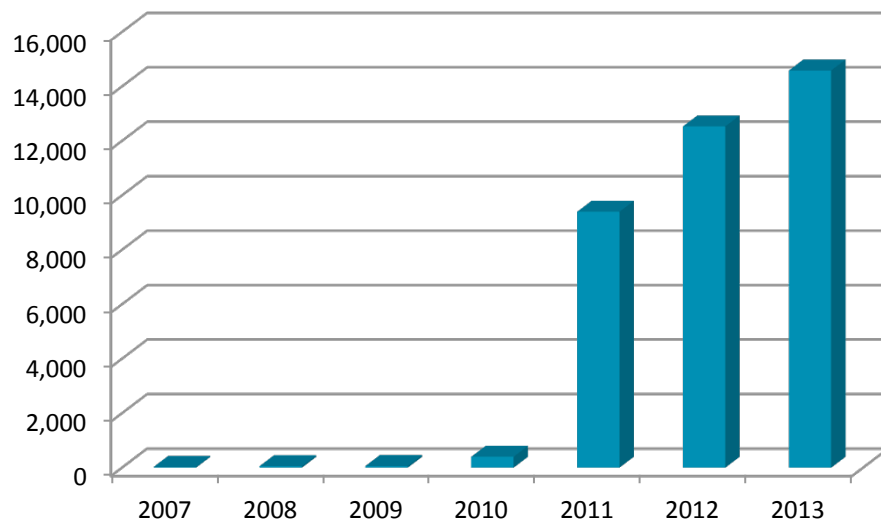Network Deployment

Future Challenge

# Network Status

❖ Severe asymmetry of regional development and the shortage of address resources

