



# IPv6 Registry & KRDNSv6

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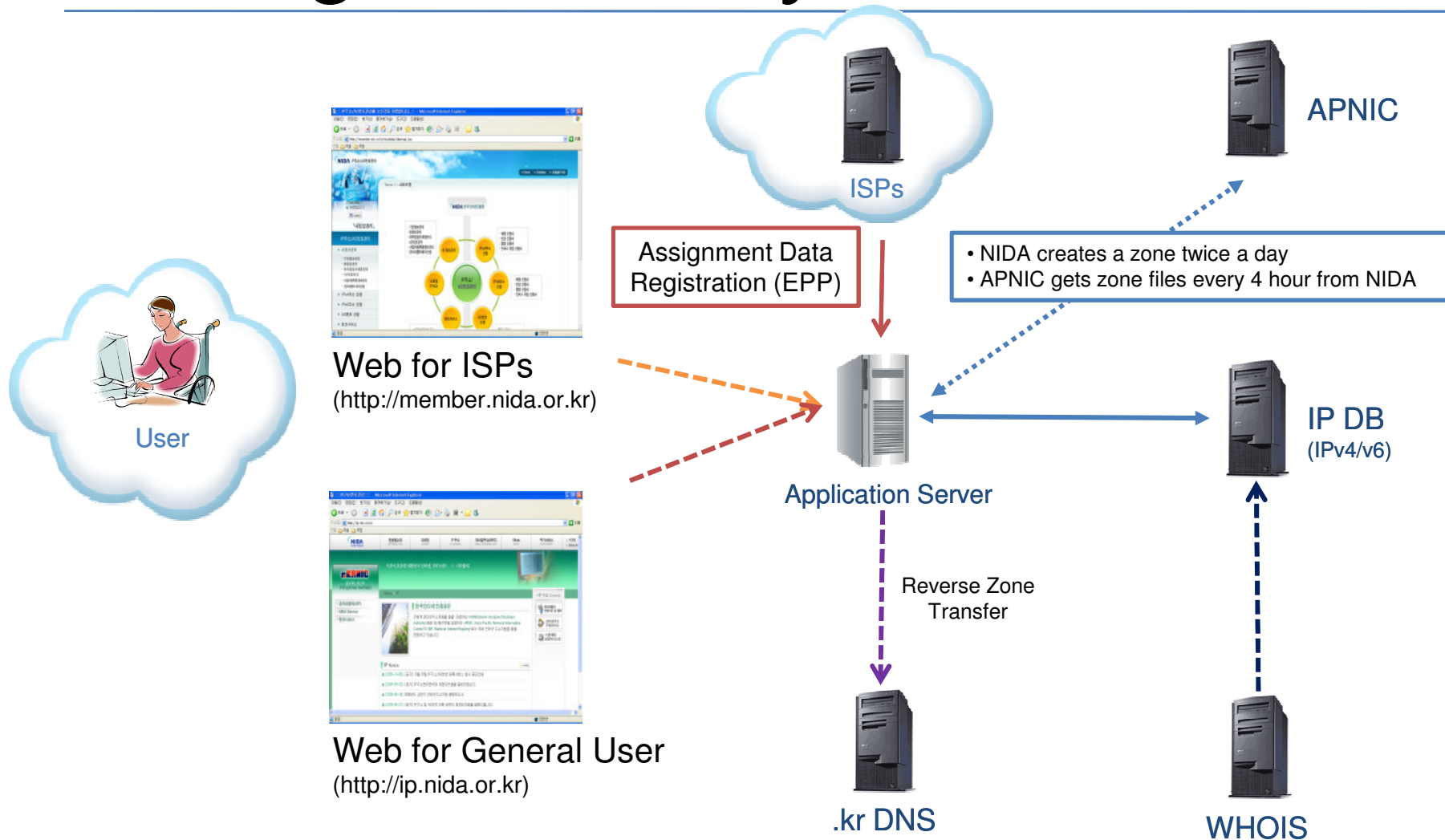


