

Introduction of CNGI-CERNET2/6IX Operation

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Outline

Topology

Routing

Advanced Services

Traffic

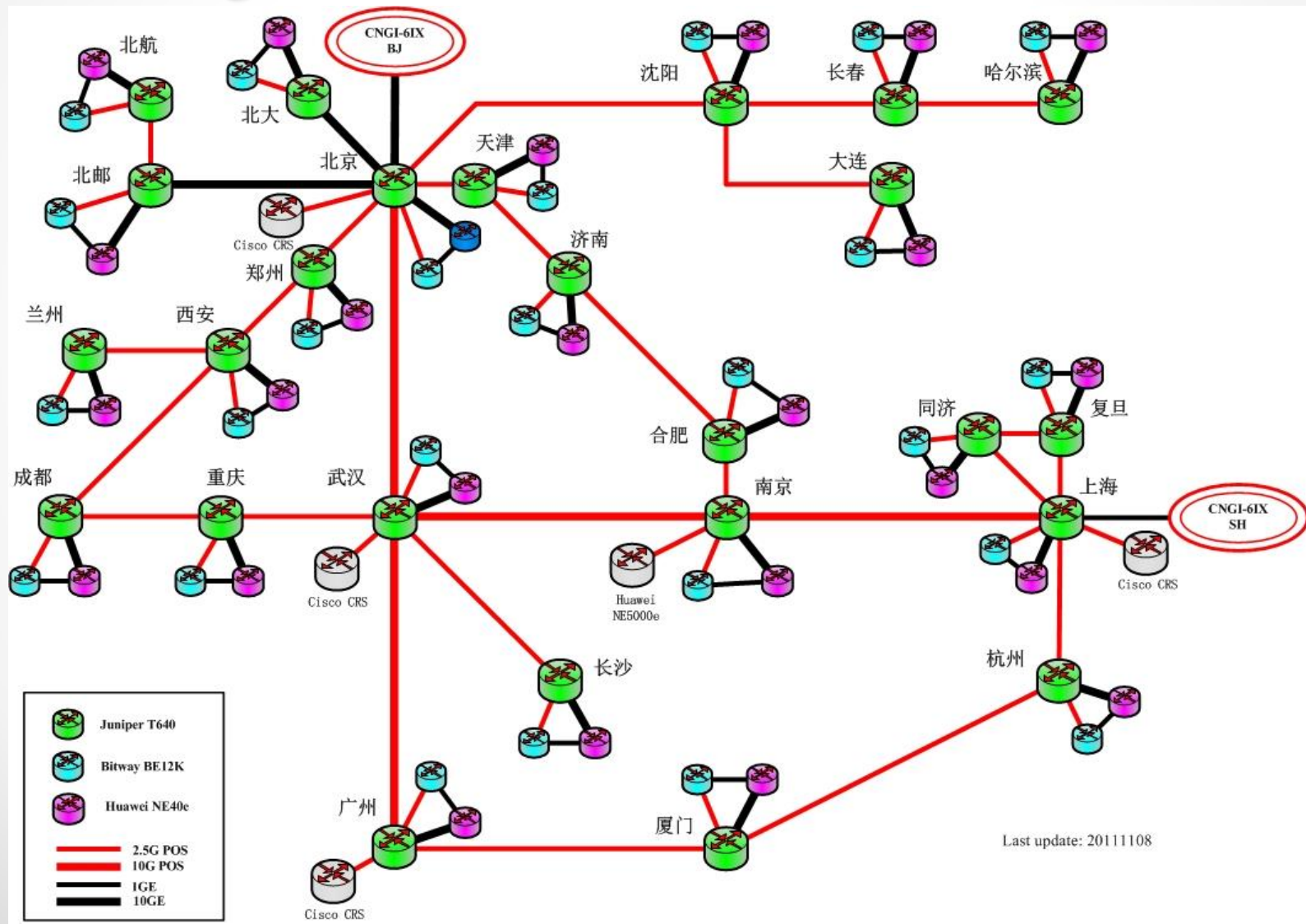
NMS

Topology

