



# DNS Operations & Research at CNNIC

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- Introduction on CNNIC
- “.CN” Operations
- DNS Research@CNNIC

- Founded on Jun. 3rd 1997
- Non-profit organization
- Supervised by Chinese Academy of Sciences (CAS) and Ministry of Industry and Information Technologies(MIIT)
- **Main Business**
  - .CN domain name service
  - IP Address and AS Number Allocation
  - Research on DNS related areas and Internet Addressing
  - International Affairs

# “.CN” operations

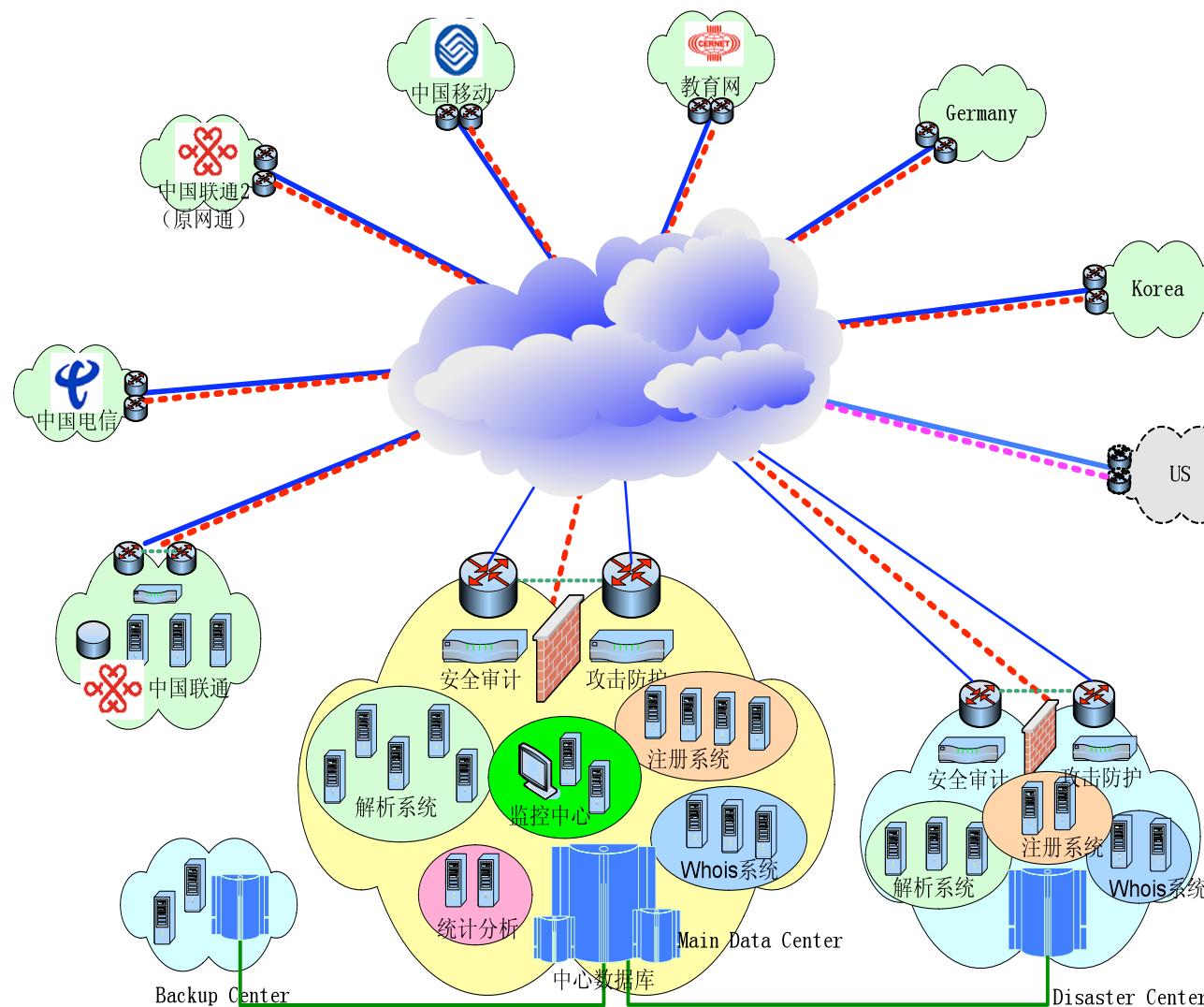
中国信息社会重要的基础设施建设者、运行者和管理者

## Global Distribution of .CN Name Servers



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# .CN Operation Platform

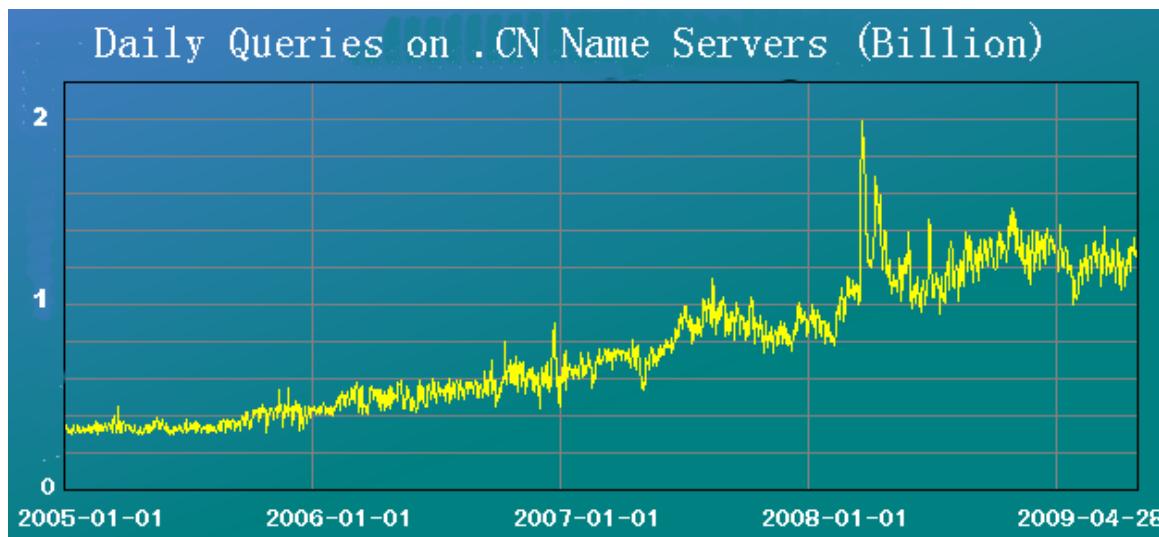
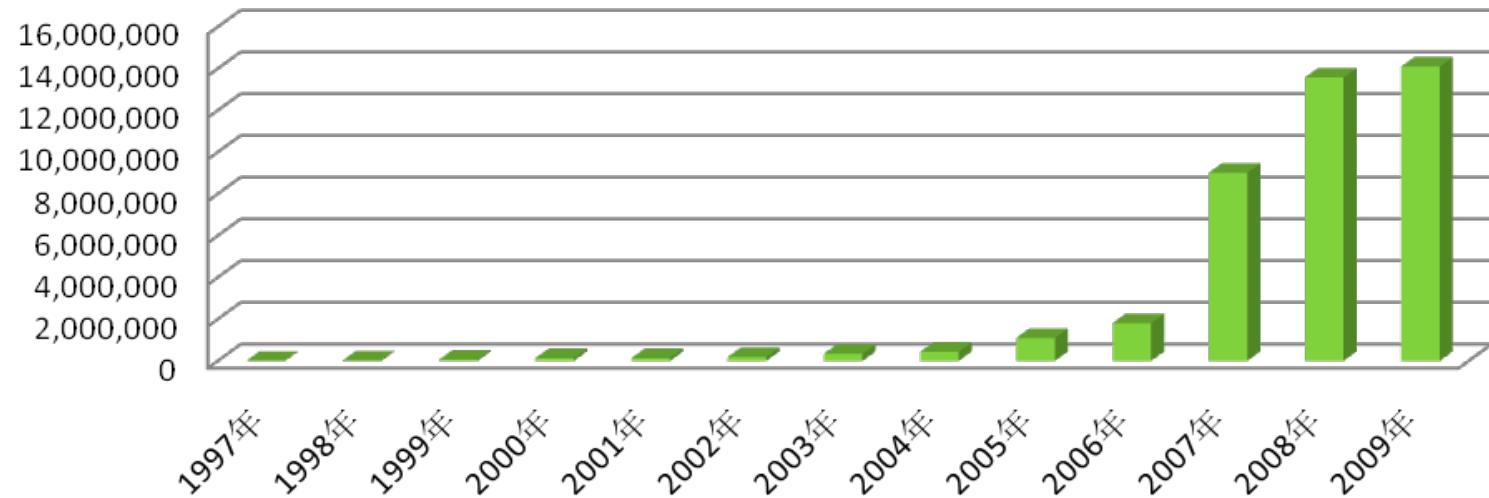