# IPv6 Address

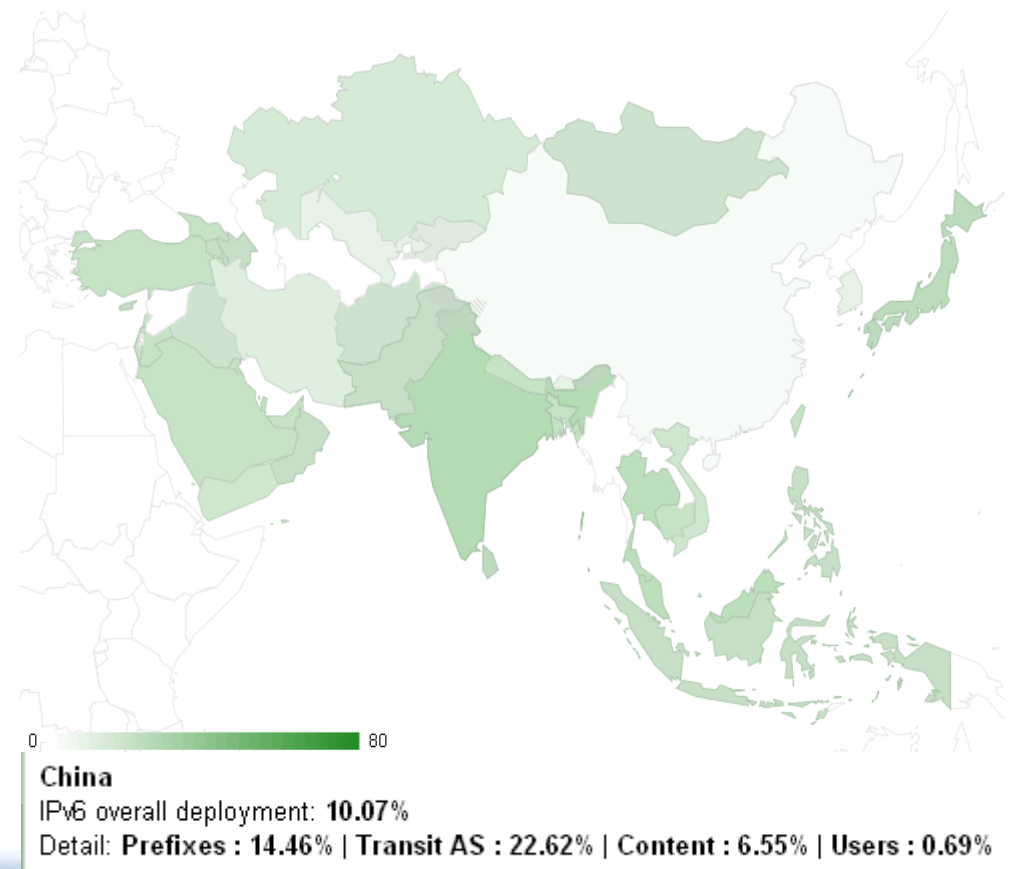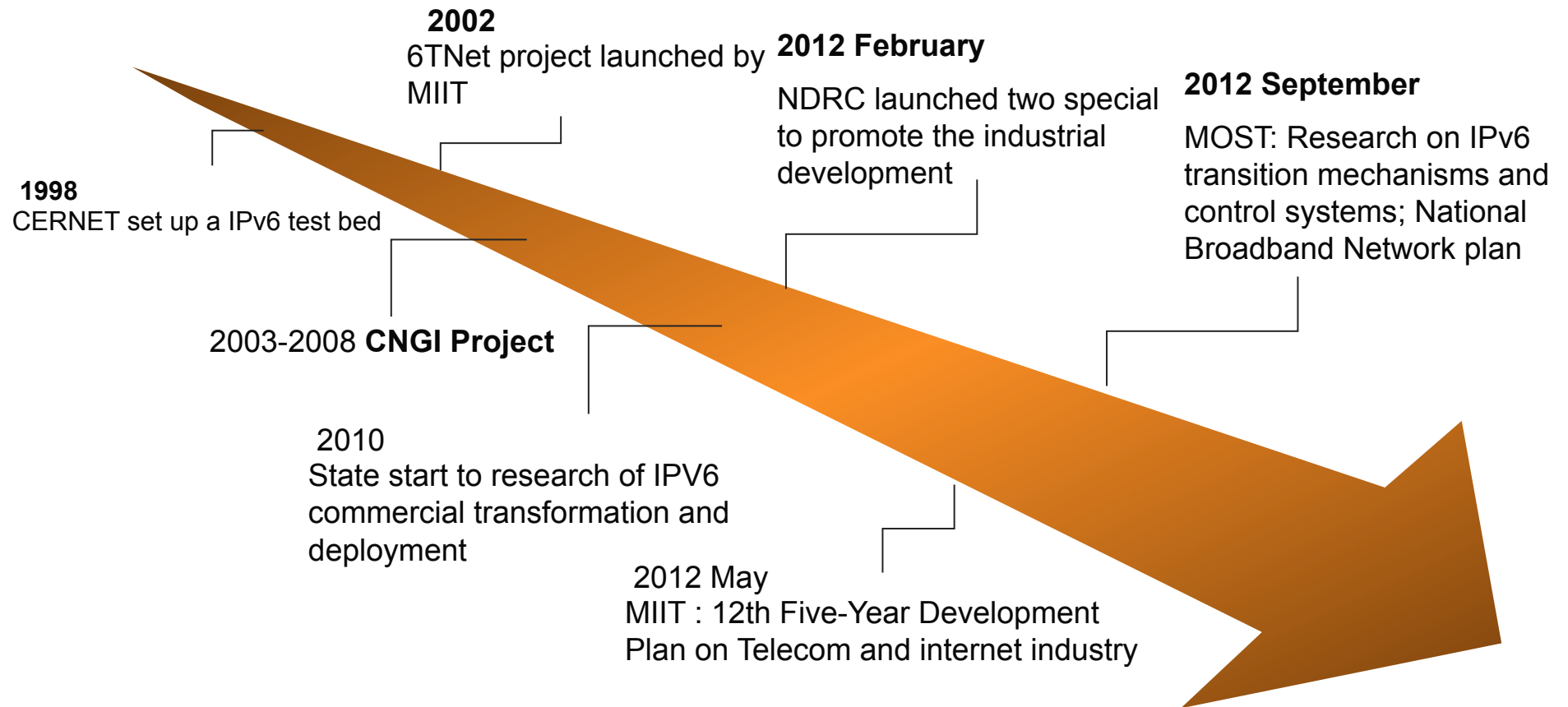Main internet operators start to apply big blocks of IPv6 in 2011, the addresses of three commercial operators has reached /20 each,