# IPv6 Registry Service

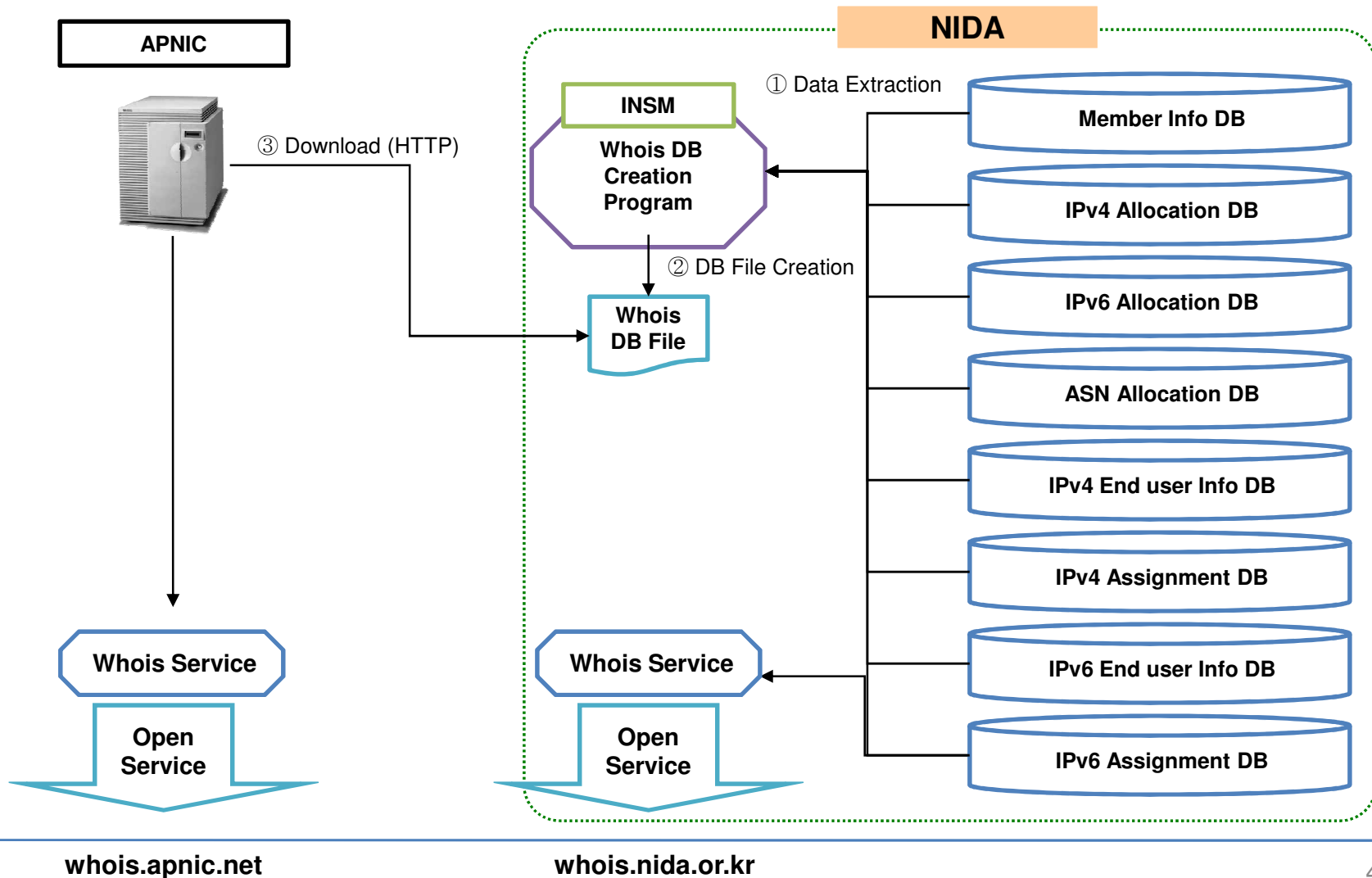
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- History
  - January 2000
    - RFC-KR 121(IPv6 Allocation Policy), ETRI
  - March 2000
    - ETRI launched IPv6 allocation service
  - June 2000
    - KRNIC launched IPv6 allocation service
  - March 2002
    - Launched WHOIS service (<http://whois.nida.or.kr>)
- IPv6 Allocation(/32)
  - 5,187(2007), 5,185(2006), 4,145(2005), 31(2004)

