



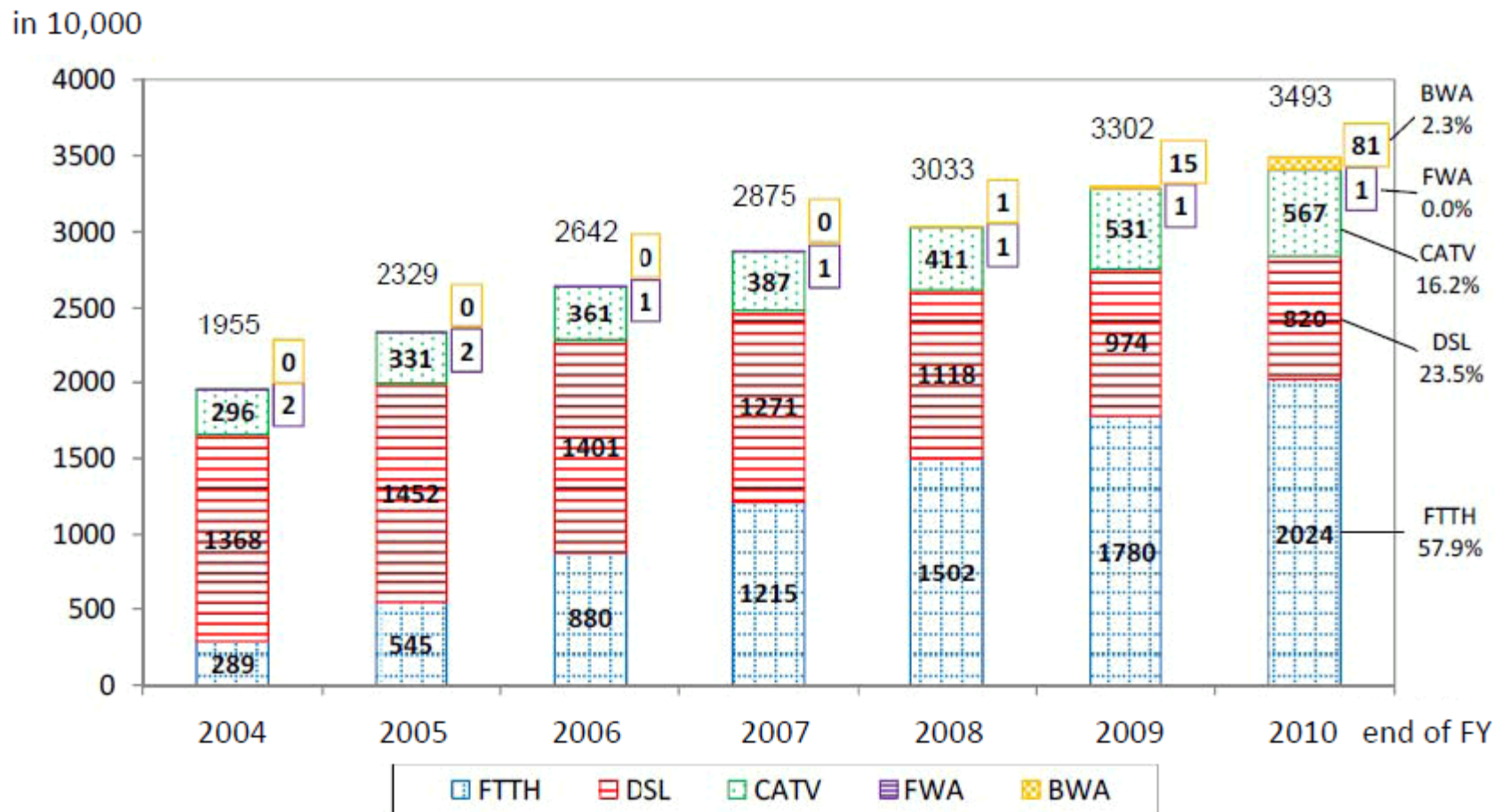
# IPv6 deployment status in Japan

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- IPv6 deployment status in Japan
- Deployment activities of IPv6 Promotion Council in Japan