TLD Sever	# Instances	Site & Location
<i>a.dns.cn</i>	1	<i>cstnet</i> , Beijing, China
<i>b.dns.cn</i>	4	<i>cu</i> , Beijing, China <i>cnc</i> , Beijing, China Seoul, South Korea Frankfurt, Germany
<i>c.dns.cn</i>	2	<i>cu</i> , Beijing, China <i>cnc</i> , Beijing, China
<i>d.dns.cn</i>	3	<i>cu</i> , Beijing, China Guangzhou, China Frankfurt, Germany
<i>e.dns.cn</i>	4	<i>cnc</i> , Beijing, China <i>ctc</i> , Chengdu, China Seoul, South Korea Guangzhou, China
<i>ns.cernet.net</i>	1	<i>tsinghua</i> , Beijing, China

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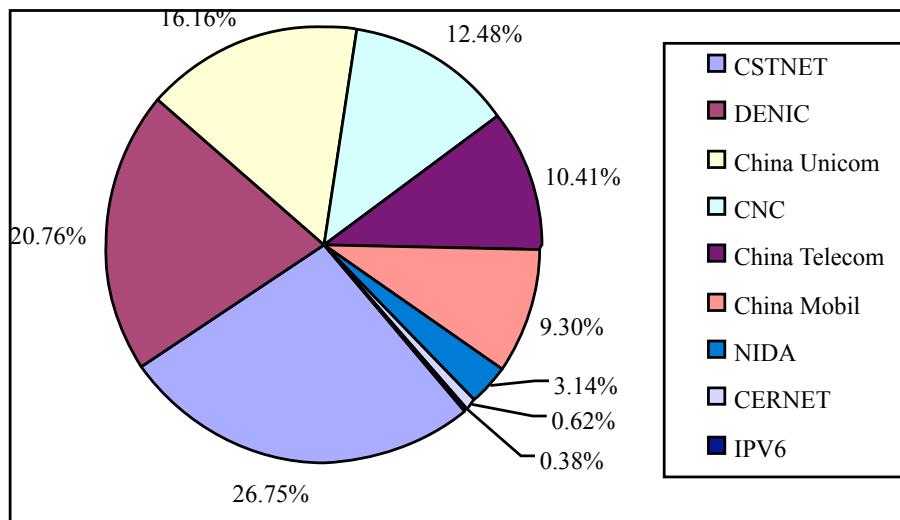
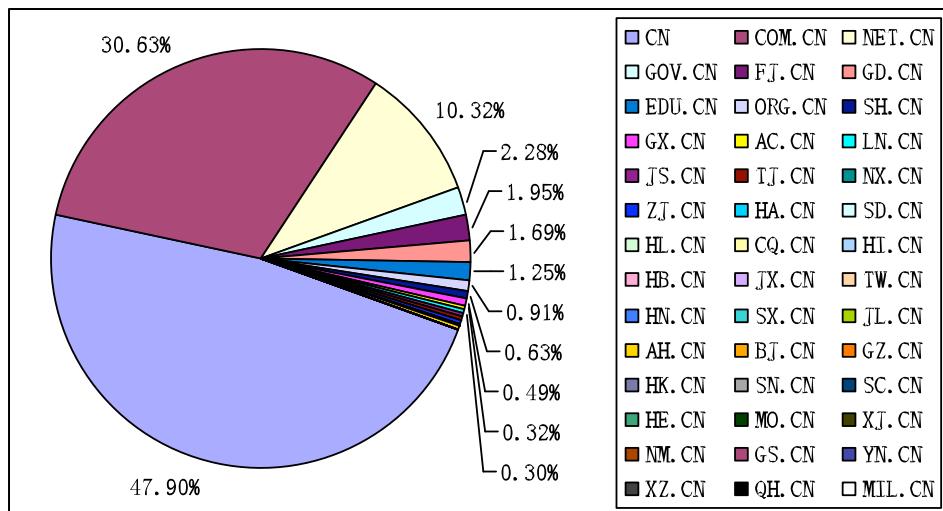
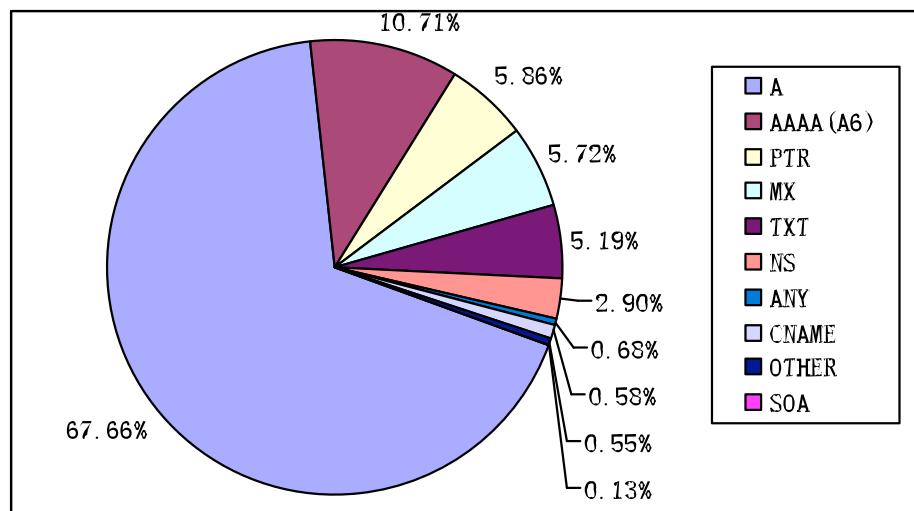
# Registration and Query of .CN