- CNGI-CERNET2
- CNGI-6IX

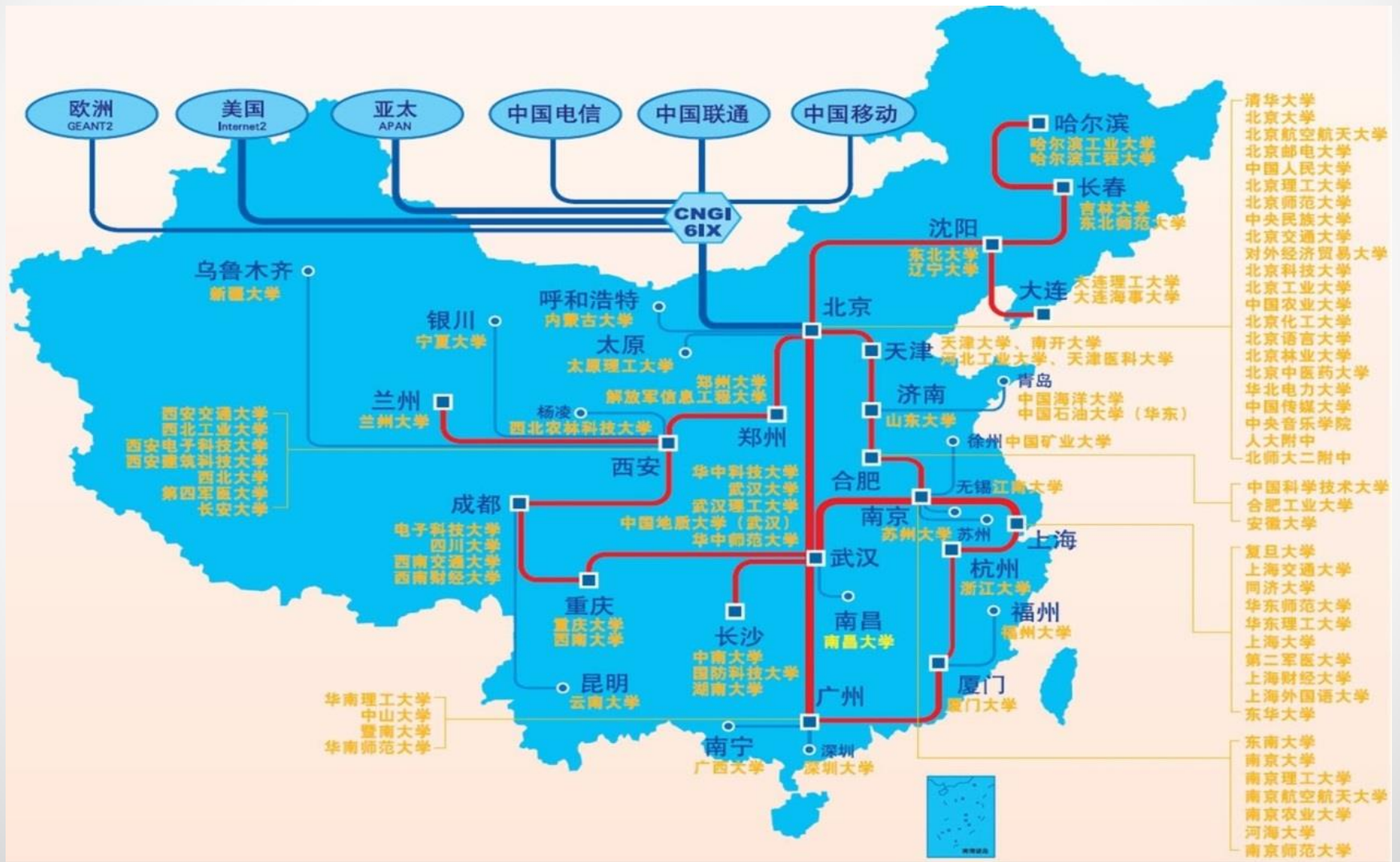
CNGI-CERNET2

Largest Pure IPv6 Internet Backbone



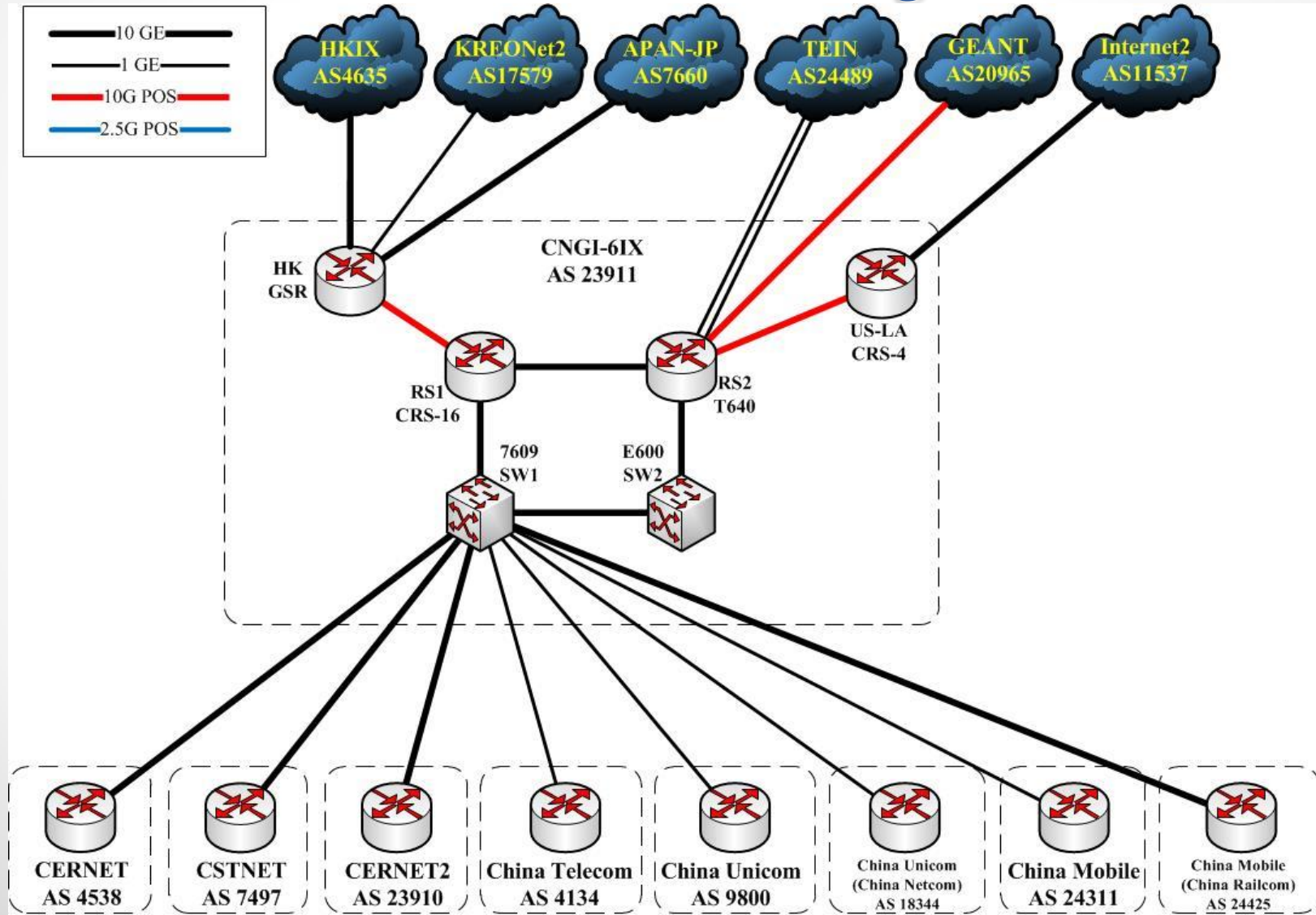
100 Customer Networks

(Funded by CNGI Project)



CNGI-6IX

National IPv6 Exchange Center



CNGI-6IX Equipment

(Tsinghua University, Beijing)



CNGI-6IX Equipment

(MEGA-iAdvantage, Hong Kong)

- CNGI-6IX core router
 - Cisco GSR



CNGI-6IX Equipment

(Coresite, Los Angeles)

