

Life with IPv6

Journée Cohabitation IPv4-IPv6
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Keiichi SHIMA <keiichi@ijlab.net>
IJJ Research Laboratory / WIDE project

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IPv6 service in Japan

- Most of backbone ISPs support IPv6
- Many ISPs are providing:
 - IPv6 commercial service
 - IPv6 trial service
- The list of ISPs and services available in Japan
 - <http://www.ipv6style.jp/en/statistics/services/index.shtml>
 - IJ, NTT West, NTT East, Dream Train Internet, Poweredcom, Nifty, Japan Telecom, KDDI, JENS, Media Exchange, STNet, HTNet, FreeBit, NEC

How I live at my workplace

- In IIJ

- The headquarters and some big branches are IPv6 ready
 - All subnets are managed as dual stack networks
 - Small branches are still IPv4 only
- We can use IPv6 by just connecting our computers which support IPv6

- In K2 (my another workplace as a WIDE researcher)

- Connected to the WIDE IPv6 backbone via wide area Ethernet service
- All subnets are providing IPv6 and some subnets provides only IPv6
- Operating IPv6-IPv4 translator for IPv6 only nodes

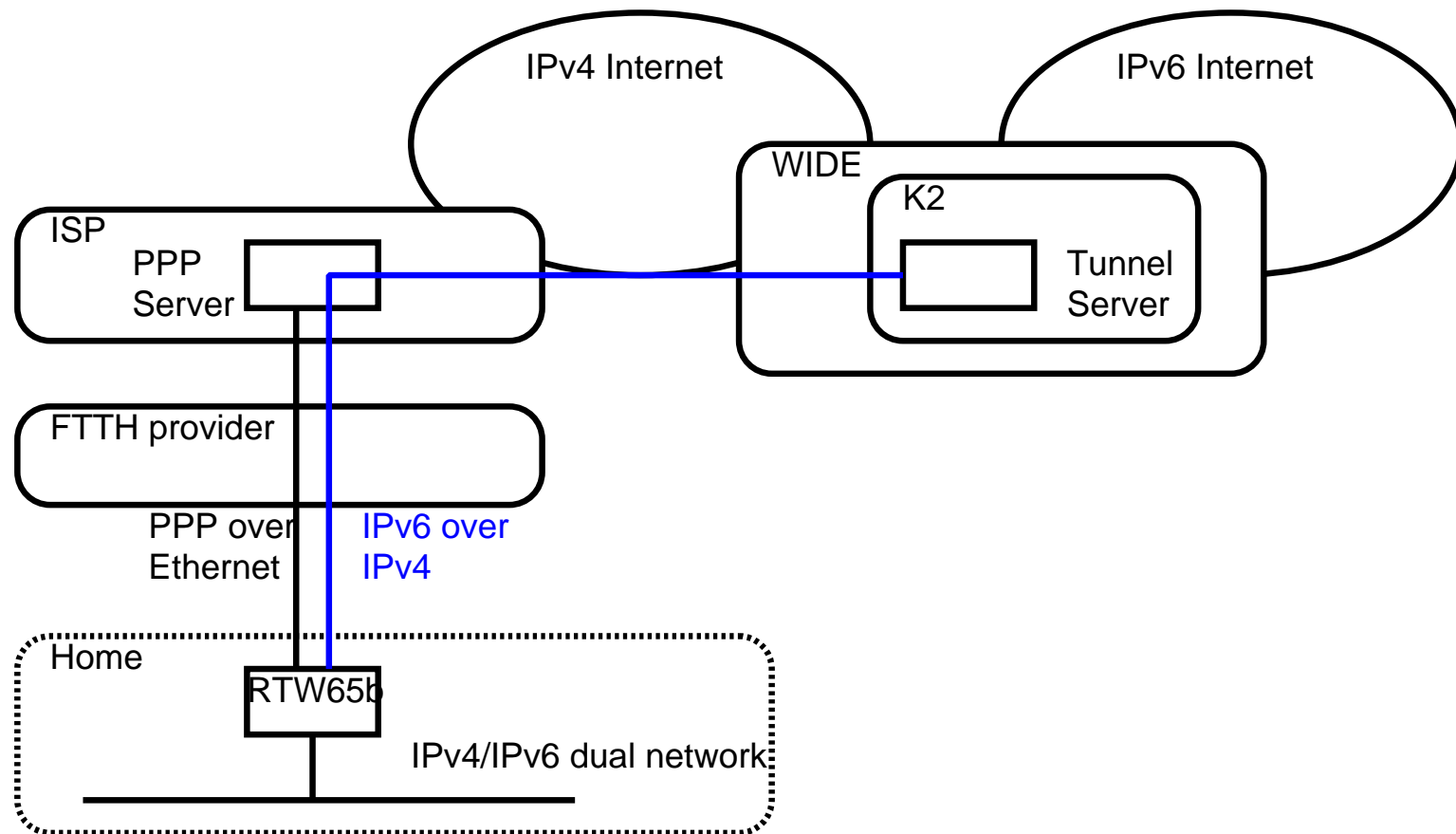
How I live at home

- When considering to use IPv6 as a personal user, we can have the following options
 - (1) Tunnel service with a static IPv4 address
 - (2) Tunnel service with a dynamic IPv4 address
 - (3) Native service with ADSL line

- I chose the option (1)
 - Subscribe FTTH service to get L2 access
 - FTTH = Fiber To The Home
 - Subscribe the ISP service which provides one static IPv4 address
 - Operate an IPv6 capable personal router
 - In my case, Yamaha RTW65b (discontinued model)
 - Yamaha is one of active vendors which providing dual stack router for personal use
 - <http://netvolante.jp/> (Japanese)
 - Create a tunnel between my router and K2 office

Network configuration (1)

A static tunnel (my case)



- Tunnel using one global IPv4 address
- IPv6/(private)IPv4 dual network
- Other tunnel server (e.g. any ISP services) can be used

Network configuration (2)