| Organization | IPv6 block (/32) |
|---|---|
| China Telecom | 4098 |
| China Unicom | 4098 |
| China Mobile | 4098 |
| CNNIC members | 2251 |

**China**
IPv6 overall deployment: **10.07%**
Detail: **Prefixes : 14.46% | Transit AS : 22.62% | Content : 6.55% | Users : 0.69%**

# *State Driving*

**2002**
6TNet project launched by MIIT

**2012 February**
NDRC launched two special to promote the industrial development

**2012 September**
MOST: Research on IPv6 transition mechanisms and control systems; National Broadband Network plan

**1998**
CERNET set up a IPv6 test bed

2003-2008 **CNGI Project**

2010
State start to research of IPV6 commercial transformation and deployment

2012 May
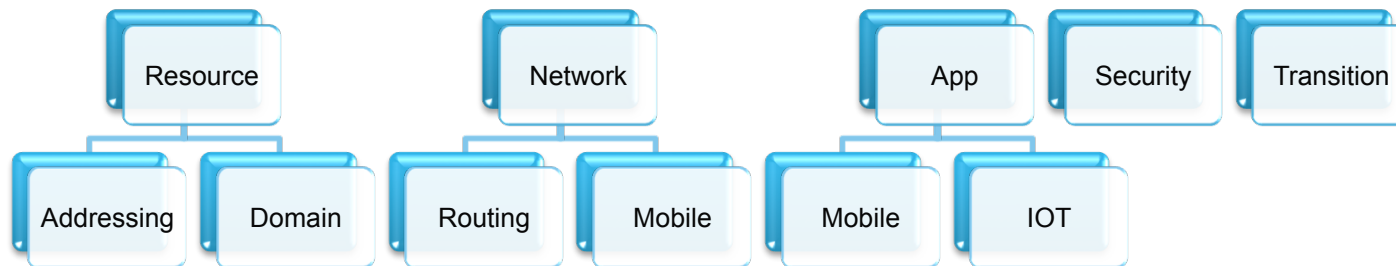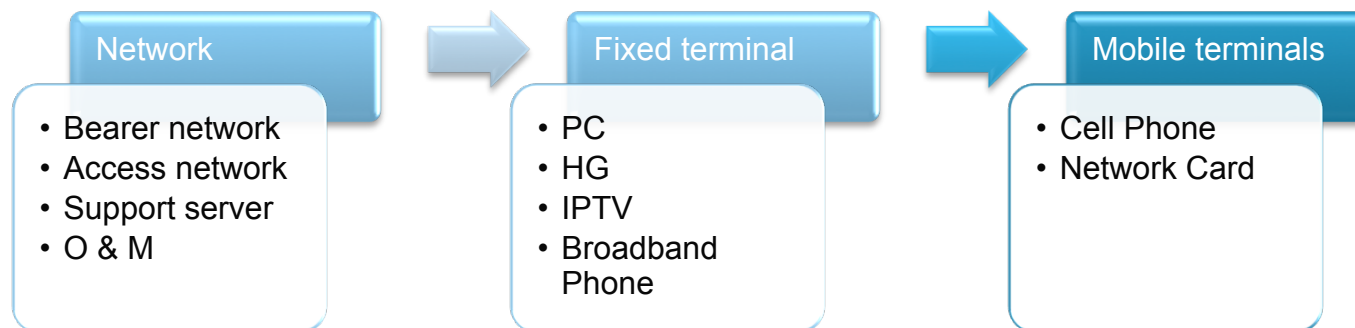MIIT : 12th Five-Year Development Plan on Telecom and internet industry