## .CN Registration



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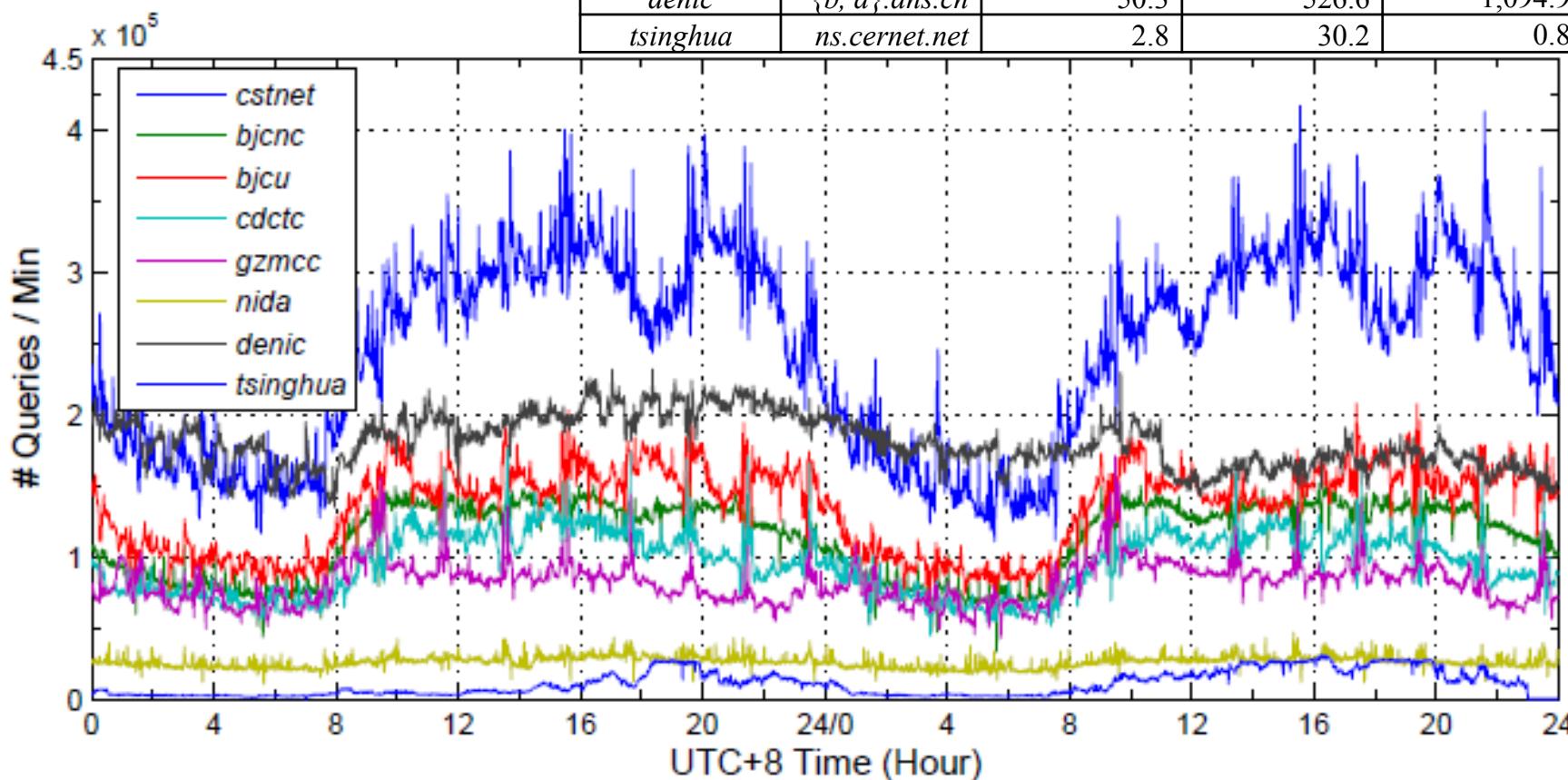
# .CN Queries classification



