
Action Plan and Milestone Toward IPv4 Address Exhaustion ver. 2010.06

**June 4, 2010
Task Force on IPv4 Address Exhaustion, Japan**

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About this document

This document describes a series of recommended action plans and milestones to prepare toward IPv4 address exhaustion, which is estimated to occur in 2011, as a reference for industry players in Japan, but it should be informative also for those in other countries.

The Task Force on IPv4 Address Exhaustion, Japan expects that industry players will study and address the issues in IPv4 address exhaustion on the basis of this reference, and create and execute individual action plans accordingly. We hope the Internet industry as a whole will smoothly overcome this problem as a result.

In order to take the latest situation into consideration, this document is supposed to be updated on a regular basis.

In version 2009.10, according to NTT NGN set up time, updated the tables and add the latest information.

In version 2010.6, no update on the tables about each industrial player's situation. Evaluation on ongoing process and latest information are added.

Revision history

Date	Version	Contents
Feb. 17, 2009	2009.2	First release
Oct. 5, 2009	2009.10	Second release; Modified diagrams based on estimated commencing time of the IPv6 access network services on the NGN services.
June 4, 2010	2010.6	Each industrial player's situation is not reviewed. Evaluation of ongoing situation and latest information are added.

Background of the Creation of this document

- ✓ The target date in this document is set as early 2011, unchanged from The Ministry of Internal Affairs and Communications of Japan's *Report "Study Group on Sophisticated Use of the Internet by IPv6" (March 2010)* *.
 - ✓ The above report predicts the exhaustion date of the remaining IPv4 address pool on the following assumptions:
 - ✓ Around **mid to late 2011**, exhaustion of the international address stock (IANA Pool)
 - ✓ the acquisition of new IPv4 addresses in Japan will be impossible in the **mid 2012**.Geoff Huston currently estimates (as of May 5, 2010):
 - ✓ 3Q to 4Q 2011 as the IANA exhaustion date
 - ✓ 1Q to 2Q 2012 as the APNIC exhaustion date (exhaustion dates are updated every day.)
 - ✓ The exhaustion date may be delayed by reduced capital investment in the current recessionary environment, while it may also accelerate the consumption of IPv4 address through such factors as the faster deployment of wireless broadband, expanding demand mainly in Asian region, the last minute demand etc..
 - ✓ At present the target date is set as early 2011, as a result.
- **Study Group on Sophisticated Use of the Internet by IPv6*
(http://www.soumu.go.jp/main_content/000058238.pdf)
- ✓ This Action Plan and Milestone is a model example with a margin of time. Each player should set its own schedule in consideration of risks and environments.
 - ✓ Even the latest movers should complete preparation before JPNIC/APNIC exhaustion.
 - ✓ This Action Plan will be updated as necessary based on changing address consumption trends, IPv6 technology issues, etc.
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Current Progress Review

- ✓ ISPs are taking action to IPv4 exhaustion.
 - ✓ NTT NGN IPv6 connectivity method (tunneling method and native method) details are decided.
- ✓ MIC formulated information disclosure guidelines.
 - ✓ The guidelines are formulated for promoting appropriate advertisement of ISPs' measures on IPv4 address exhaustion.
 - ✓ It is expected that ISPs provide information in the summer 2010.
- ✓ Situation of the other players
 - ✓ Among iDC, ASP/CSP, some of industrial players are ready for Ipv6, others are not. Their readiness differs.



Latest information on IPv4 address exhaustion in the past half year (since Oct. 2009)

- ✓ Situation of /8 address block consumption is almost as predicted.
 - ✓ In January 2010, /8 address stock at IANA is 24 block, it is less than 10% of the total.
 - ✓ Consumption is continued after that, and 16 block is remained on June 2010 (6% o the total).
- ✓ For NGN IPv6 Internet Connection, internet providers in native method were selected.
 - ✓ On December 4, 2009, as native method internet providers, BBIX, Japan Internet Exchange and Internet Multi Field were selected. They are preparing for starting services in April 2011.
- ✓ IPv6 service list was released (IPv4 Address Exhaustion Task Force).
 - ✓ Released since Feb. 22, 2010 (Currently 61 services in 13 corporations, as of June 2010)
(<http://www.kokatsu.jp/blog/ipv4/data/ipv6service-list.html>)
- ✓ The guidelines for information disclosure on IPv4 address exhaustion measures in ISPs were issued(by MIC).
 - ✓ Since April 23, 2010 (http://www.soumu.go.jp/menu_news/02kiban04_000022.html)
- ✓ IPv6 connection service in 6RD method was launched.
 - ✓ Start to provide service by Free Telecom @ France
 - ✓ Softbank group also started services step by step since April 2010.
- ✓ The other actions by contents side
 - ✓ Google search function is ready for IPv6 since 2009.
 - ✓ YouTube is ready for IPv6 since February 5, 2010.

