

# **IPv6 Metrics Project: a tool set for analyzing IPv6 readiness**

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produced by IPv6 metric WG in IAJapan

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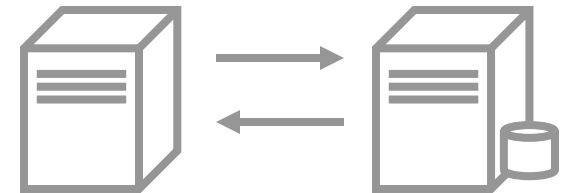
- Measure the degree of IPv6 deployment
  - Measure the IPv6 specific since the beginning of IPv6 deployment
  - Useful for the market strategy and operation of IPv6
- Contents of process
  1. Define the IPv6 metrics set as the measure the IPv6 readiness
  2. Establish the method of analyzing data using continuous measurement
  3. Share the methods and our tools
  4. Do measurement in each country (ex. in AP region)
  5. Compile and publish the result of the measurement
- Today
  - Introduce our measurement tool for deployment rate of DNS server.

## ● IPv6 deployment of DNS

- Measures the current registration of IPv6 from DNS servers
- Use the updated JP domain list from JPRS twice a month
  - There are about 1,000,000 records
- Target applications are DNS, Mail, Web
- Measure using some DNS query

## ● DNS and Mail service

- Resolve NS/MX record of target domain
- Check the address type (A/AAAA)



DNS queries per domain

## ● Web service

- Resolve AAAA/A record of `www.<domain>` and `<domain>`
- Can not search all web services, but can calculate the ratio

## ● Judgment method

- If AAAA record is exist, the target domain is defined as IPv6 ready

## ● How to install

### ● Download a tarball file

[http://v6metric.inetcore.com/download/analyze\\_dns\\_deployment-1.1.tar.gz](http://v6metric.inetcore.com/download/analyze_dns_deployment-1.1.tar.gz)

### ● Unpack this tarball

```
% tar xzpvf analyze_dns_deployment-1.1.tar.gz
x analyze_dns_deployment-1.1
x analyze_dns_deployment-1.1/bin
x analyze_dns_deployment-1.1/bin/create_final_csv.pl
x analyze_dns_deployment-1.1/bin/fetch_by_dig.pl
x analyze_dns_deployment-1.1/bin/run.sh
x analyze_dns_deployment-1.1/bin/wait_dig.pl
x analyze_dns_deployment-1.1/bin/divide_file.pl
x analyze_dns_deployment-1.1/data
x analyze_dns_deployment-1.1/data/example_domain_list.csv
x analyze_dns_deployment-1.1/tmp
x analyze_dns_deployment-1.1/README
```

### ● This tool runs on FreeBSD-5.5 or upcoming versions. (Maybe run on Linux distributions.)

## ● How to use

### ● Step 1: install some applications

- This tool set needs some applications.

**dig**                      DNS lookup utility

**idnconv**                internationalized domain name converter

### ● Step 2: set parameters

<run.sh>

INPUTFILE:              the path of domain list file (default directory is ../data)

IDNCONV\_USE:          set yes to use converting international domain name

IDNCONV:                the path of idnconv command

IDNCONV\_OPT          options of idnconv command (EX. -in EUC-JP)

<fetch\_by\_dig.pl>

DIG\_COMMAND:          the path of dig command

DNS\_SERVER:          DNS server address for this measurement

### ● Step 3: run “run.sh”

# Analyzing DNS Tool Set (Cont.)

## ● File format

### ● Input file                      domain list

```
# format: domain_name, domain_category, v_bit
```

```
# if v_bit is 0, this line is removed from analysis.
```

```
Ex)
```

```
example.co.jp, co, 1
```

```
example.ne.jp, ne, 1
```

```
. . .
```

Domain category

### ● Output file                      result by domain category

```
# format: category, total, nsv4, nsv6, mxv4, mxv6, wwwv4, wwwv6
```

```
Ex)
```

```
ne, 16274, 14431, 130, 12891, 49, 13626, 50
```

```
co, 310857, 299776, 1295, 292571, 81, 291339, 76
```

```
ga, 447915, 389807, 2012, 344999, 296, 369923, 755
```

```
. . .
```