- CNGI-6IX core router
 - Cisco CRS

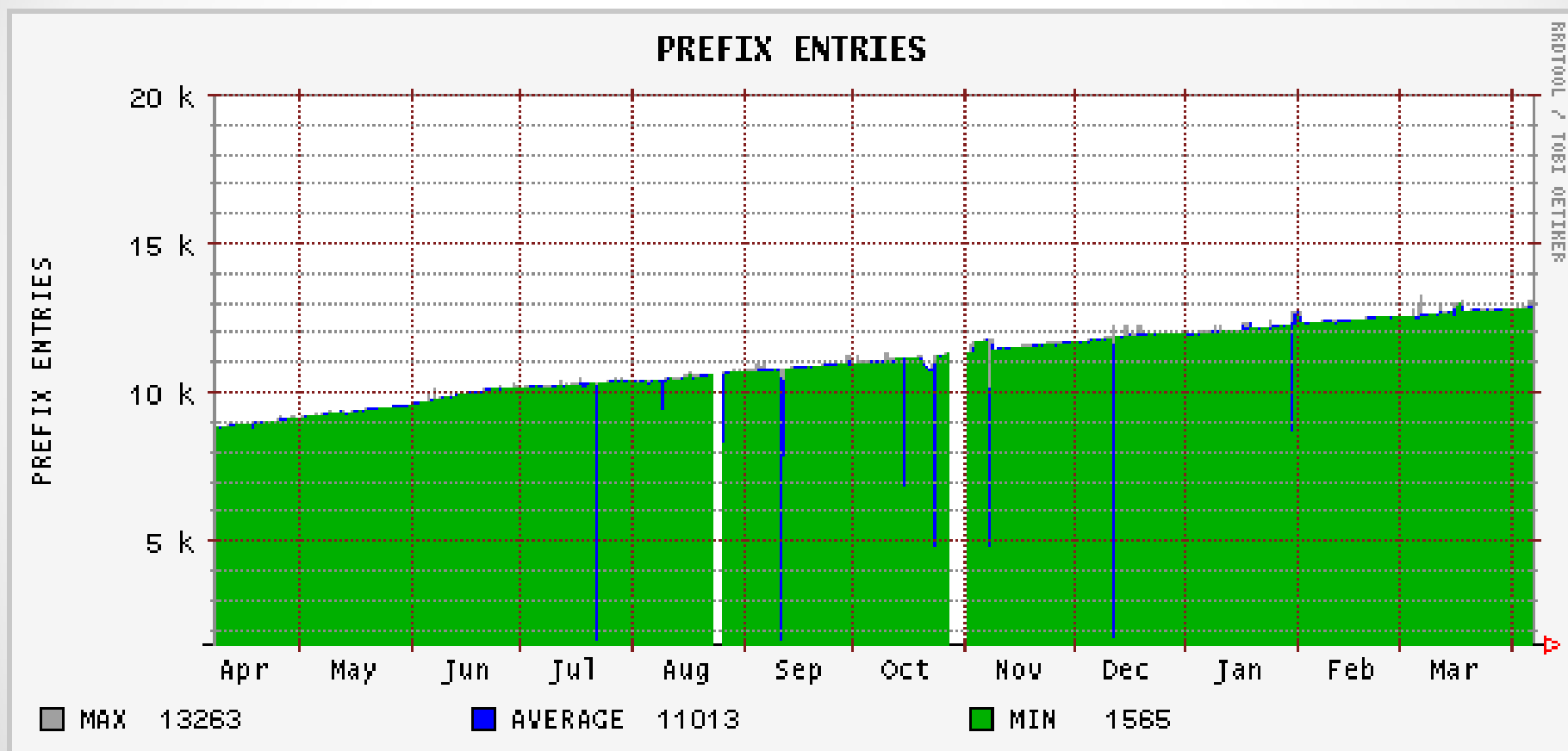


Routing

- **CNGI-6IX**

- Open to receive all the IPv6 prefixes from CNGI participants, domestic peers and external peers
- Conservative to advertise IPv6 prefixes based on agreed peering policy
 - No transit service for external peers
 - Except for BJ-LON's backup for TEIN-EU traffic
- Community-based
- Mutual transit backup among CNGI-6IX and GEANT/Internet2 over BJ-LON & BJ-LA links

CNGI-CERNET2 IPv6 Prefix (Yearly Graph)



CNGI Participants

- CERNET2 (AS23910)
- China Telecom (AS4134)
- China Unicom (AS9800 & AS18344)
- China Mobile (AS24311 & AS24425)

Domestic Peers

- CERNET (AS4538)
- CSTNET (AS7497)
- NSFCNet (AS9406)
- CJ-IPv6 (AS23912)
- Google-China (AS24424)

External Peers

- GEANT (AS20965)
- Internet2 (AS11537)
- ESnet (AS293)
- NLR (AS19401)
- TransPAC (AS22388)
- TEIN (AS24489)
- APAN-JP (AS7660)
- KREONet2 (AS17579)
- HK-IX2 (AS4635)
- Google (AS15169)
- Hurricane (AS6939)
- Cable & Wireless (AS1273)
- ...