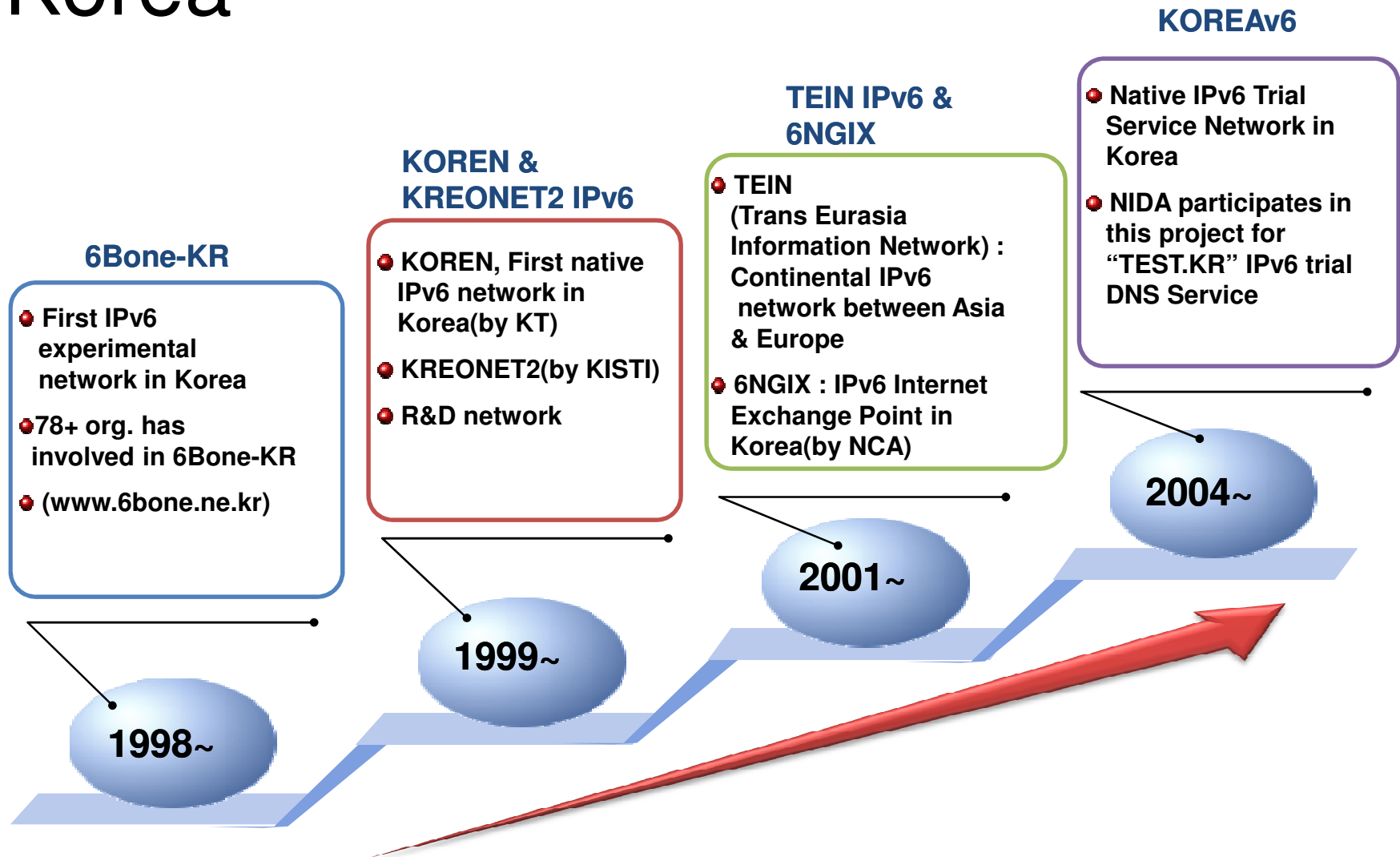
# IP Registration System



# WHOIS Workflow Overview



# IPv6 Network