Calculate each domain category

## ● Organizational Type JP Domain Names

Domain	Code	Purpose
.co.jp	CO	Japanese companies.
.or.jp	OR	Japanese non-profit organizations.
.ne.jp	NE	Japanese communications operators and network providers.
.ac.jp	AC	Japanese academic institutions. (university, technical school, etc.)
.ad.jp	AD	JPNIC members.
.ed.jp	ED	Japanese educational institutions. (junior high school, high school, etc.)
.go.jp	GO	Japanese government organizations
.gr.jp	GR	Japanese private organization
.le.jp	LG	Japanese local government organizations

## ● Geographic Type JP Domain Names

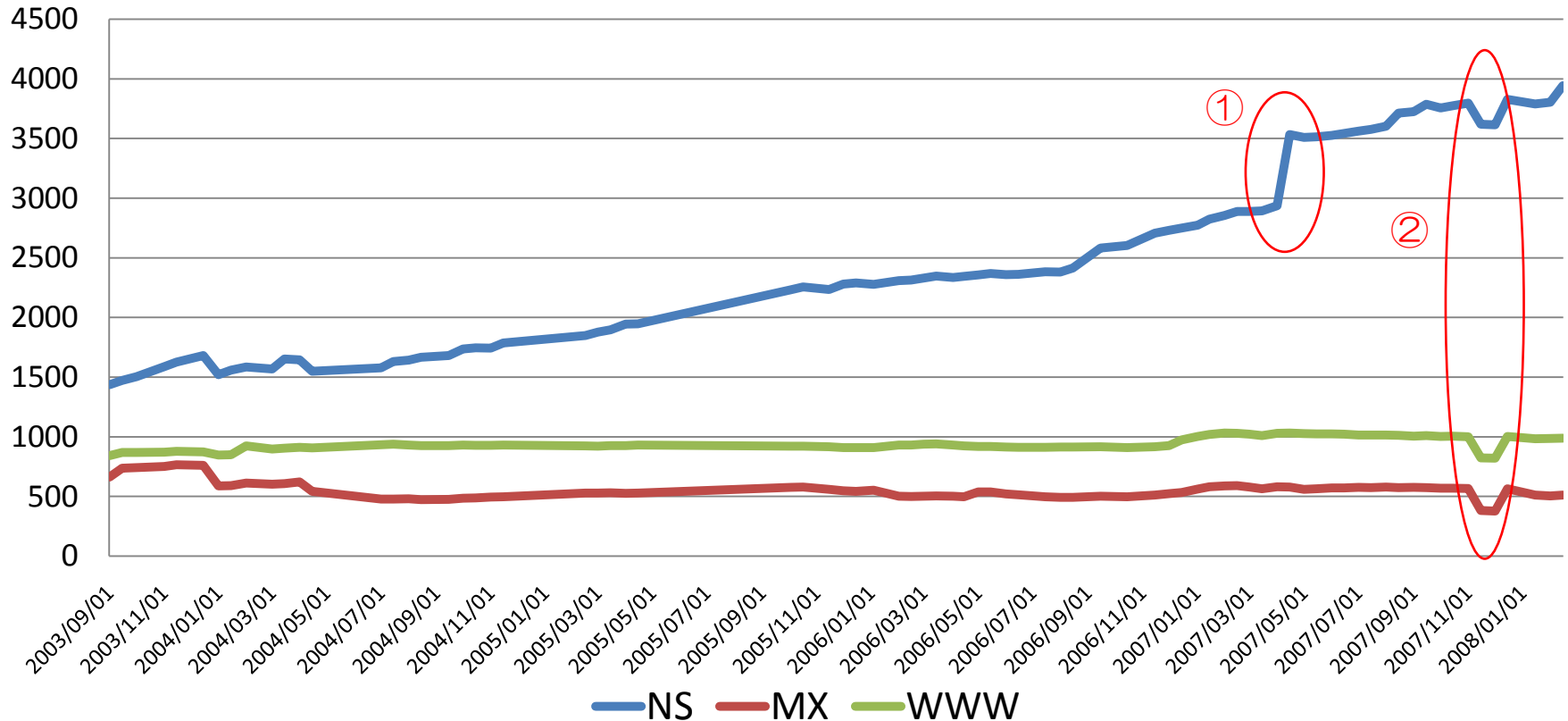
Domain	Code	Purpose
Ex).tokyo.jp	GEO	Geographic type domain. <city>.<prefecture>.jp