# Japan Market Overview: Broadband Internet Access

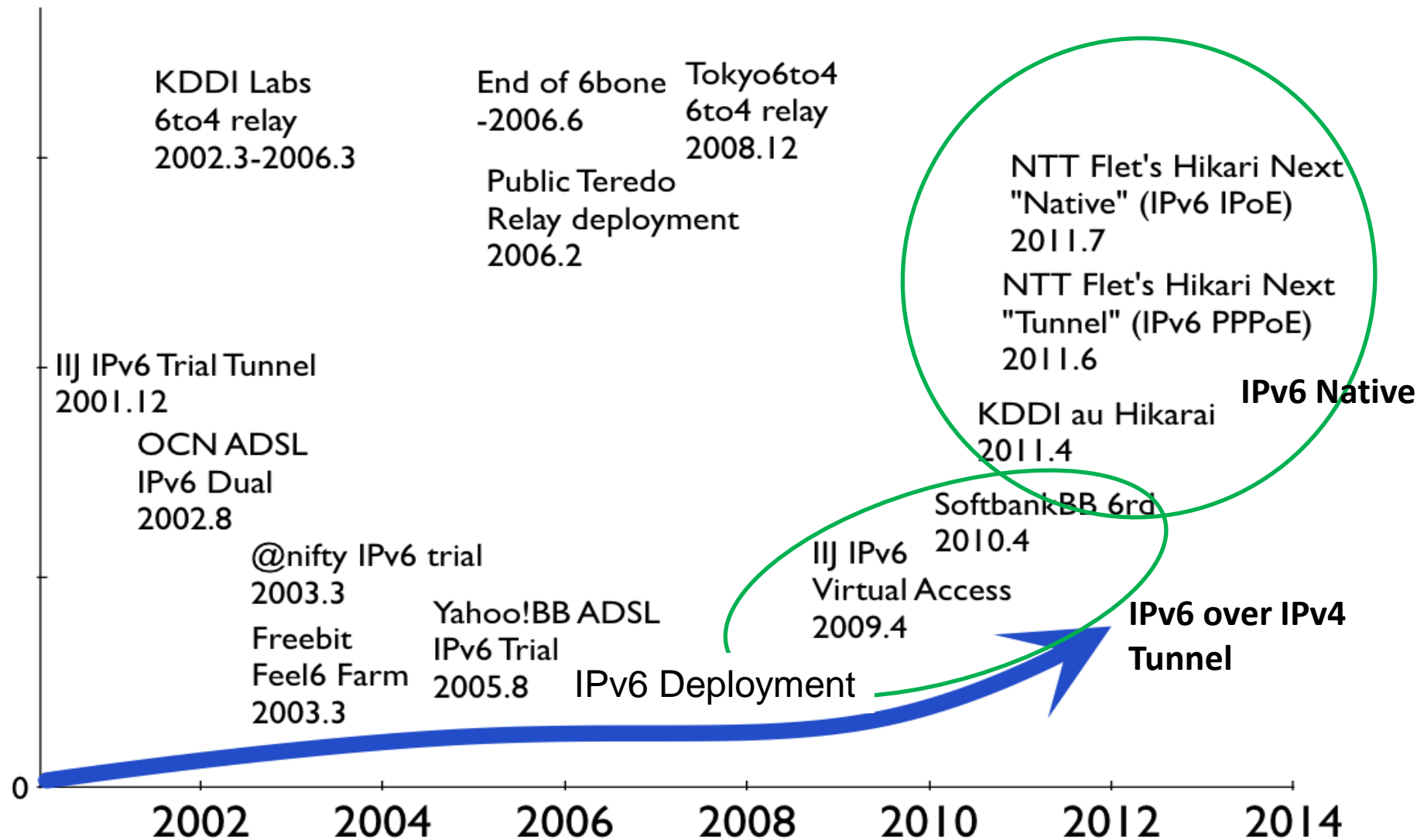


Transition of Broadband subscribers (MIC)

# IPv6 services in Japan

- Many ISPs have started their IPv6 services
  - Not only for enterprises but for consumers
    - As of July 2011, 35% of FTTH users in Japan can buy IPv6 service
    - Many ISPs offer their IPv6 service with no additional fee [KEY POINT]
  - One mobile carrier, NTT Docomo started IPv6 service in their LTE/3G network
    - Their LTE users can access to IPv6 Internet