Development in Korea

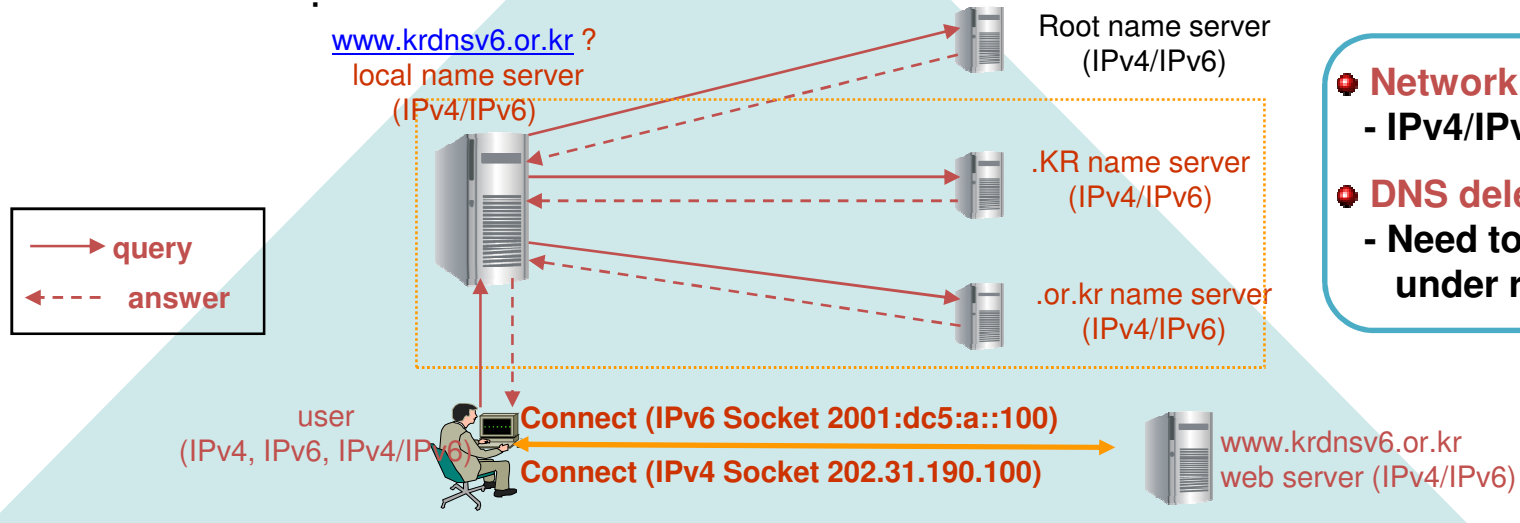
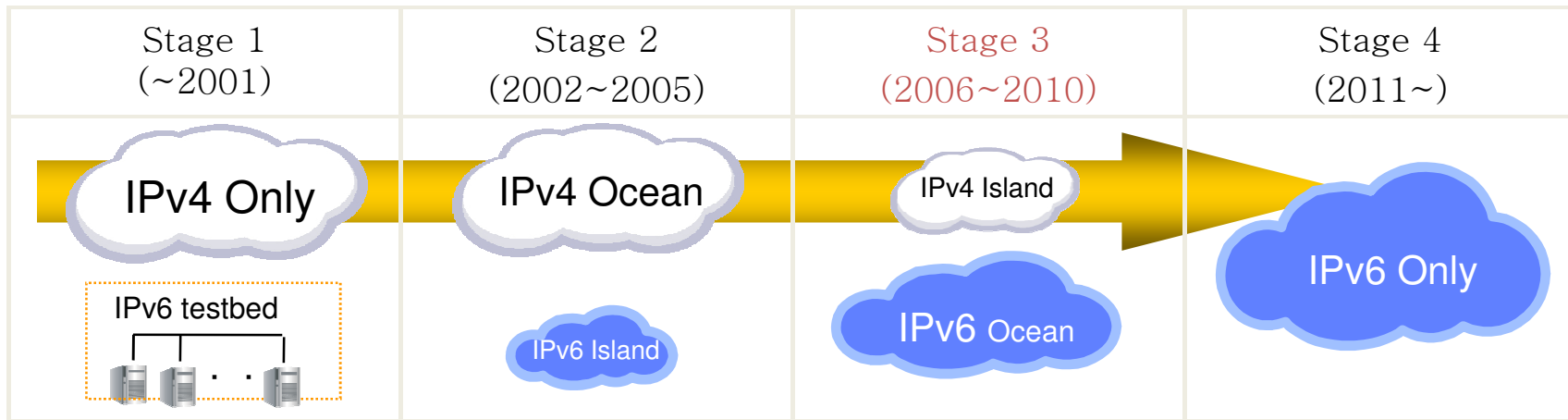