## ● General-Use JP Domain Names

Domain	Code	Purpose
example.jp	GA	General use by ASCII
日本語.jp	GJ	General use by Japanese (Internationalized domain name)

# Update: each service

## The IPv6 deployment each service

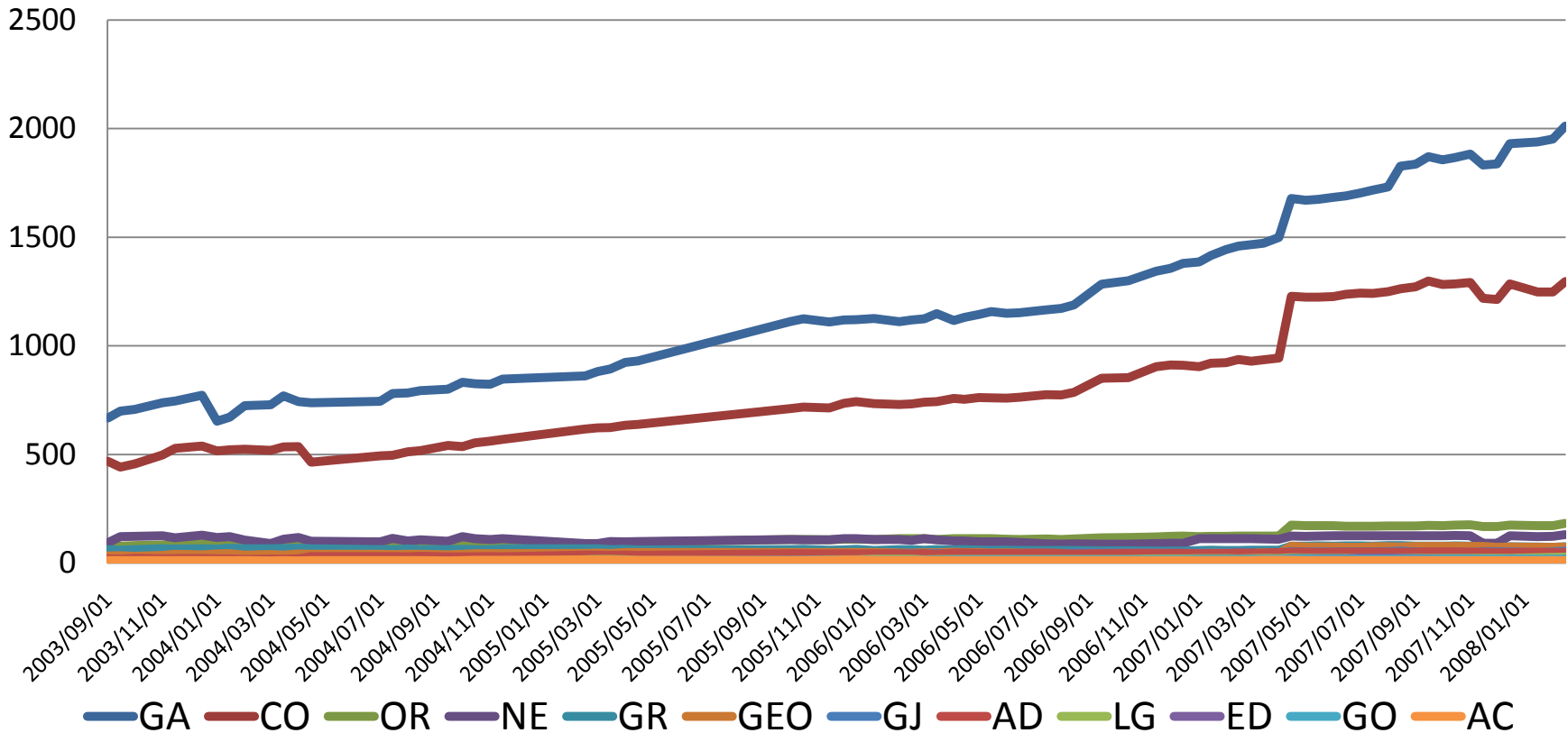


- IPv6 ready DNS service is smooth increasing
  - ① an IDC's DNS server became IPv6 ready on Apr. 2007
  - ② a trouble at an IDC IPv6 network on Nov. 2007
- ➡ the influence of IDC is very large