Advanced Services

- Multicast
- MPLS
- P2P Service

Multicast

- IPv6 Multicast BGP peering can be enabled on demand
- IPv6 ASM (embedded-rp) and SSM are all supported
- IPv6 Multicast BGP peerings among domestic and external peers have been activated

MPLS

- **Intra-AS**

- MPLS/LDP is activated inside CNGI-6IX domain

- **Inter-AS**

- Option-C is preferred solution
 - IPv4 /32 labeled-unicast routes are exchanged among CNGI-6IX, CERNET2 and TEIN

MPLS

- **MPLS/L2VPN service statistics**
 - 2.5G virtual link: 3
 - 1G virtual link
 - Native: 2
 - VLAN: 15

P2P Service

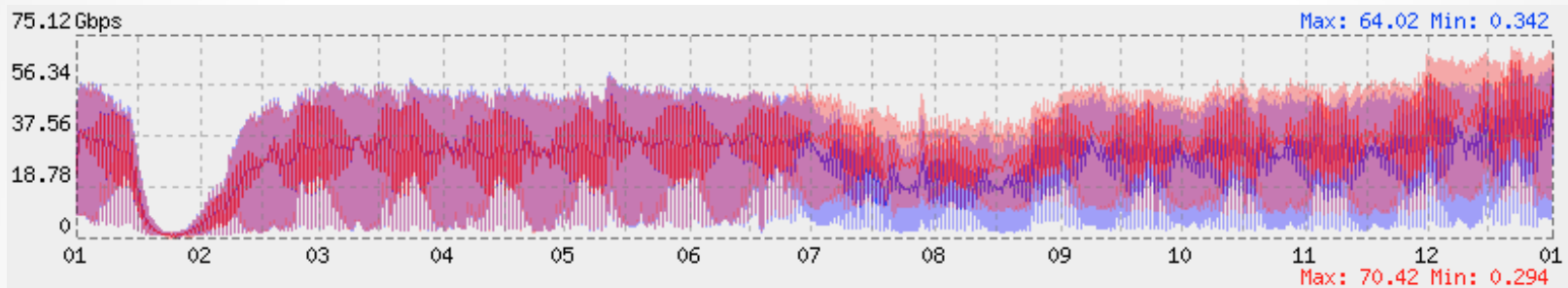
- **BJ-LON 10G link**
 - 5G for IP service
 - 5G for P2P service (lightpath)
 - Feasibility study on backup solution (via BJ-LA 10G link) for manually configured P2P service is underway
 - Feasibility study on automatic P2P service deployment is underway

Traffic

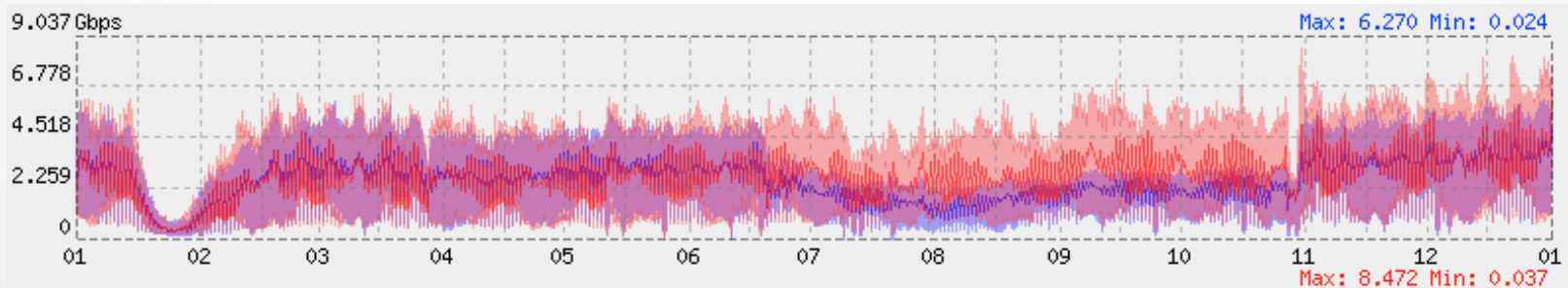
- **CNGI-CERNET2**
- **CNGI-6IX**

CNGI-CERNET2

(Traffic Graph in 2012)