# IPv6 service for residential users in Japan



# IPv6 services in Japan

ISP Name	Access Technology for IPv6	Status	Service Type
NTT Communications	FTTx, Tunnel, Leased line	Commercial	Residential, Enterprise, Transit
Internet Initiative Japan	FTTx, Tunnel, Leased line	Commercial	Residential, Enterprise, Transit
Softbank Telecom Corporation	Leased Line, Tunnel	Commercial	Enterprise
Softbank BB Corporation	Tunnel (with 6rd on FTTx users)	Commercial	Residential
KDDI Corporation	FTTx	Commercial	Residential
NTT Docomo	Mobile (LTE)	Commercial	Residential, Enterprise
ISPs using NTT East/West Internet access platform	FTTx	Commercial	Residential
DREAM TRAIN INTERNET INC.	FTTx, Tunnel	Commercial	Residential
N-plus Internet Services	FTTx, Tunnel	Commercial	Residential, Enterprise
SANNET INTERNET SERVICE	FTTx, DSL(Tunnel), Mobile(Dialup)	Commercial	Residential, Enterprise
Densan Co, Ltd.	Tunnel, Leased line	Commercial	Residential, Enterprise

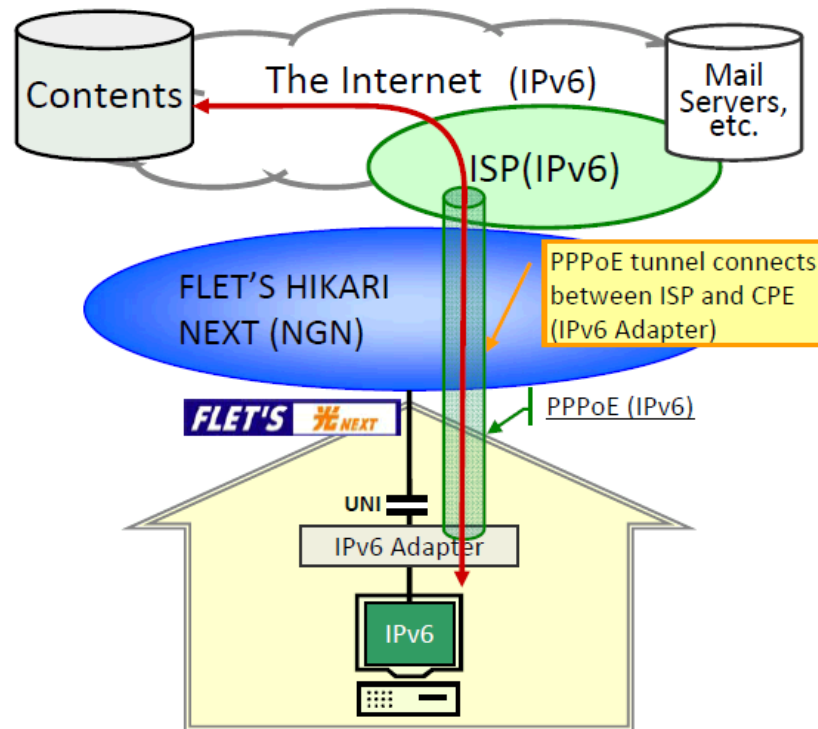
This table created from information below (as of Jan. 2012):

1. IPv6 service list in Japan by Task Force on IPv4 Address Exhaustion, Japan. <http://www.kokatsu.jp/blog/ipv4/data/ipv6service-list.html>
2. IPv6 enabled ISP [http://www.ipv6forum.com/ipv6\\_enabled/isp/approval\\_list.php?start=0](http://www.ipv6forum.com/ipv6_enabled/isp/approval_list.php?start=0)
3. Presentation material at Internet Week 2011 by Ruri Hiromi about IPv6 residential service in Japan.  
(not published now, but will be in a few month)


# NTT East and West, NGN's IPv6 PPPoE

## Outline of IPv6 PPPoE

- IPv6 Prefix will be assigned to User via PPPoE by ISP
- new CPE for handling PPPoE(v6CP) and NAT66 is required to access both NGN and the Internet.
- Dedicated ID and password for IPv6 tunnel must be set on IPv6 Adapter