# Update: each domain category

The IPv6 deployment of name server each domain category



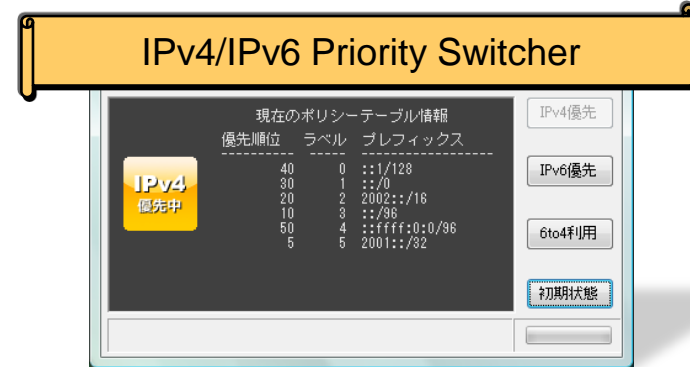
- The number of AAAA DNS servers is increase at GA and CO domains
- The latest increase of IPv6 DNS server on GA is 73 per month
  - however the number of increase on IPv4 is 6300

# IPv6 mini-Tools

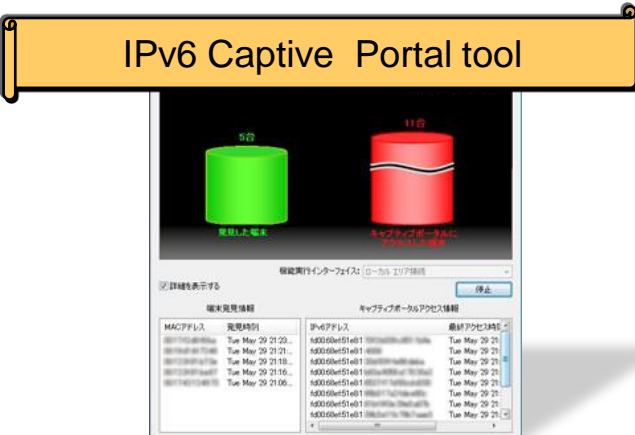
- IPv6 mini-tools help IPv6 operation in your PC by visualizing IPv6 configuration and traffic
- Available at <http://entne.jp/> with free of charge (but only in Japanese...)



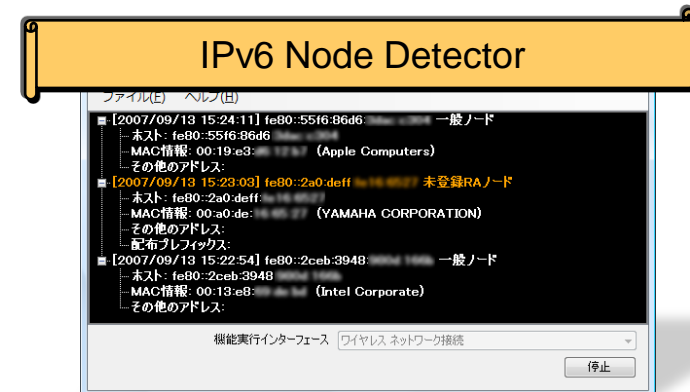
- Visualizing various IPv6 addresses configured in your PC and connectivity to the IPv6 Internet



- Configuring priority of IPv4/IPv6 communication  
You can prioritize IPv6 (6to4) even in dial-up environments



- Inducing all web accesses to this IPv6 captive portal and providing IPv6 connectivity



- Detecting IPv6-enabled terminals in your LAN and warning unmanaged terminals

● Current versions are only in Japanese. We will publish English versions soon!

# Thank you very much!

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Our project web page:

<http://v6metric.inetcore.com/en/> (English)