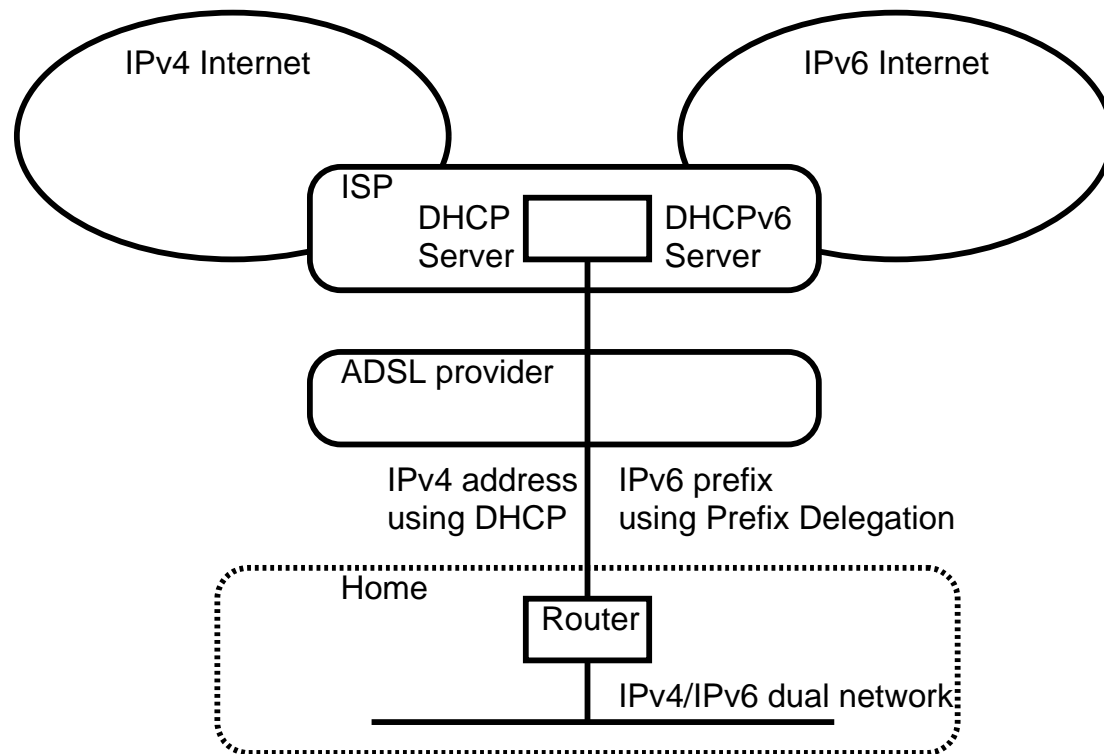
A dynamic tunnel

- Currently not many ISP are providing dynamic tunnel service
 - Maybe because of lack of standard technology
- Feel6
 - <http://start.feel6.jp/en/>
 - The tunnel service FreeBit is providing
 - Utilize DTCP (Dynamic Tunnel Control Protocol)
 - <http://jazz-1.trumpet.com.au/ipv6-draft/dtcp-draft-prt-13-may-1999.htm>



Network configuration (3)

A native service



- The router at home can be considered to be connected to the ISP's Ethernet network
- Assign an IPv4 address by DHCP, an IPv6 prefix by Prefix Delegation

IPv6 application

- Recently, many software is going to support IPv6
- Operating Systems:
 - Most of UNIX/Linux operating systems
 - Windows XP
 - MacOS X
- Application software (for FreeBSD)
 - ```
% grep 'ipv6|' /usr/ports/INDEX| awk -F '|' '{print $1}' | wc -l
```

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- Application software (for Windows)
  - See <http://www.ipv6style.jp/en/statistics/ipv6win/index.shtml>

# IPv6 commercial application service

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- New trial services to utilize IPv6 started in Japan
- NTT (Nippon Telephone and Telegram) East Company
  - FLET'S dot net
    - <http://flets.com/dotnet/> (Japanese)
- NTT West Company
  - FLET'S v6 application
    - <http://flets-w.com/v6ap/index.html> (Japanese)
- Basic services
  - Security service
    - Virus filtering
    - Contents filtering
    - Spam message filtering
  - High quality Video chat system
  - Broadband contents streaming
    - Video on demand service
    - IPv6 multicasting stream service

# Flet's v6 application

- Top page of FLET'S v6 application

The screenshot shows the top page of the Flet's v6 application. At the top left is the NTT West Japan logo with the tagline "新しいサービス、ひびくあふ" (New services, spreading everywhere). A search bar is located next to it. The main navigation bar includes links for "TOP", "個人のお客さま" (Individual customers), "法人のお客さま" (Corporate customers), "リービスのご案内" (Leevis guide), and "フレッツをご利用のお客さま" (Customers using Flet's). Below this is a breadcrumb trail: "TOP > サービスのご案内 > フレッツ・v6アプリ".

The left sidebar contains a "サービス提供エリア確認" (Service area confirmation) section with a "GO" button and a list of services: "フレッツ・光プレミアム" (Flet's Premium), "8フレッツ" (8 Flet's), "フレッツ・ADSL" (Flet's ADSL), and "フレッツ・ISDN" (Flet's ISDN). Below this is an "アップグレードのご案内" (Upgrade guide) section and a "フレッツ・v6アプリトップ" (Flet's v6 app top) section with links for "特長" (Features), "料金のご案内" (Rates), "提供エリア" (Service area), "お申し込みからご利用開始まで" (From application to start of use), and "各種ダウンロード" (Downloads). At the bottom of the sidebar are links for "よくあるご質問" (FAQ) and "お問い合わせ" (Contact us).