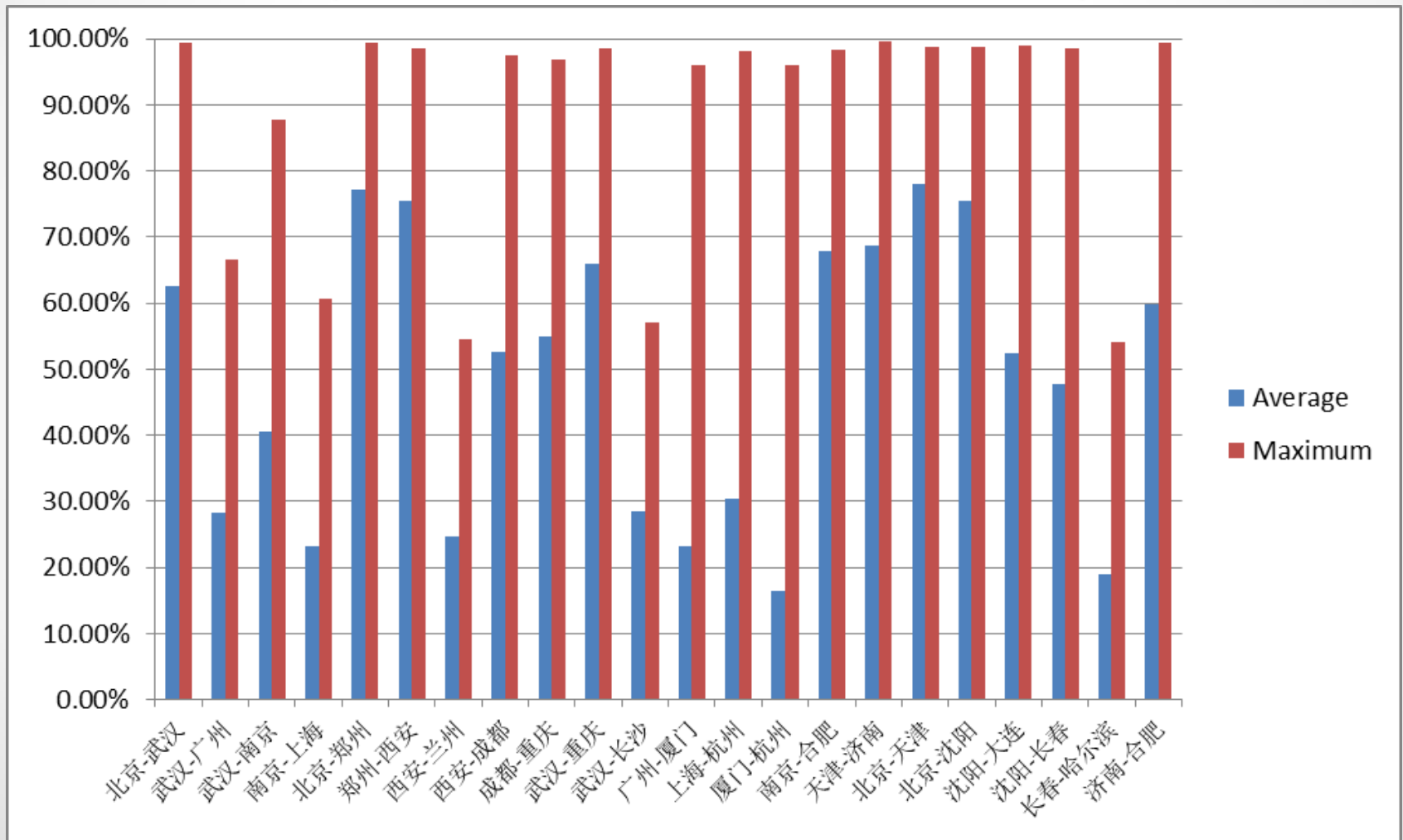
Internal traffic (core router \rightleftharpoons edge router)



External traffic (core router \rightleftharpoons external peer)

