# IPv6 in China

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# Internet Development

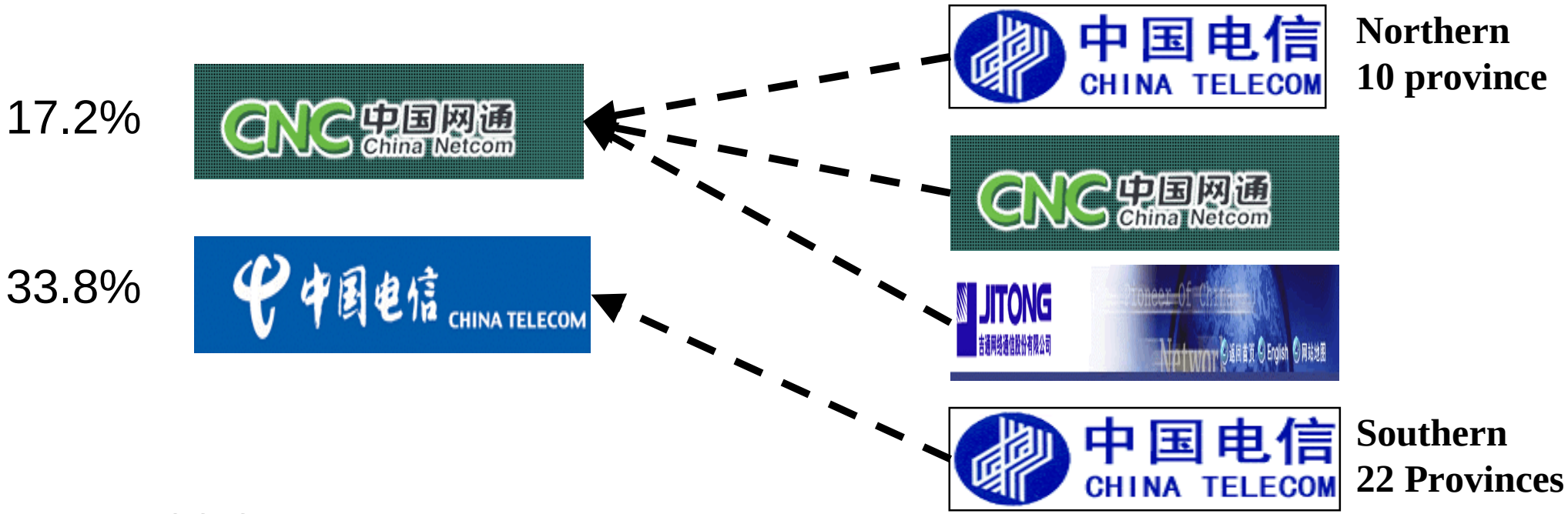
- China's Internet Situation
  - 39.8 Million subscribers, 277,100 WWW websites
  - International bandwidth over 10G
  - Fast development of domestic enterprise networks
- IP Applications in China's Telecom Networks
  - IP phone
  - IP video system
  - Broadband MAN, FTTx
  - …

# Drivers for China's IPv6 Development 1/3

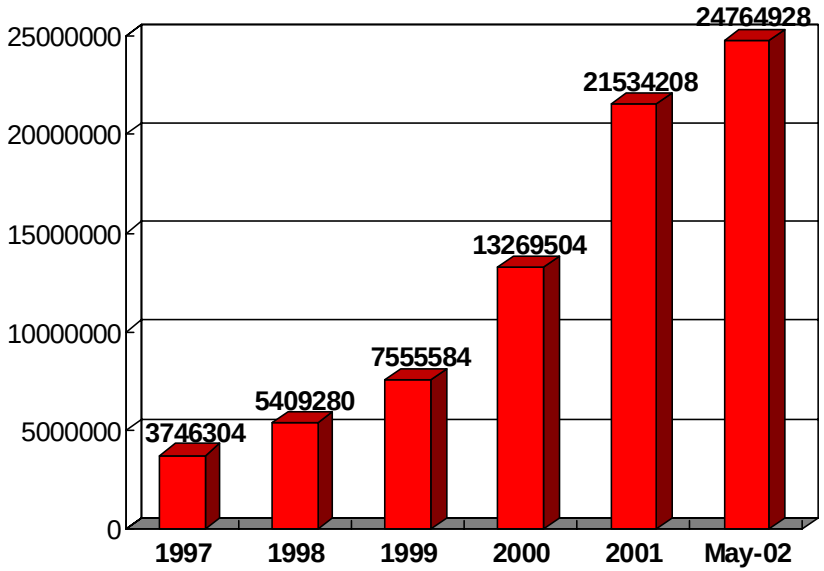
- Big Scale Market
  - Large population base; fast economy growth; great market demand
  - Broadband and mobile communication growing rapidly
  - E-government (with investment of US$ 121 Billion)
- IPv4 Not Enough
  - Internet access service/Roll-out of real-time IP services
  - The largest VoIP network/IP video conference network
  - Real-time mobile services GPRS, CDMA
- Wish IPv6 supports sustained development of IP network market in China