# IPv6 DNS Service (KRDNSv6)

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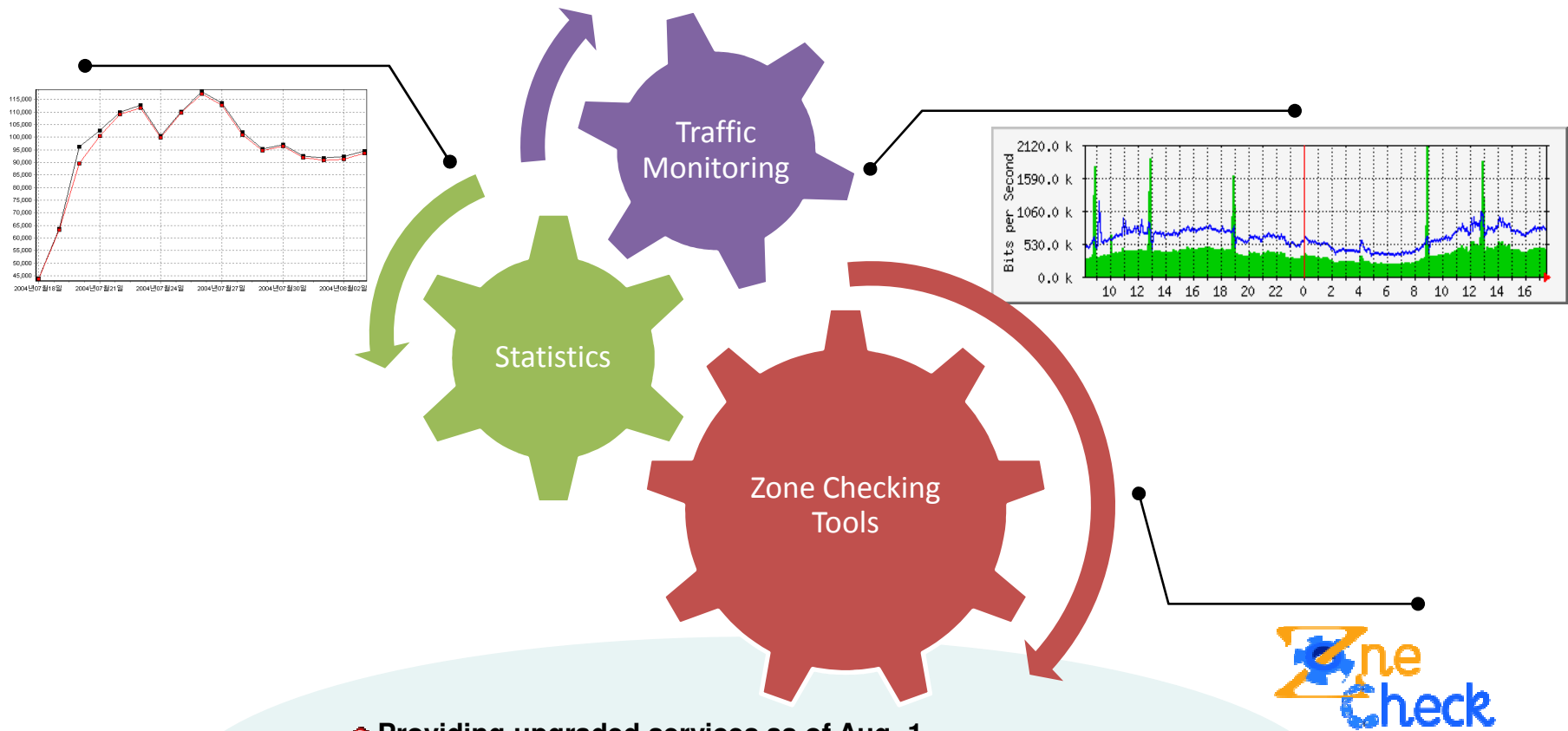
- Overview
  - Scaled-up .kr DNS to guarantee stable internet service by supporting both IPv4/v6
- History
  - July 2004
    - IPv6 Address Glue for .kr added to the Root DNS Zone (*First in the world with .jp*)
    - Launched IPv4/v6 Dual-stack .kr DNS Service (g.dns.kr)
  - August 2004
    - Launched IPv6 Delegation Service for .kr domain
  - 2005
    - Setup two more IPv6 .kr DNS (Daejeon & Busan)
  - July 2006
    - Setup Anycast IPv6 .kr DNS (g.dns.kr) (at DENIC)
  - October 2006
    - Setup Anycast IPv6 .kr DNS (e.dns.kr) (at CNNIC)

# Development of .kr DNS



- **Network side**  
- IPv4/IPv6 dual-stack
- **DNS delegation config.**  
- Need to IPv6 delegation under root name server

# KRDNSv6 Web Site



- Providing upgraded services as of Aug. 1
  - IPv4/IPv6 DNS statistics
  - Monitoring .kr DNS name server traffic
  - Providing Zone Checking Tools for end-users