# Industry Support

**Standard**：combining with domestic construction need to develop a range of equipment technical standards and testing standards

| Resource | Network | App | Security | Transition |
|---|---|---|---|---|
| Addressing   Domain | Routing   Mobile | Mobile   IOT | | |

**Equipment**：three aspects of networks, fixed and mobile terminals

**Network** → **Fixed terminal** → **Mobile terminals**

**Network**
- Bearer network
- Access network
- Support server
- O & M

**Fixed terminal**
- PC
- HG
- IPTV
- Broadband Phone

**Mobile terminals**
- Cell Phone
- Network Card

# Service Platform

Service Platform including web, search, P2P, basic service and VAS of operators

| Type | Service | Support status |
|------|---------|----------------|
| web, search | browsing, email | qq, baidu, cstnet.cn |
| P2P | IM, Chat, Download, Video | qq, cstnet |
| Basic service | Phone, data transmission | unsupported |
| VAS | multimedia, Music download | unsupported |



Few contents and applications are the bottle neck of deployment

# *NS Lookup*

```
;; QUESTION SECTION:
;ipv6.baidu.com.                    IN      AAAA

;; ANSWER SECTION:
ipv6.baidu.com.        7200   IN     AAAA   2400:da00::dbf:0:100
```

Ipv6.baidu.com

```
;; QUESTION SECTION:
;www.qq.com.                    IN      AAAA

;; ANSWER SECTION:
www.qq.com.            7200   IN     AAAA   2402:4e00::b
www.qq.com.            7200   IN     AAAA   2402:4e00::11
www.qq.com.            7200   IN     AAAA   2402:4e00::a
```

www.qq.com

```
;; QUESTION SECTION:
;qq.com.                        IN      AAAA

;; AUTHORITY SECTION:
qq.com.                515    IN     SOA    ns1.qq.com.
webmaster.qq.com. 1330914143 3600 300 86400 300
```
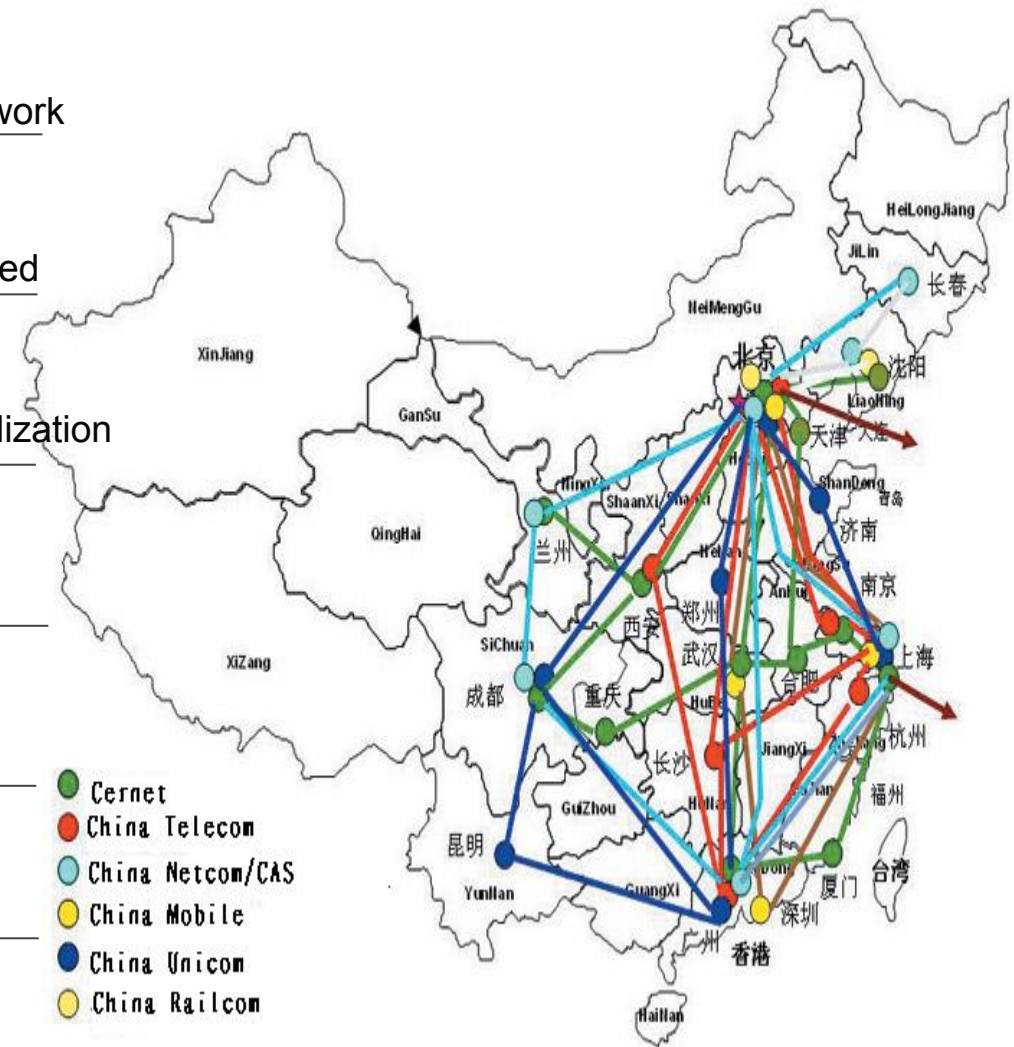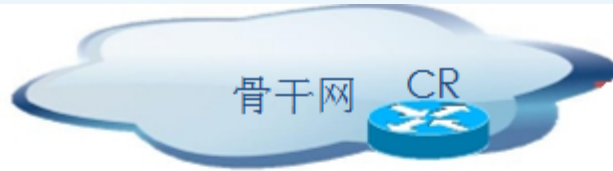
qq.com