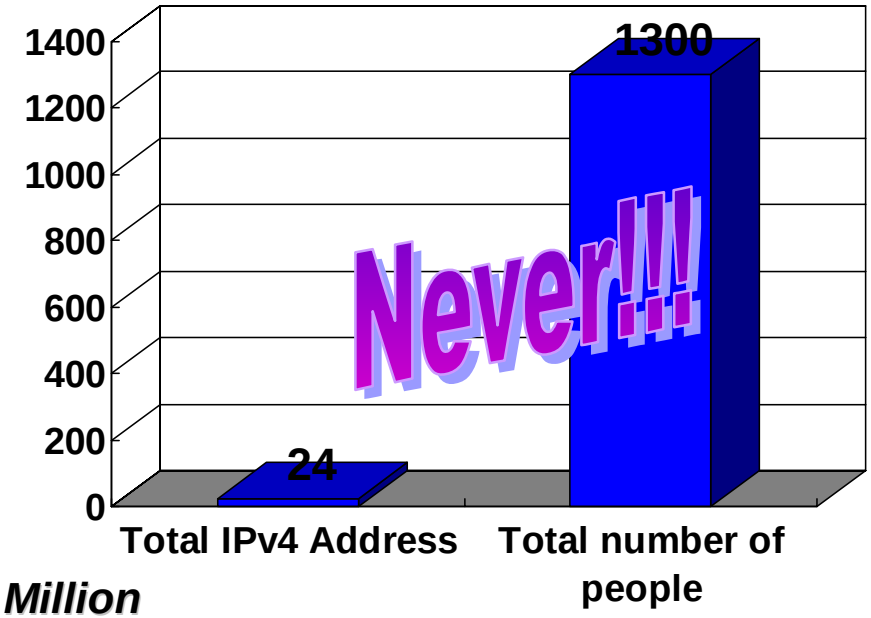
# Drivers for China's IPv6 Development 2/3

- Since none of the present 6 telecom carriers owns a complete national operation network, they need to expand their existing networks adopting new technologies. And IPv6 service network and its technology will be the best solution.



# Drivers for China's IPv6 Development 3/3




*- source from APNIC and ARIN*

# IPv6 Standardization in China

- China's IPv6 standardization process already started
- 9 IPv6 industry standards in process: IPv6 basic protocol, IPv6 network overall requirement, Neighbor discovery protocol, Stateless address auto-configuration, Mobile IPv6, routing protocol( OSPF, BGP4, etc).
- 6 aspects of domestic IPv6 standardization
  - Basic protocols
  - Network system structure & performance
  - Network evaluation method & testing suite
  - Network equipment requirement and testing specification
  - Mobile communication standard
  - IPv6 services & applications standard