The main content area features a "IPv6対応、次世代コミュニケーション" (IPv6 compatible, next-generation communication) section titled "フレッツ・v6アプリ" (Flet's v6 app). A large banner below this reads "便利で安心、そして楽しい！新しいブロードバンド・ライフはじまる。" (Convenient and安心, and fun! New broadband life begins.) and "8フレッツ、フレッツ・ADSLをご利用のお客さまに次世代の多彩な機能をお届けします" (We deliver a variety of next-generation features to customers using 8 Flet's and Flet's ADSL). The banner includes three icons: "安心のセキュリティ" (Security), "ハイクオリティテレビ電話" (High-quality video call), and "テレビでブロードバンド映像" (Broadband video on TV). Below the banner is a "フレッツ・v6アプリ サポート情報" (Flet's v6 app support information) button.

At the bottom of the page is a "キャンペーン・イベント" (Campaign/Event) section with a "プレゼント" (Gift) icon. A banner for "フレッツ v6アプリ 無料キャンペーン" (Flet's v6 app free campaign) is displayed, with the text "ご利用開始から2か月間 月額利用料が無料に！" (Free monthly fee for 2 months from start of use!).

# IPv6 host configuration (example)

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- On FreeBSD

- Just put one line in /etc/rc.conf

- ```
ipv6_enable="YES"
```

- From next reboot, you will get automatically configured IPv6 address on your network interfaces

- For more information,

- http://www.freebsd.org/doc/en_US.ISO8859-1/books/handbook/network-ipv6.html

- On MacOS X

- You are using IPv6 unless you intentionally disable it from System Preference

- Safari tip

- Type the following magic words

- ```
% defaults write com.apple.Safari IncludeDebugMenu 1
```

- Disable 'Simple Loader' from the Debug menu

- Then, Safari starts trying IPv6 connection first

- On Windows XP

- Install 'Microsoft TCP/IP version 6' from property page of a network interface

# IPv6 router configuration (example)

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- Configuring a static tunnel on FreeBSD

- Add necessary configuration to `/etc/rc.conf`

- `ipv6_enable="YES"`

- `gif_interfaces="gif0"`

- `gifconfig_gif0="YOUR_IPV4_ADDR TUNNEL_SERVER_IPV4_ADDR"`

- `ipv6_ifconfig_fxp0="YOUR_IPV6_ADDR prefixlen 64"`

- `ipv6_gateway_enable="YES"`

- `rtadvd_enable="YES"`

- `rtadvd_interfaces="fxp0"`

- `ipv6_router_enable="YES"` (if you use RIPng)

- `ipv6_default_router="YOUR_IPV6_DEFAULT_ROUTER"` (if you use static routing)

- For more information

- [http://www.freebsd.org/doc/en\\_US.ISO8859-1/books/handbook/network-ipv6.html](http://www.freebsd.org/doc/en_US.ISO8859-1/books/handbook/network-ipv6.html)

- With the above configuration

- An IPv6 over IPv4 tunnel is created using gif0 interface

- IPv6 becomes available on fxp0 interface

## Some recent IPv6 news in Japan

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- Yahoo! BB is going to start IPv6 service
  - Trial service from February
  - Commercial service from December
- KDDI laboratory deployed IPv6 only network inside their company network
  - From October 2004
  - <http://www.kddilabs.jp/main.html>(Japanese)
- Okayama prefecture (which is located middle west of Japan) is the first prefecture which supports IPv6 officially
  - <http://www.ipv6style.jp/en/action/20041227/index.shtml>
- FreeBit is providing IP phone (Voice over IP) service using IPv6 VoIP terminals
  - <http://www.freebit.com/english/officeline/index.html>

# Summary

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- IPv6 is still not widely used even in Japan yet
  - Access service problem
  - What does IPv6 give personal users?
- However, IPv6 is available to most of Internet user in Japan
  - Not only for companies
  - Not only trial services, but also many commercial services
- Many companies are trying IPv6 in their services/environment
  - As a new service to users
    - P2P solutions with IPv6
    - As a communication media for closed services
  - To reduce maintenance costs
    - Intranetwork
    - IX
    - VoIP backbone

# Appendix: Getting IPv6 information in Japan

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- IPv6 style
  - A portal site of IPv6, mainly in Japanese market
  - Providing:
    - IPv6 general information
    - Technical columns
    - Service information
    - Product information
  - <http://www.ipv6style.jp/en/index.shtml>