## Service specifications

Connection method	PPPoE(IPv6)
Fee	Included in monthly charge of FLET'S
IPv6 Prefix assign method	DHCPv6-PD via PPPoE
ISPs	 and 128 ISPs in total
Remark	IPv6 adapter or similar function to terminate PPPoE(v6CP) and NAT66 is required

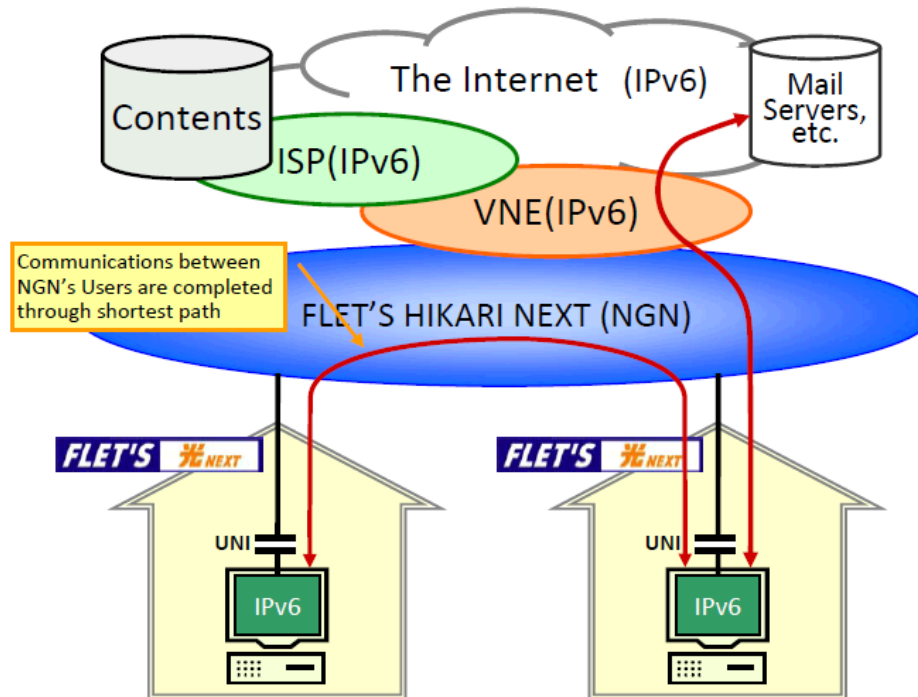
source: MIC Study Group on Advanced Use of Internet with IPv6 the 3rd interim Report,  
[http://www.soumu.go.jp/main\\_content/000127670.pdf](http://www.soumu.go.jp/main_content/000127670.pdf)




# NTT East and West, NGN's IPv6 IPoE

## Outline of IPv6 IPoE

- VNE's prefix will be assigned to UNI when user subscribe to ISP
- Users are required to subscribe to NGN with "FLET'S v6 Option" to make UNI-UNI communications go through shortest path in NGN



## Service specifications

Connection method	IPoE(IPv6)
Fee	Included in monthly charge of FLET'S
IPv6 Prefix assign method	RA or DHCPv6-PD (VNE's Prefix )
ISP	 And some more ISPs *1
Remark	VNE (Virtual NW Enabler*2) <ul style="list-style-type: none"> <li>– BBIX, Inc.</li> <li>– Japan Network Enabler, Co.</li> <li>– Internet Multifeed, Co.</li> </ul>