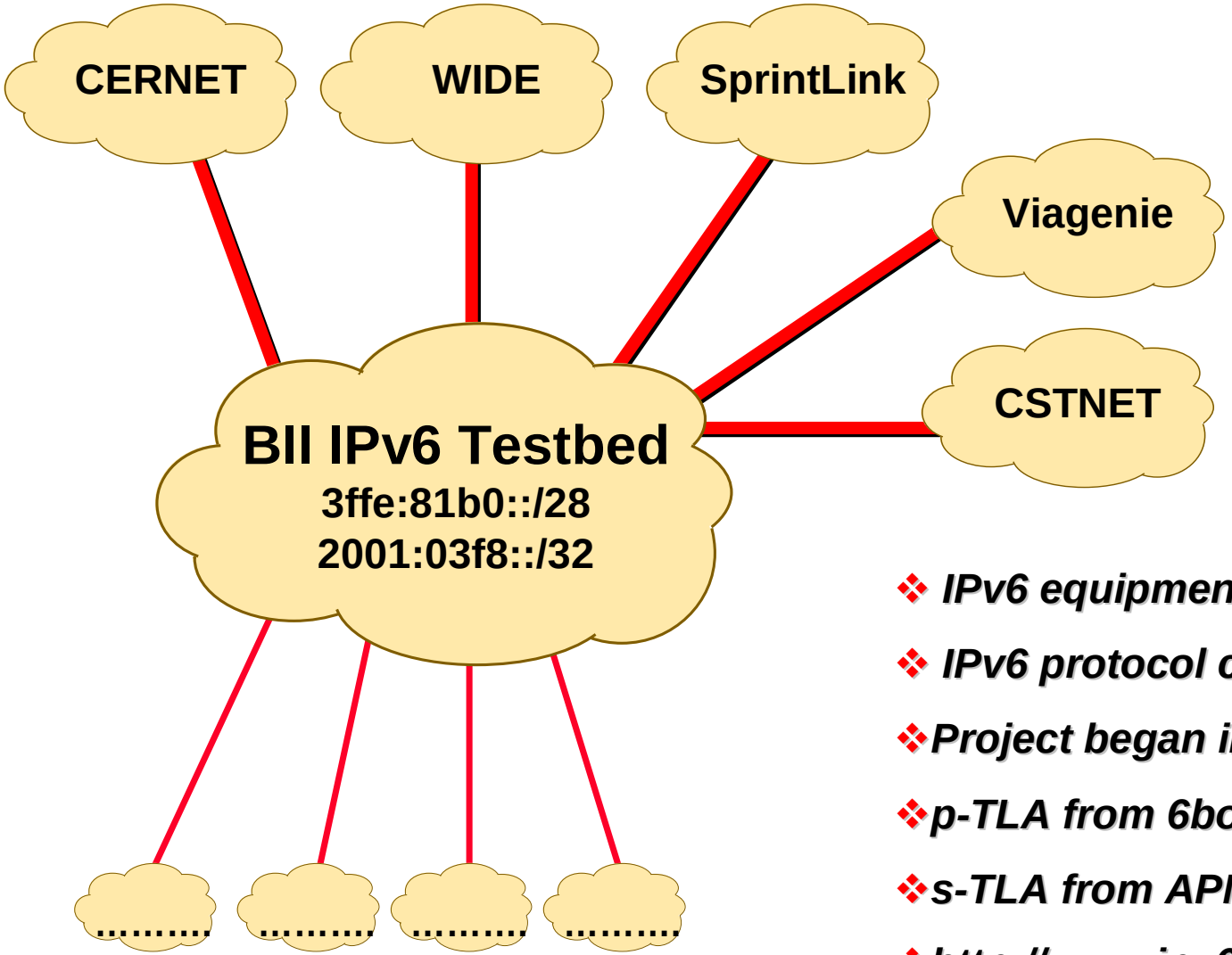
# China's IPv6 Equipment Manufacturing

- Maturity of IPv6 equipment internationally
- Strong capability of equipment R&D and manufacturing in China, with extensive applications of IPv4 products
  - Huawei / ZTE / Jia Xun FH
- Technical continuity and similarity between IPv6 and IPv4 equipments
- Domestic equipment vendors' IPv6 R&D started with governmental support; commercialized IPv6 products to be expected in the near future

# IPv6 Academic Test-bed

- Research on essential technologies for technical orientation
- China's existing IPv6 academic test-beds
  - CERNET
  - CSTNET
  - China Advanced IP Experiment Network
- Objectives for next-phase academic test-bed
  - To strengthen infrastructure network technology R&D
  - To solve NGI practical technical problems
  - To develop related applications on the base of NGI

# IPv6 Commercial Test-bed (1)




- *IPv6 equipment Inter-operability testing*
- *IPv6 protocol conformance testing*
- *Project began in 2000/4*
- *p-TLA from 6bone in 2001/4*
- *s-TLA from APNIC in 2002/7*
- *http://www.ipv6.net.cn*