# .kr DNS Status

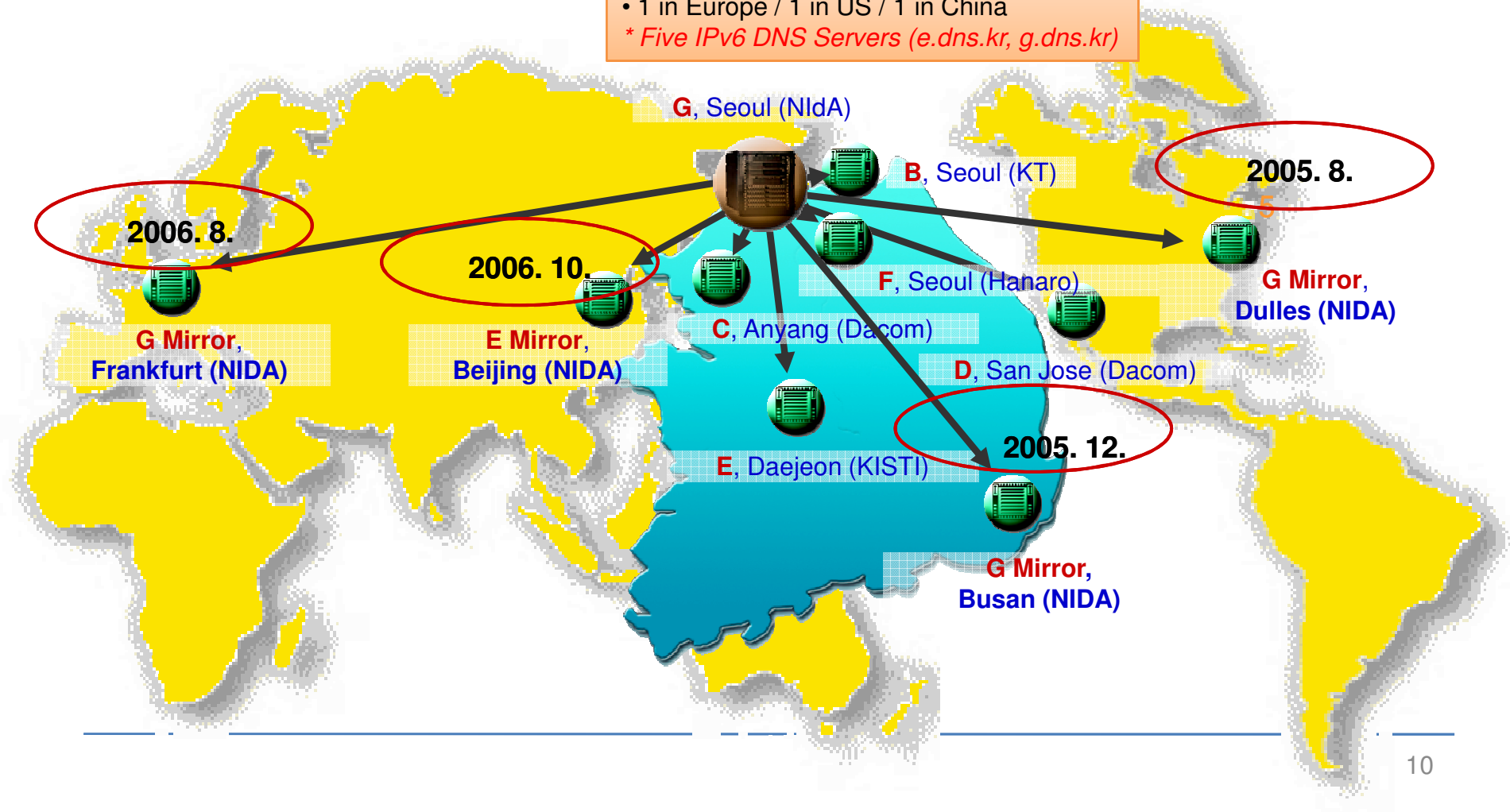
As of June 2007

No.	.kr DNS	Location/Operator	IP address	Anycast
1	B.DNS.KR	Seoul, Korea/KT	v4:211.216.50.130	X
2	C.DNS.KR	Anyang, Korea/DACOM	v4: 203.248.240.141	X
3	D.DNS.KR	SanJose,USA/DACOM	v4: 203.255.234.103	X
4-0	E.DNS.KR	Daejeon,Korea/KISTI	v4: 202.30.124.100 / <u>v6:2001:DC5:5::100</u>	O
4-1	E.DNS.KR	Beijing,China/CNNIC		
5	F.DNS.KR	Seoul,Korea/Hanaro	v4:210.94.0.15	X
6-0	G.DNS.KR	Seoul,Korea/NIDA	v4:202.30.190.1 / <u>v6:2001:DC5:A::1</u>	O
6-1	G.DNS.KR	Dellus,USA/Verisign	v4:202.30.190.1	
6-2	G.DNS.KR	Busan,Korea/BIX	v4:202.30.190.1 / <u>v6:2001:DC5:A::1</u>	
6-3	G.DNS.KR	Frankfrut,Germany/DENIC	v4:202.30.190.1 / <u>v6:2001:DC5:A::1</u>	