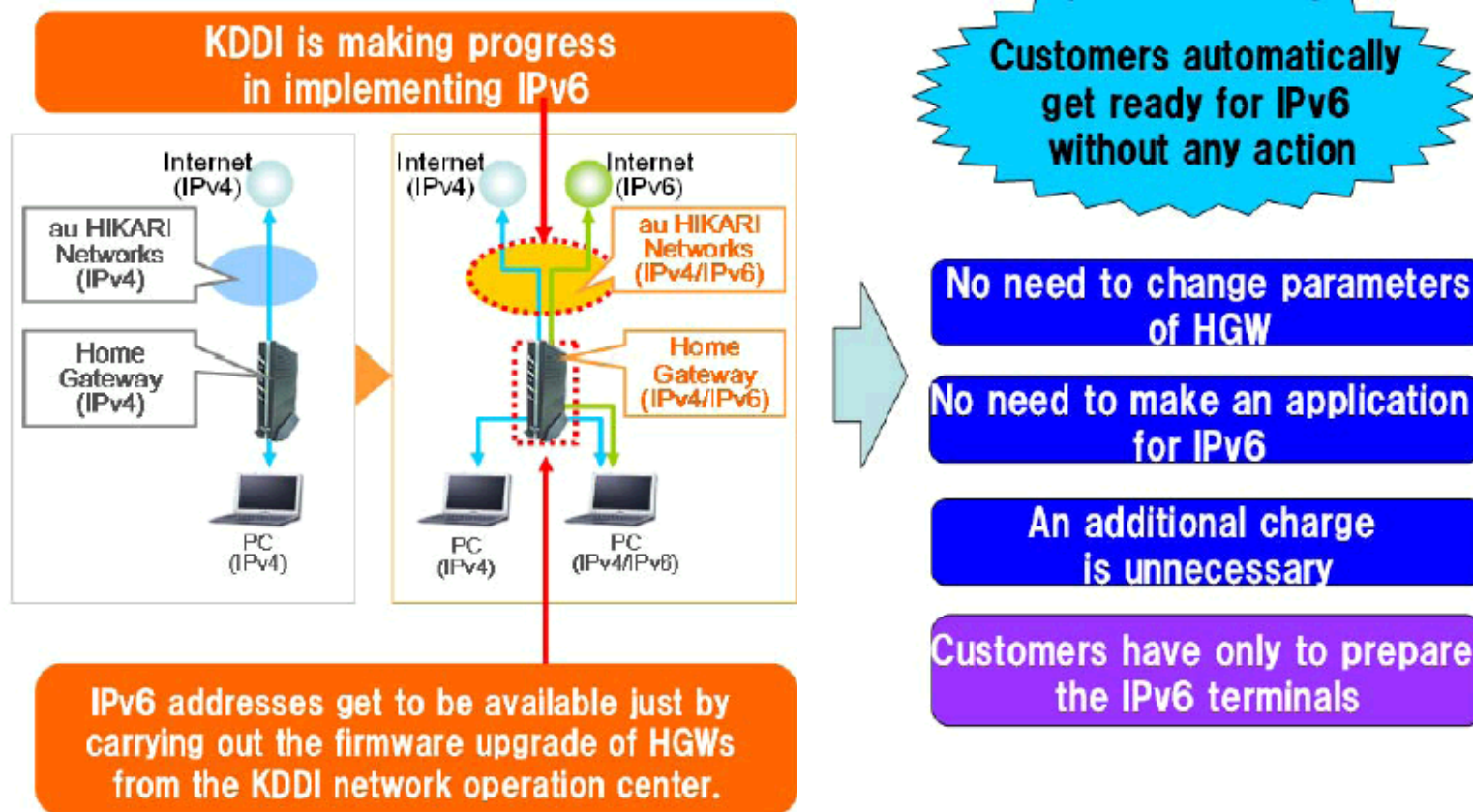
\*1: [http://www.fletes.com/next/ipv6\\_ipoe/isp.html](http://www.fletes.com/next/ipv6_ipoe/isp.html)

\*2: A kind of roaming service provider

source: MIC Study Group on Advanced Use of Internet with IPv6 the 3rd interim Report,  
[http://www.soumu.go.jp/main\\_content/000127670.pdf](http://www.soumu.go.jp/main_content/000127670.pdf)