CNGI-CERNET2

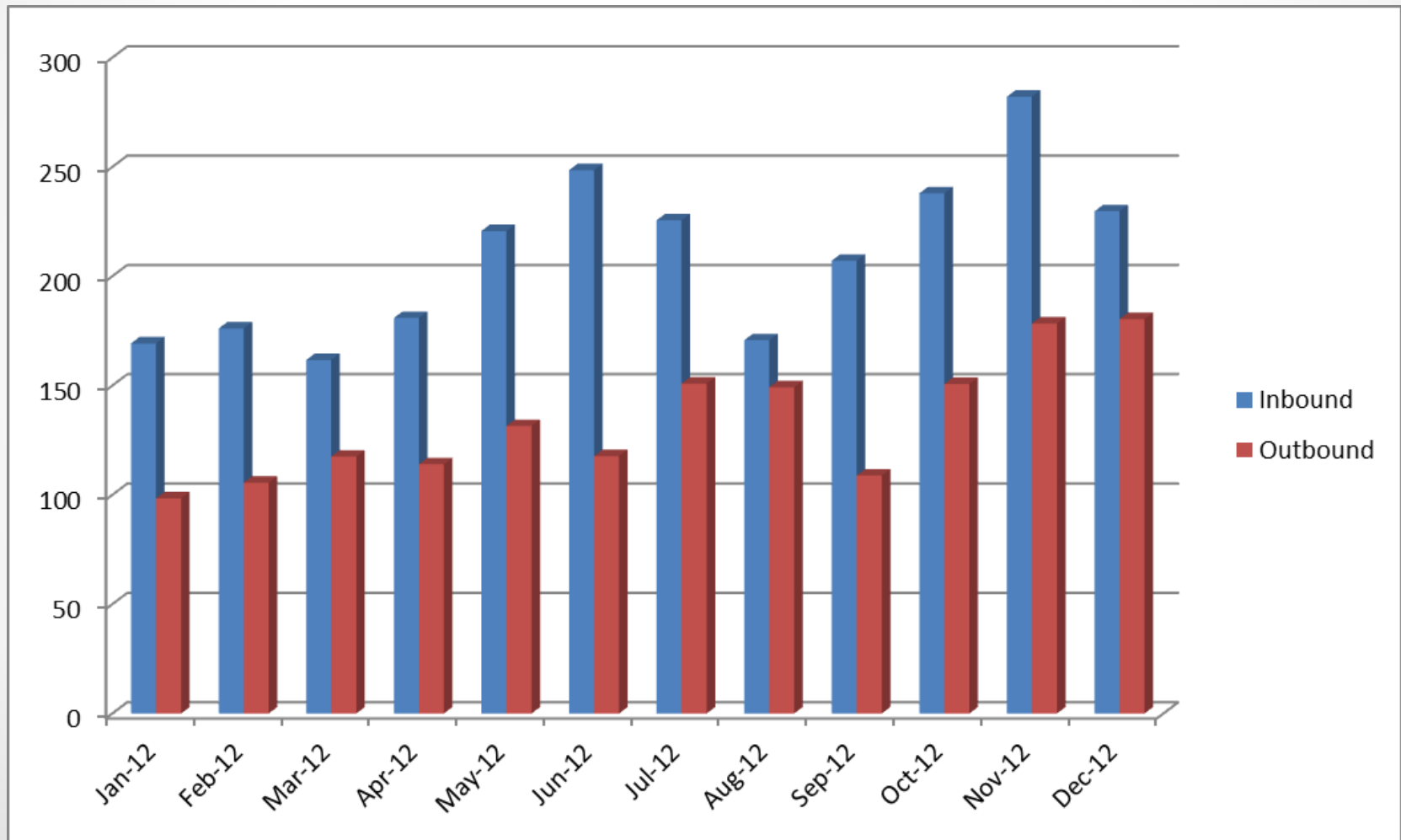
(Link Utilization in 2012)