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# Queries collected in a 48 hrs period

Site	Server Instance(s)	Size (GB)	Queries (M)	Clients (K)	Duration
cstnet	{a}.dns.cn	62.3	698.5	1,284.7	Nov 27, 00:00 ~ Nov 28, 24:00
bjcnc	{b, c, e}.dns.cn	30.2	323.6	593.0	
bjcu	{b, c, d}.dns.cn	35.9	384.2	754.9	
cdctc	{e}.dns.cn	26.2	268.6	1,080.8	
gzmcc	{d, e}.dns.cn	21.5	233.1	317.4	
nida	{b, e}.dns.cn	7.2	74.9	369.8	
denic	{b, d}.dns.cn	50.3	526.6	1,094.9	
tsinghua	ns.cernet.net	2.8	30.2	0.8	



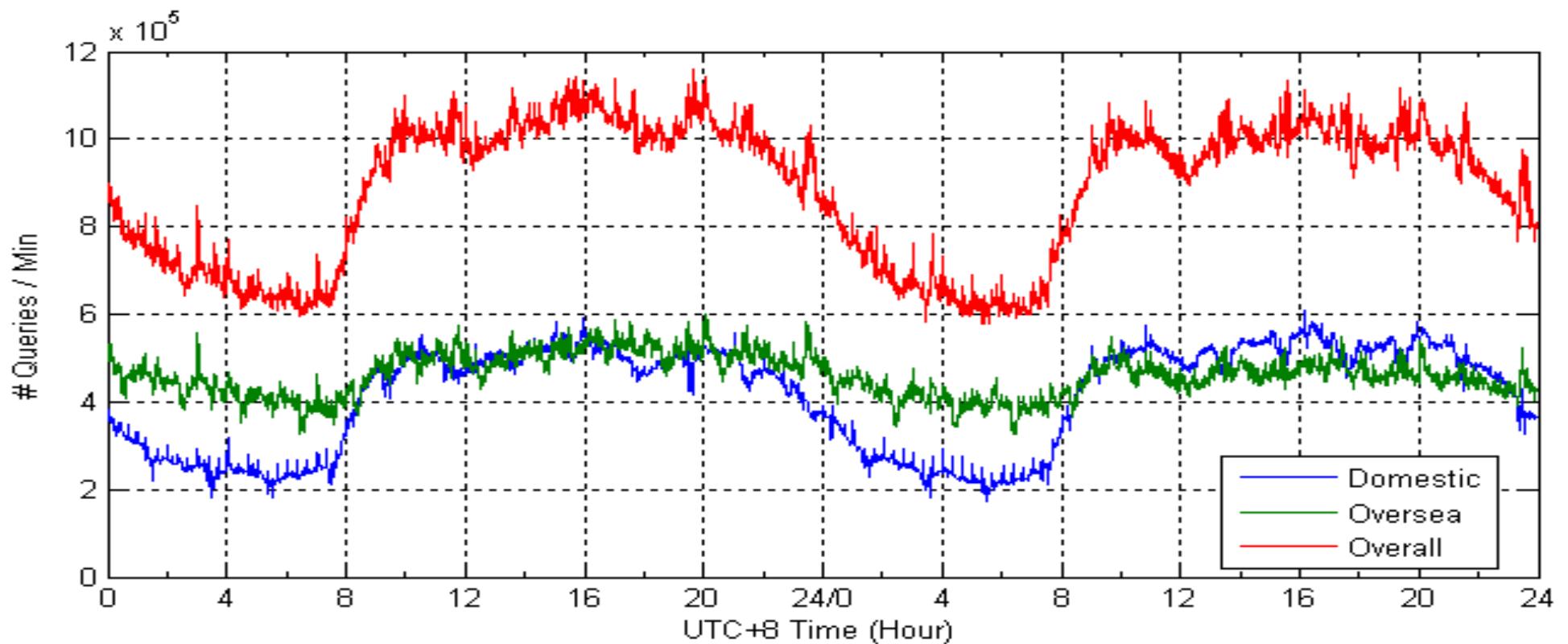
管理者