## ■ Migration to IPv6



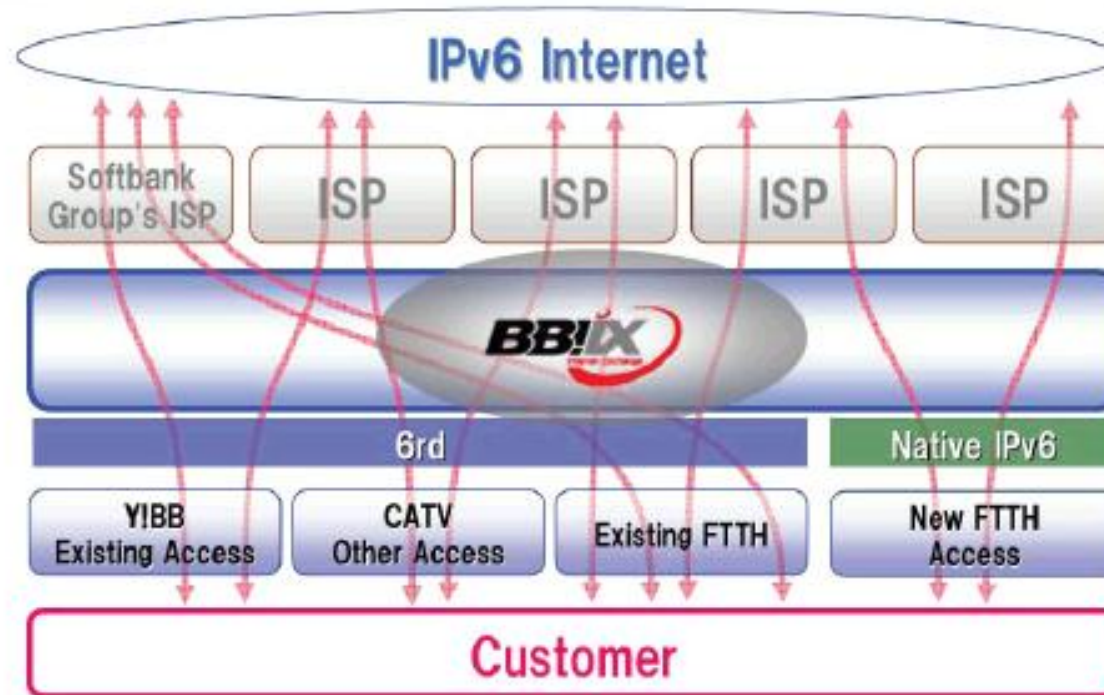
# SoftBank IPv6 Service

IPv6 for Everybody!

SoftBank

For all of broadband customer in Japan, BBIX provides  
6rd and native IPv6 service to other ISPs

For Everybody!

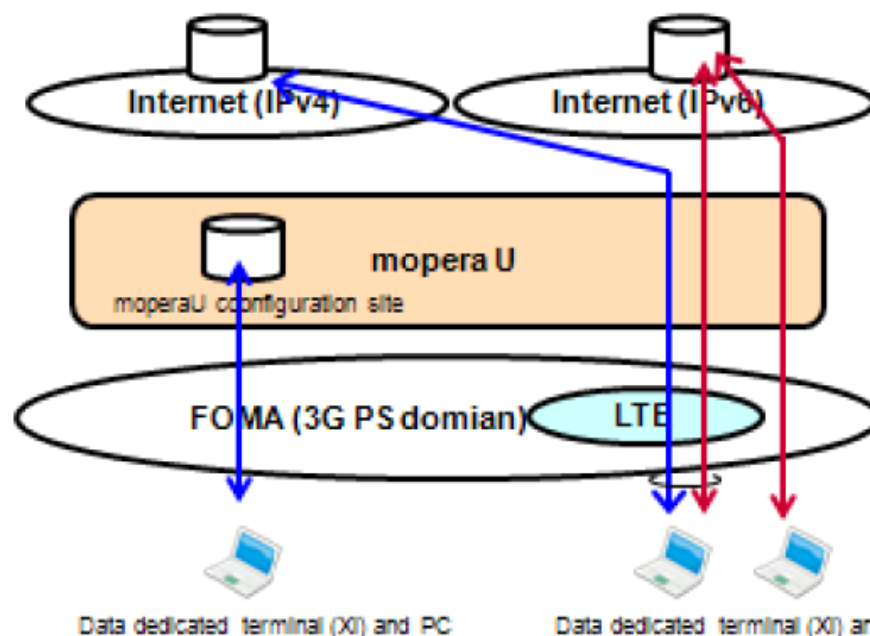


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# Wireless Access LTE

## mopera-U's IPv6 internet access service

docomo



### ## How to use IPv6 service? ##

- Xi service contract
- mopera-U's ISP contract
- Xi handset (L-02C or F-06C by now)
- Change the setting to activate IPv6 using mopera-U's self configuration site.