Statistics based on both inbound and outbound traffic over backbone link

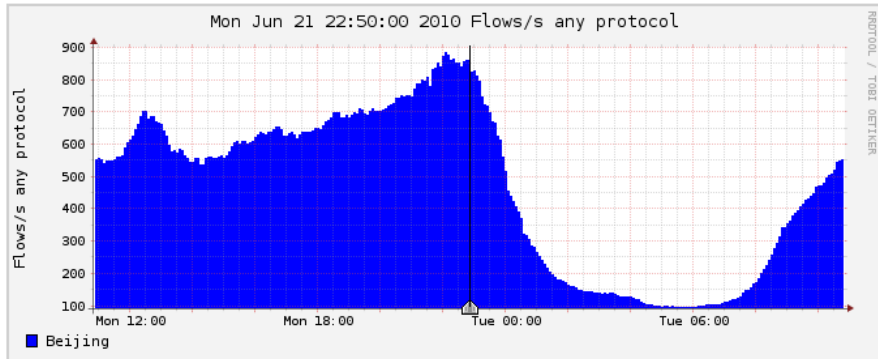
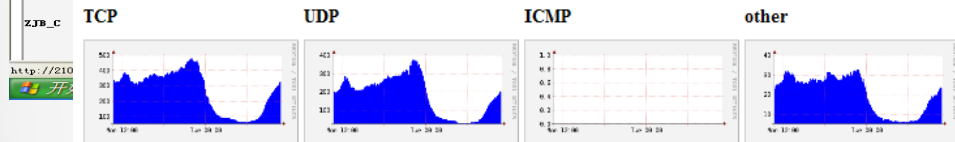
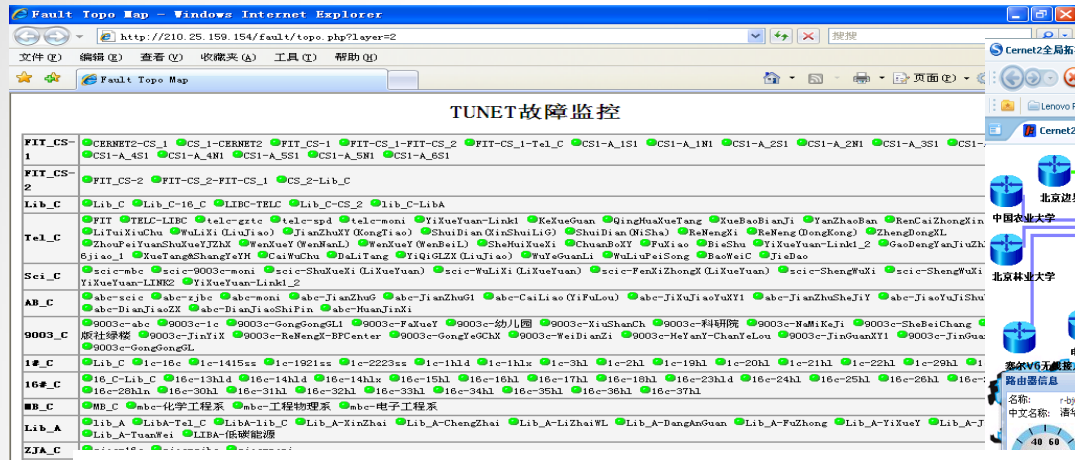
CNGI-6IX

(BJ-LON 10G link as an example)



Total traffic volume in 2012 (Tera byte)

NMS



Select **Single Timeslot** ▼

Display: 1 day

Profileinfo:

Type: live

Exp: never

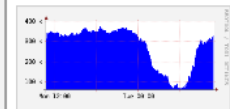
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End: Jun 22 2010 - 10:50 CST

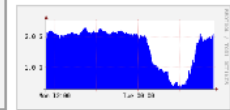
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t _{end}	2010-06-21-22-50
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Packets

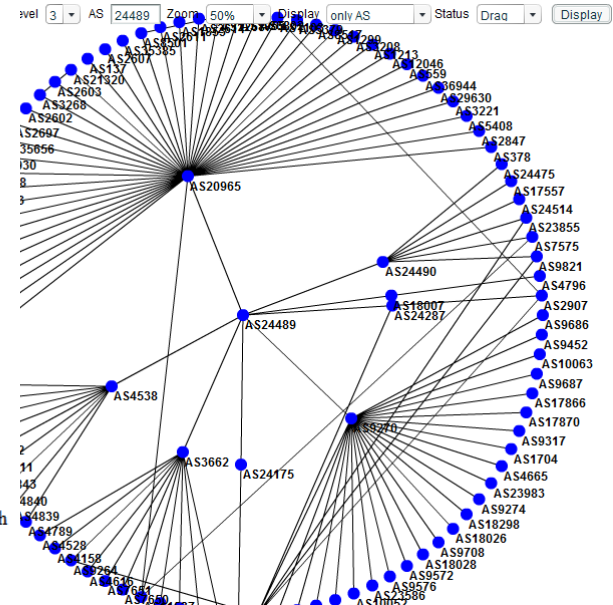


Traffic



Lin Scale Stacked Graph

☒ Log Scale ☐ Line Graph



Thanks !