# .kr DNS Servers Location

## Operating 10 DNS Servers

- 6 in Korea
- 1 in Europe / 1 in US / 1 in China
- \* Five IPv6 DNS Servers (*e.dns.kr, g.dns.kr*)



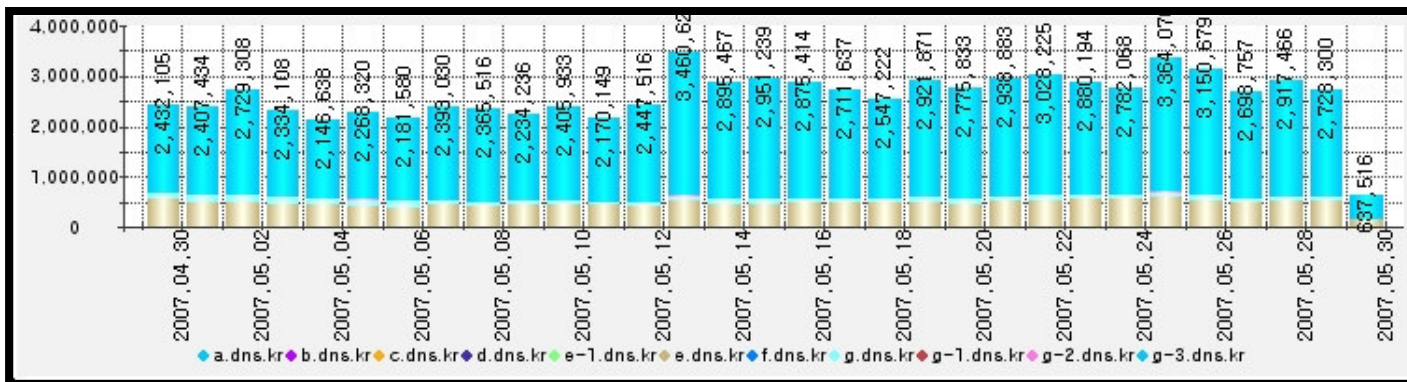
# Anycast IPv6 .kr DNS Service

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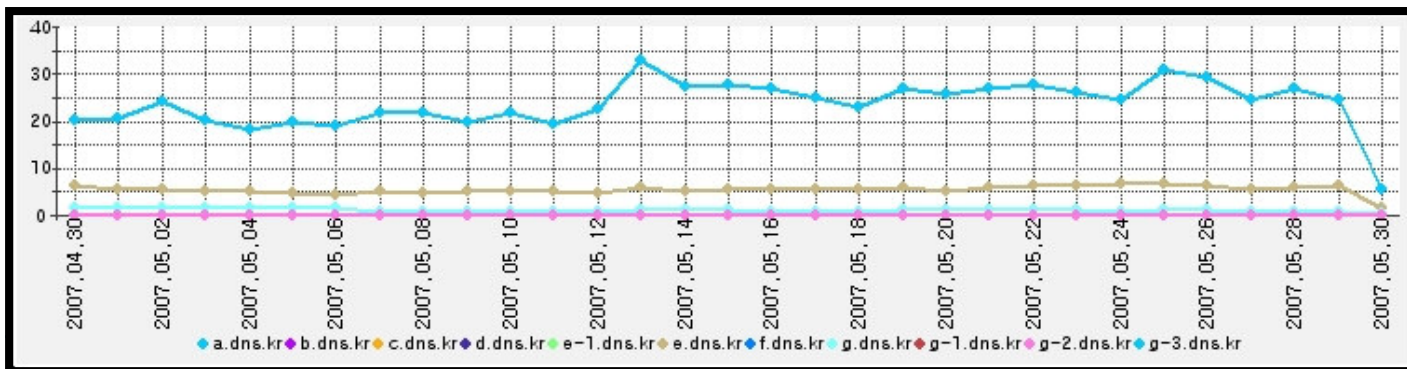
- Anycast IPv6 DNS Deployment
  - Two Anycast servers deployed
    - e.dns.kr (CNNIC) & g.dns.kr (DENIC)
- Benefit of Anycast IPv6 DNS
  - Improvement of stability & performance
    - Can distribute “DDoS” attacks
  - Decrease in RRT(Request-Response Time) for DNS queries
  - Can increase .kr DNS servers more than 13