# DV Transport across BII IPv6 Network

***BUPT, Beijing, China***

***SFC, KEIO Uni. Japan***

DV Camera

IEEE1394
Cable

DV Deck

IEEE1394
Cable

**School of Internet**
**2002/1/18**

DV PDU→IPv6 PDU

IPv6 PDU →DV PDU

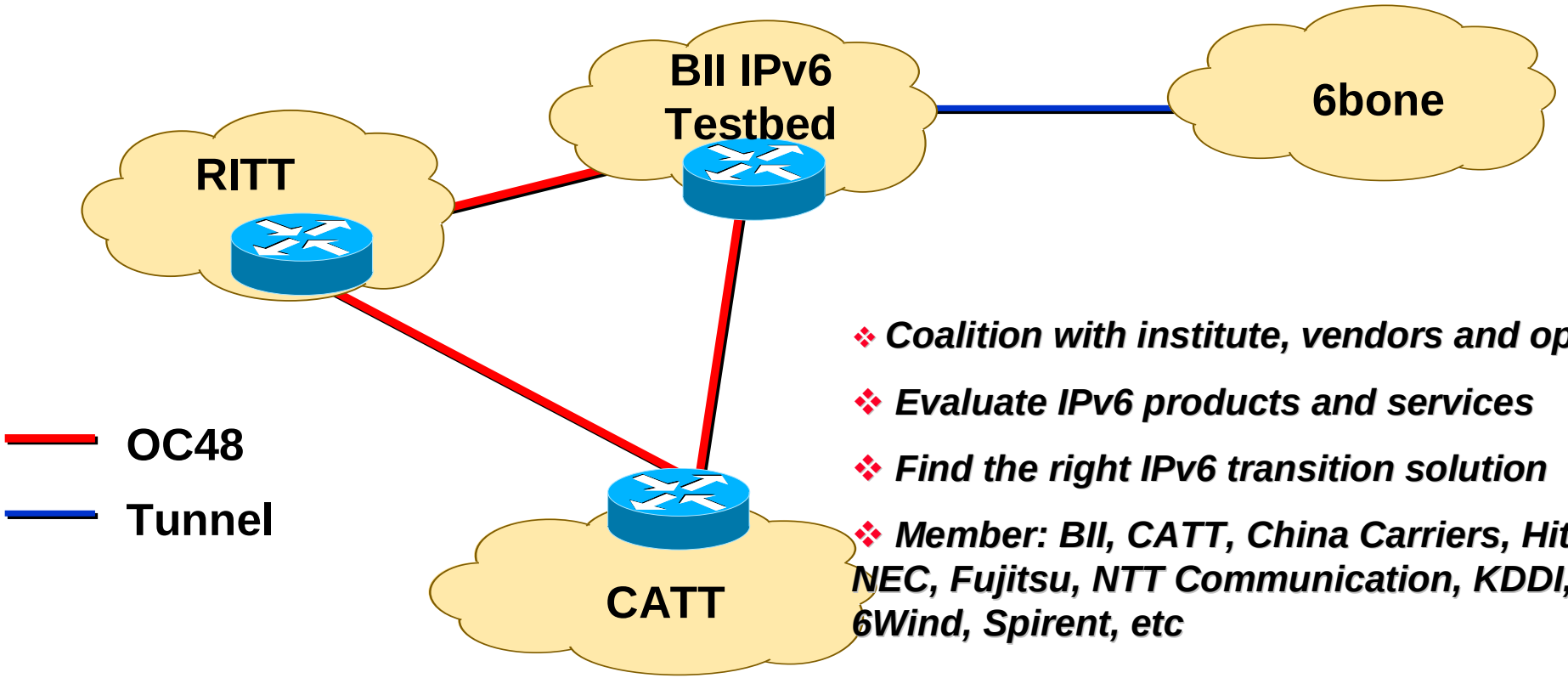
# IPv6 Commercial Test-bed (2)

## *IPv6 Telecom Trial Network(6TNet)*

***CATT: China Academy of Telecommunications Technology***

***RITT: Research Institute of Telecommunication Transmission***

***BII: BII Group Holdings***




- ***Coalition with institute, vendors and operators***
- ***Evaluate IPv6 products and services***
- ***Find the right IPv6 transition solution***
- ***Member: BII, CATT, China Carriers, Hitachi, NEC, Fujitsu, NTT Communication, KDDI, Nokia, 6Wind, Spirent, etc***

# China Carrier's IPv6 Test-bed

- China Telecom
  - IPv6 Lab
  - IPv6 Testbed (first phase)
- China Railcom
  - Beijing, Shanghai, Guangzhou
- China Netcom
  - Beijing, Shanghai, Guangzhou
  - Native IPv6 network

# Summary

- China’s future telecom network will be based on IP.
- China will be one of the first countries to adopt large-scaled IPv6 commercial network.
- IPv6 will start from broadband network.
- Growth in the industry with domestic alliance, international cooperation, and governmental guidance;
- Stress on commercial test-beds, for new economy gaining point