### ## Note ## In the following cases, you cannot use IPv6 service.

- Access via public wireless LAN nor fixed broadband including FTTH/ADSL, etc. provided by NTT)
- Access in a roaming environment.

Change the setting yourself  
v4 only -> v4/v6 dual



v4/v6 dual add(s). to be assigned.

※ You can also use v6 connectivity via 3G network

## Next Step: Promotion of IPv6 service

- Currently, IPv6 service do not have so many users totally.
  - Some ISPs begin to provide IPv6 service to existing users automatically, but some cannot.
    - Depends on ISP's infrastructure.
  - ISPs begin to promote IPv6 service along with World IPv6 launch event.



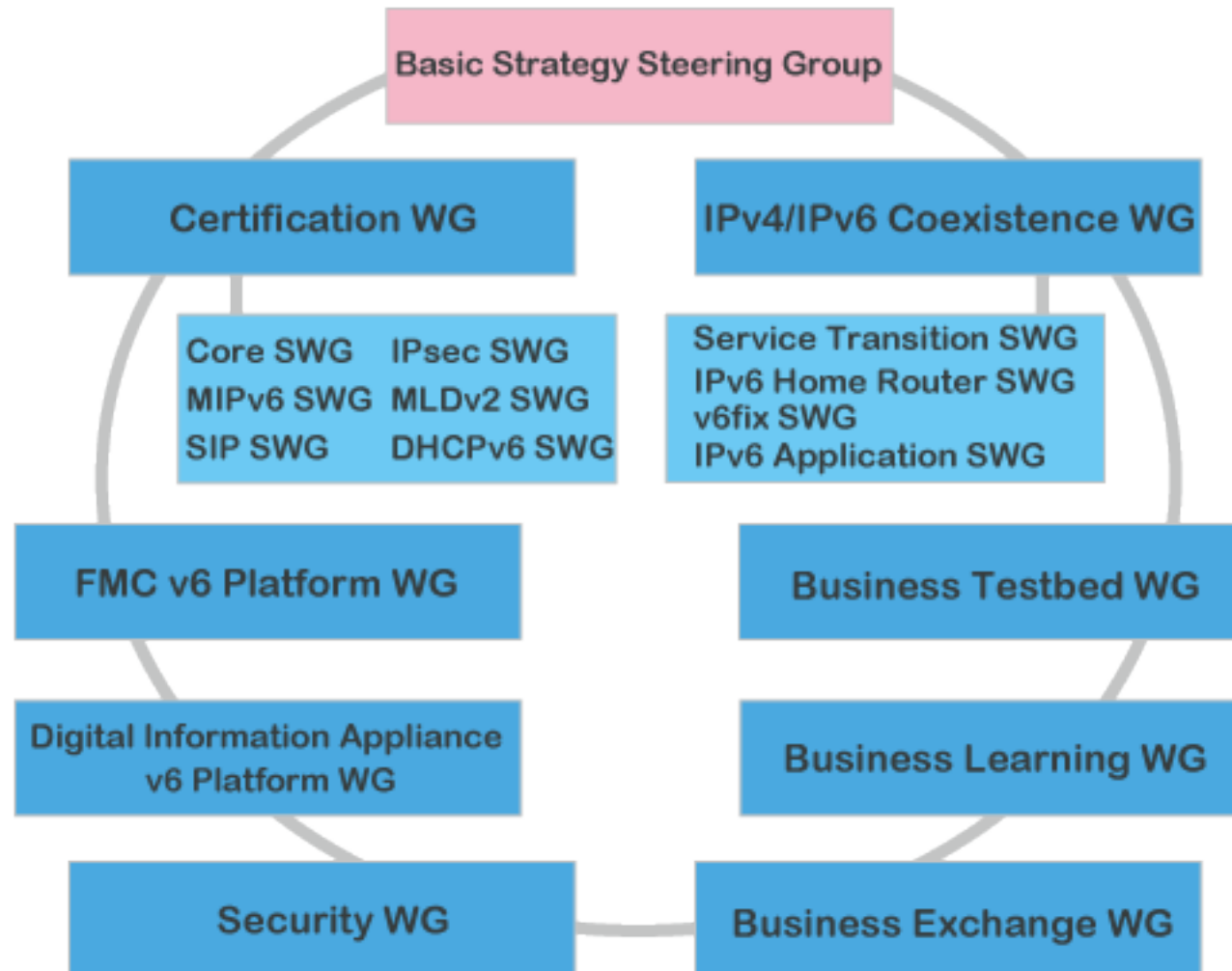
## **Activities of IPv6 Promotion Council in Japan (IPv6 PC)**