# IPv6 DNS Query Statistics (1)

- Ave. 30 qps (24~40 qps) (mostly from EUROPE)
- Ave. 2.6 million queries per day (2.1 M ~ 3.4 M)
  - Ave. 1.1 billion queries per day for IPv4

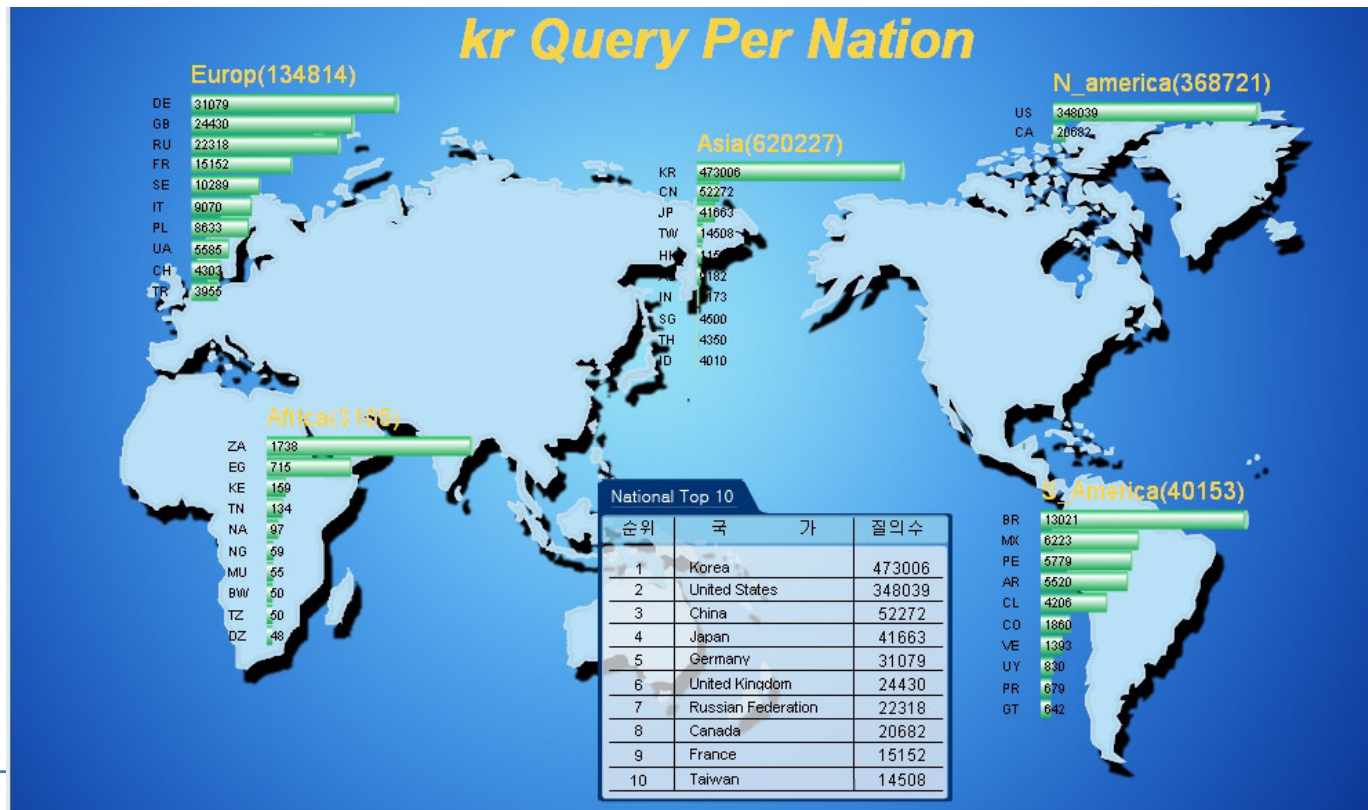


• e-1.dns.kr: China  
 • g-1.dns.kr: USA  
 • g-2.dns.kr: Busan  
 • g-3.dns.kr: Germany



# IPv6 DNS Query Statistics (2)

- IPv4/IPv6 DNS Queries by region
  - Asia(53%),North America(32%),Europe(12%), South America(3%)



# Future Service Plan for KRDNSv6

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- IPv6 DNS Service Expansion
  - Migration to IPv4/v6 Dual-stack DNS
  - Study on EDNS0 deployment plan
- DNS Stability Improvement
  - Deploy IPv6 Anycast DNS servers around the world
    - Improve a DNS response time

# Thank you.

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