# *CNGI*

- built a large-scale NG Internet demonstration network

- Provide a major research and new business test bed

- Promote standards development and the industrialization

- Exemplary application of the results

- Enhance the ability of innovation in the field

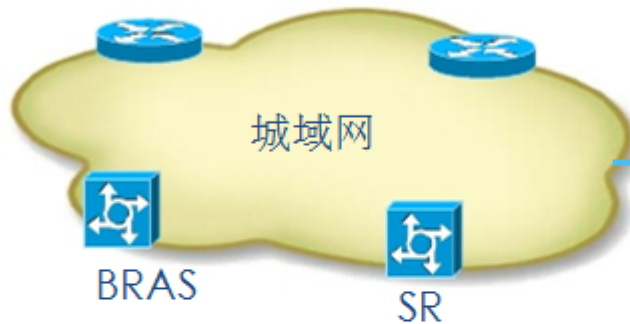- Training a number of Internet professionals

# Commercial Network



骨干网 CR

城域网

BRAS    SR

接入网    交换机

DSLAM    OLT

HG

CR: Mainstream devices support IPv6 routing protocols, most need SW update, small part need hardware replacement
DNS: Mainstream DNS SW support AAAA and A6 record adding and query

BRAS/SR: Mainstream devices support IPv6 config and access, some part need SW update
PDSN: Mainstream devices almost support mobile, need SW update