## Diurnal patterns of queries from domestic and overseas.

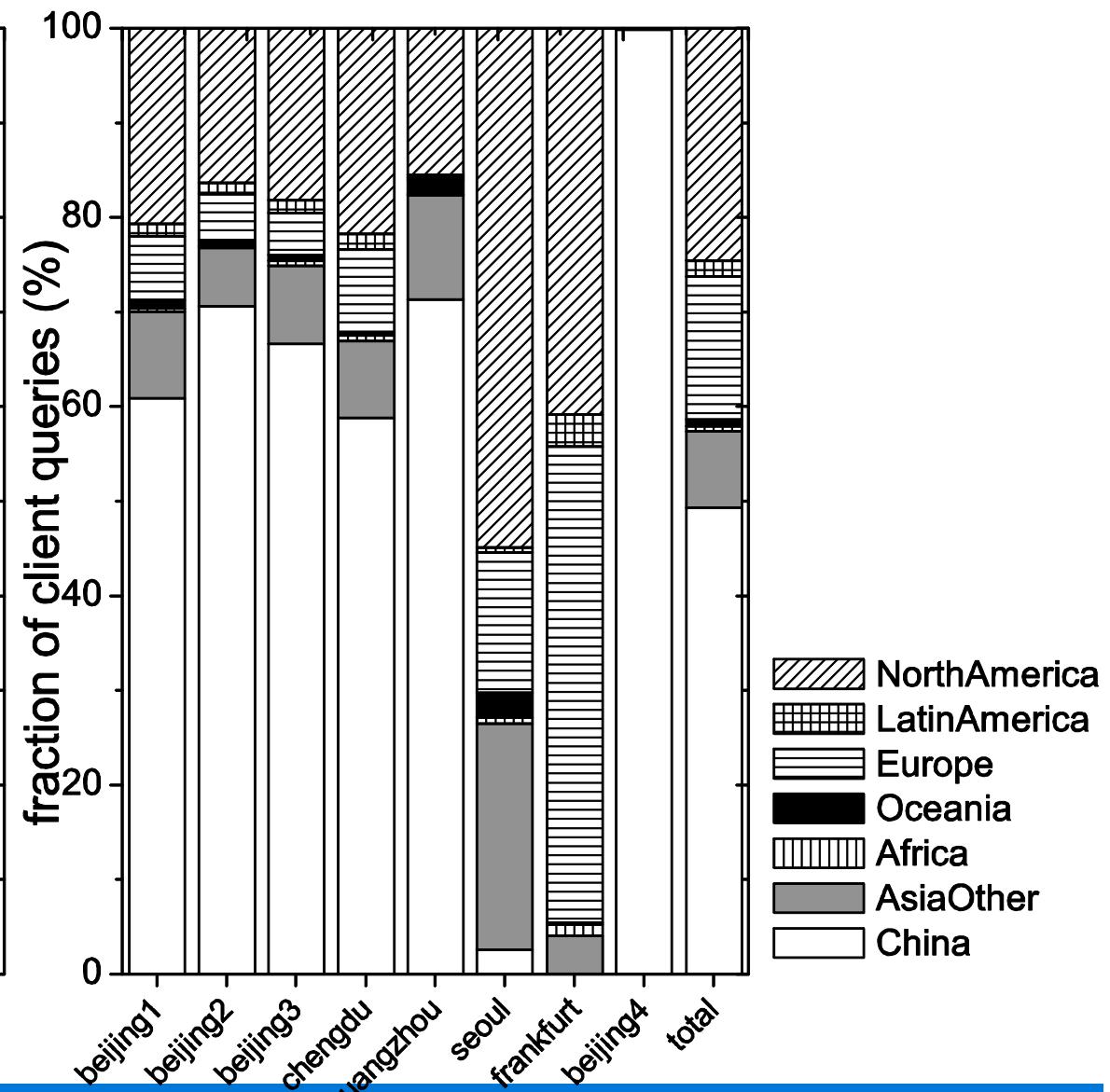
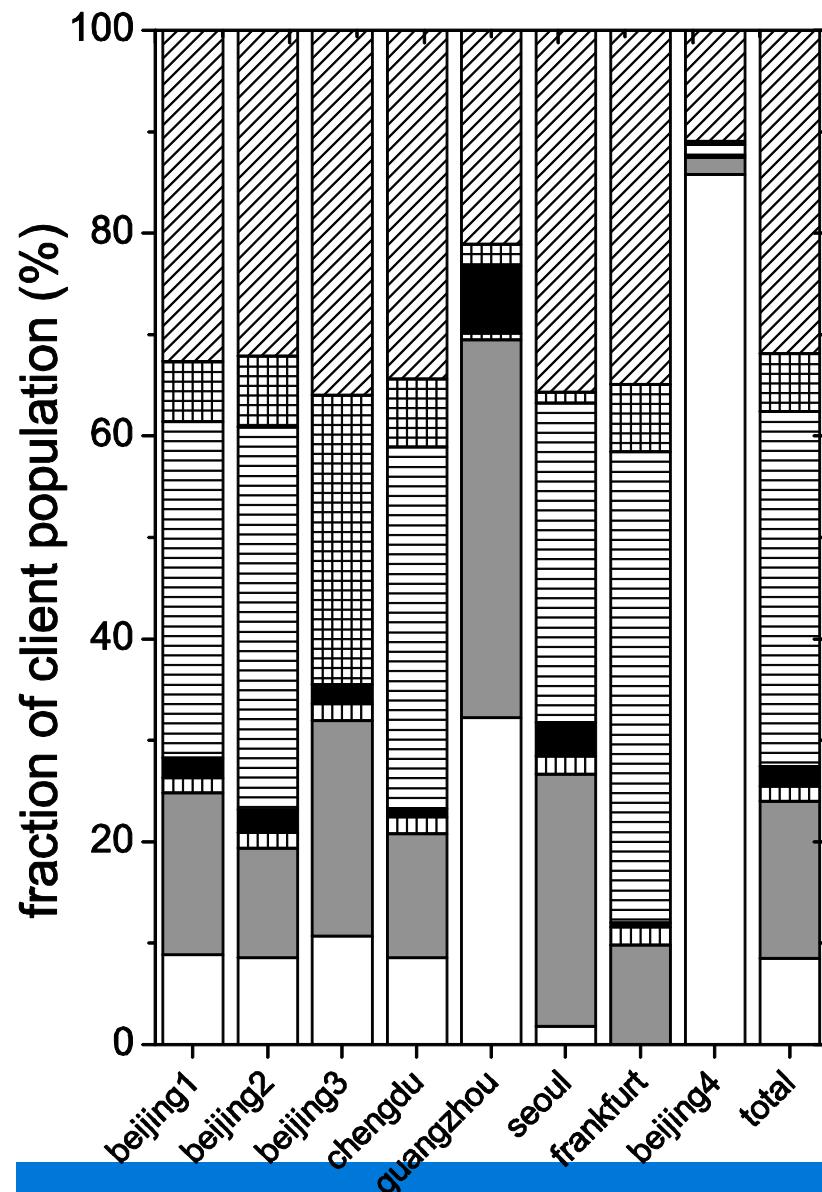
Dividing DNS queries into two categories

Diurnal patterns of queries from domestic and overseas.

The less fluctuating curve indicates heterogeneity among clients.



Continental distribution of each site's clients: population (left) and queries (right).



# DNS research@CNNIC

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## □ Development of DNS server software

- Authoritative DNS server software
- Recursive DNS server software
- DNS Load-balancing System

## □ DNS measurement and traffic analysis

- Overall statistics
- Configuration errors
- Potential threatens
- User internet behavior perception

## □ Domestic Standards on DNS operation & management

- DNS Server technical specifications
- domain Delegation
- IPV6 DNS
- DNS security
- ...

## □ Deployment of DNSSEC on CN cc-TLD

- Seeking a good solution
  - Zone file size , signing computation
  - Chain of trust
  - Key management
  - ...



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