# IPv6 Promotion Council in Japan

- IPv6 Promotion Council
  - Established on 2001.
  - Aims
    1. Pursue an international leadership role for Japan in the Internet field
    2. Develop rich human resources for continuous development of a new infrastructure for a high information society
    3. Promote new business and vitalize existing business in hardware, software and service of networks and devices
  - <http://www.v6pc.jp/en/index.phtml>



# Working Groups in IPv6 PC





# IPv6 home Router SWG

- A key component of IPv6 deployment is ‘Home Routers’.
  - One target of W6L.
    - <http://www.worldipv6launch.org/participants/?q=3>
- In this SWG, we’ve been discussing IPv6 residential home router specifications  
<http://www.v6pc.jp/en/wg/coexistenceWG/v6hgw-swg.phtml>
  - Latest guidelines
    - [http://www.v6pc.jp/pdf/v6hgw\\_Guideline\\_20.pdf](http://www.v6pc.jp/pdf/v6hgw_Guideline_20.pdf)

# IPv6 fix SWG

IPv6 fix SWG created 'IPv6 deployment issues' document

- <http://www.v6pc.jp/jp/wg/coexistenceWG/v6fix-swg.phtml> (in Japanese)

Translated version:

- <http://wiki.nttv6.net/cgi-bin/wiki.cgi>

- Translated version describes three major issues in detail

- Fallback, Rouge RA, and Path MTU

# 'IPv6 fix' document 1/2

5. IPv6 Deployment Issues: Fallback, Rouge RA, and Path MTU

6. Other Issues Associated with Deployment of IPv6

6.1. Problems Relating to the Domain Name System (DNS) when IPv6 is Deployed

6.2. Captive Portal and DNS Problems (IPv6 Uninstall at Hotels)

6.3. Poor Quality Tunnels, Transition Technology Related Issues (Teredo, 6to4)

6.4. Different QoS at Dual-Stack Sites, Different QoS of IPv4 and IPv6

6.6. Problems with False Recognition and IPv6-Ready Routers that Only Support IPv6 Bridge Functions (IPv6 Pass-Through Functions)

6.7. Problems with Bridge Filters in IPv6-Ready Routers

6.8. DNS Registration Issues ("DNS Registration, Reverse Lookup, Forward Lookup, DDNS")

6.9. Security and Filtering Issues (ICMP Filtering Problems, etc.)

6.10. IPv6-Ready Mail System Issues (Sending and Receiving Mail)

6.10.1. Issues Involved in Sending and Receiving Mail

6.11. IPv6-Ready Mail System Issues (Anti-Spam Techniques)

6.12. Blacklist Database Service (DNSBL) Issues

# 'IPv6 fix' document 2/2

- 6.13. Localizing Problems on Access Lines: Troubleshooting When Multiple Providers are Involved in Providing Service
- 6.14. Presence of Unsupported L2 Multicast Equipment
- 6.15. Adverse Effects of IPv6 Multicast on Home Communications
- 6.16. IPv6 Address Notation
- 6.17. Implementations That Do Not Meet Minimum Specifications
- 6.18. IPv6 Privacy Address (RFC 4941) Issues
- 6.19. IPv6 Address Traceability (Privacy) Issues
- 6.20. CGN, Translation Issues
- 6.21. Expressions Subject to Misunderstanding, Problems from Sharing
- 6.22. IPv6 Impact on Multiple IPv4 Subnets
- 6.23. IPv6 Impact on Large-Scale L2 Networks
- 6.24. Problems that Cannot be Resolved Within CPEs Own Domain
- 6.25. IRR Registration Issues
- 6.26. Number of DNS Records and OS Operation
- 6.27. Problems Regarding How Sites are Viewed

# IPv6 deployment issues

- We would like to share more deployment issues.
- Please send you comments to:  
*fujisaki at syce.net*



Thank you for your attention