Range of access network equipment, support condition is complex

HG: Almost all support Ipv6, replacement cost more cost and workload
End: Client side of the gateway before 2010 does not support dual stack, mobile terminal chip does not support
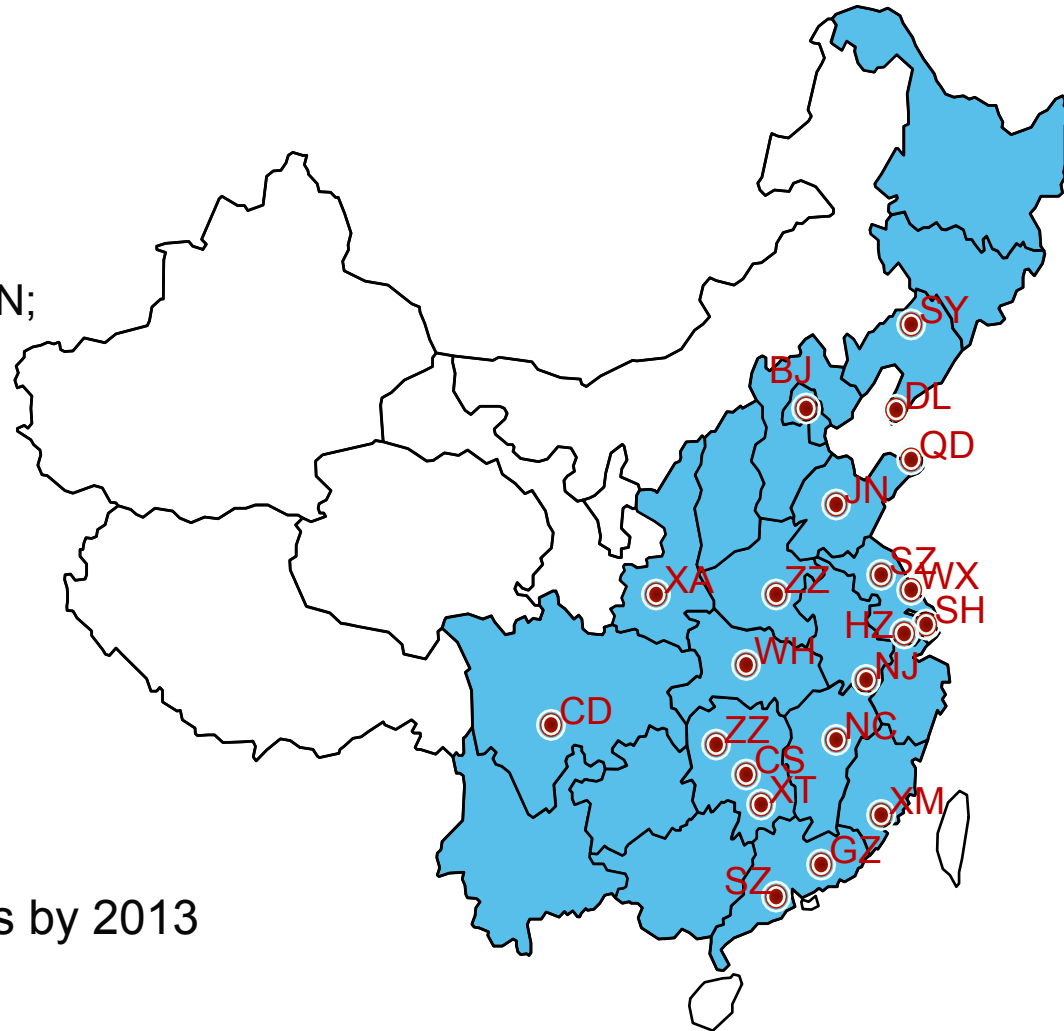
# Commercial Network

**Pilot Cities**

**China telecom**: 14 cities on MAN and AN;
　　　　11 cities on CP/SP/IDC
**China Unicom**: 10 cities on MAN and
　　　　AN ,BSS and IDC
**China Mobile**: 10 fixed network, BSS,
　　　　IDC, IT security

**User Goals**

3 Million users for each operations by 2013

SY
BJ
DL
QD
JN
SZ WX
XA ZZ
HZ SH
WH NJ
CD ZZ NC
CS
XT XM
SZ GZ

# *Future Challenge*

## Return on investment—Transformation of inert

- IPv6 not bring significant gains (different with 2G to 3G
- Today's IPv4 devices and applications more reliable and cheap

## Driving force - Who leveraging IPv6

- Users, applications are in IPv4 network
- Users concerns about the applications; ICP concerns the user and market
- Regulators concerns about security

## Technical issue

- IPv6 and IPv4 is not compatible
- No ideal smooth evolution program

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# Thank You !