Milestone: Network Area (ISP, iDC etc.)

The following represents recommendations of typical actions for network operators in dealing with IPv4 address exhaustion.

(* Refer to the action items in the diagram on the next page.)

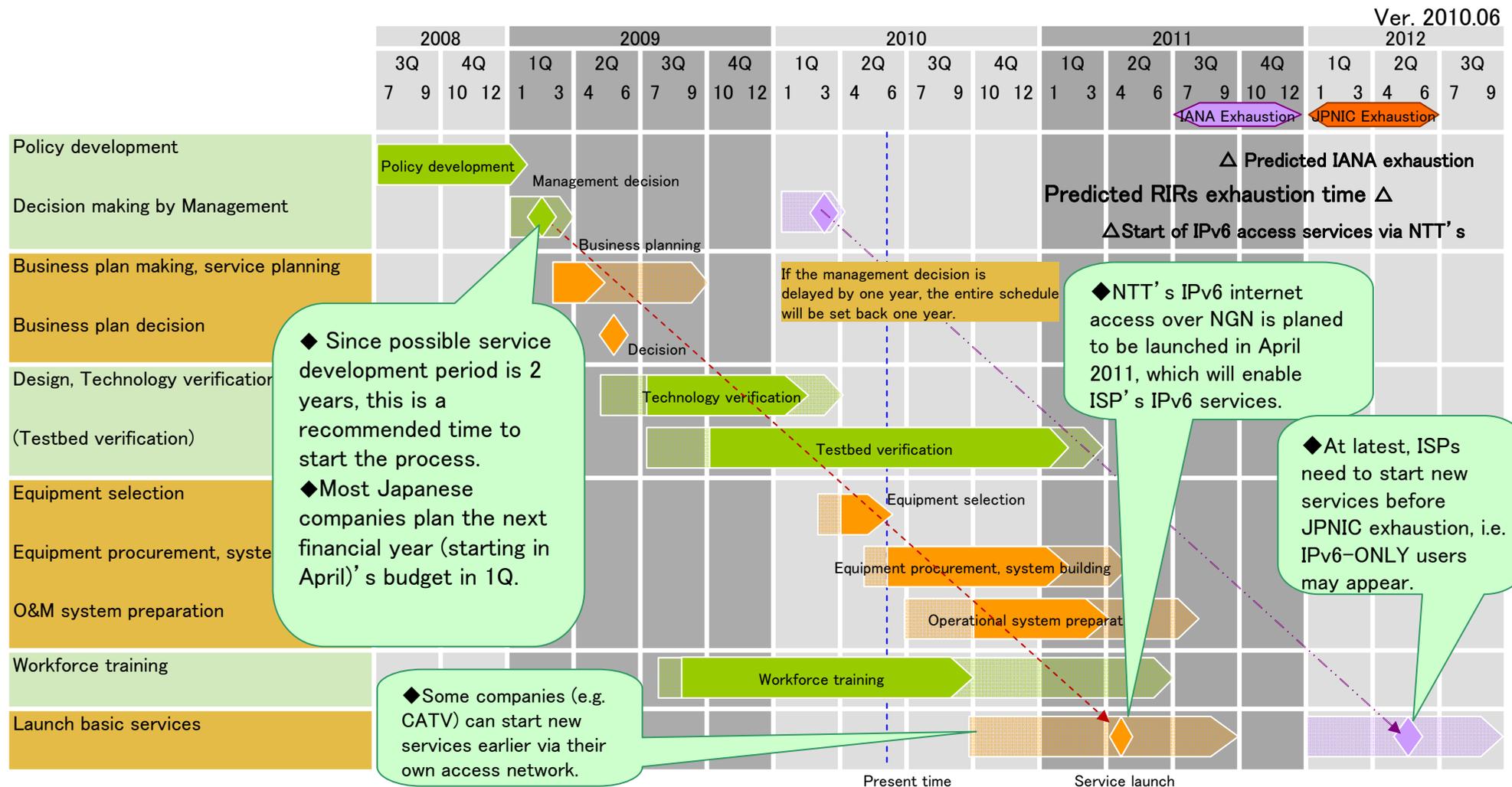
1. Policy Development, Decision Making by Management
 - i. Analyze the impact of the exhaustion on your organization.
 - ii. Perform the business decision for the preparation policy.
 - i.e.: ignore this exhaustion issue?, how to solve? (IPv6?, LSN?, etc.), When?, which type of access network? etc.
2. Business Planning/Review, Service Planning
 - i. Policy detailing and the business plan development.
 - i.e.: service planning, basic network design, consideration of operating procedures and systems, etc.
3. Design, Technology Verification
4. Equipment Selection, Procurement, System Building, Preparation of O&M system
5. Workforce training
6. Launch Basic Services

Action Plan: Network Area (ISPs)

-----▶ Recommended Schedule

-----▶ Latest start Schedule

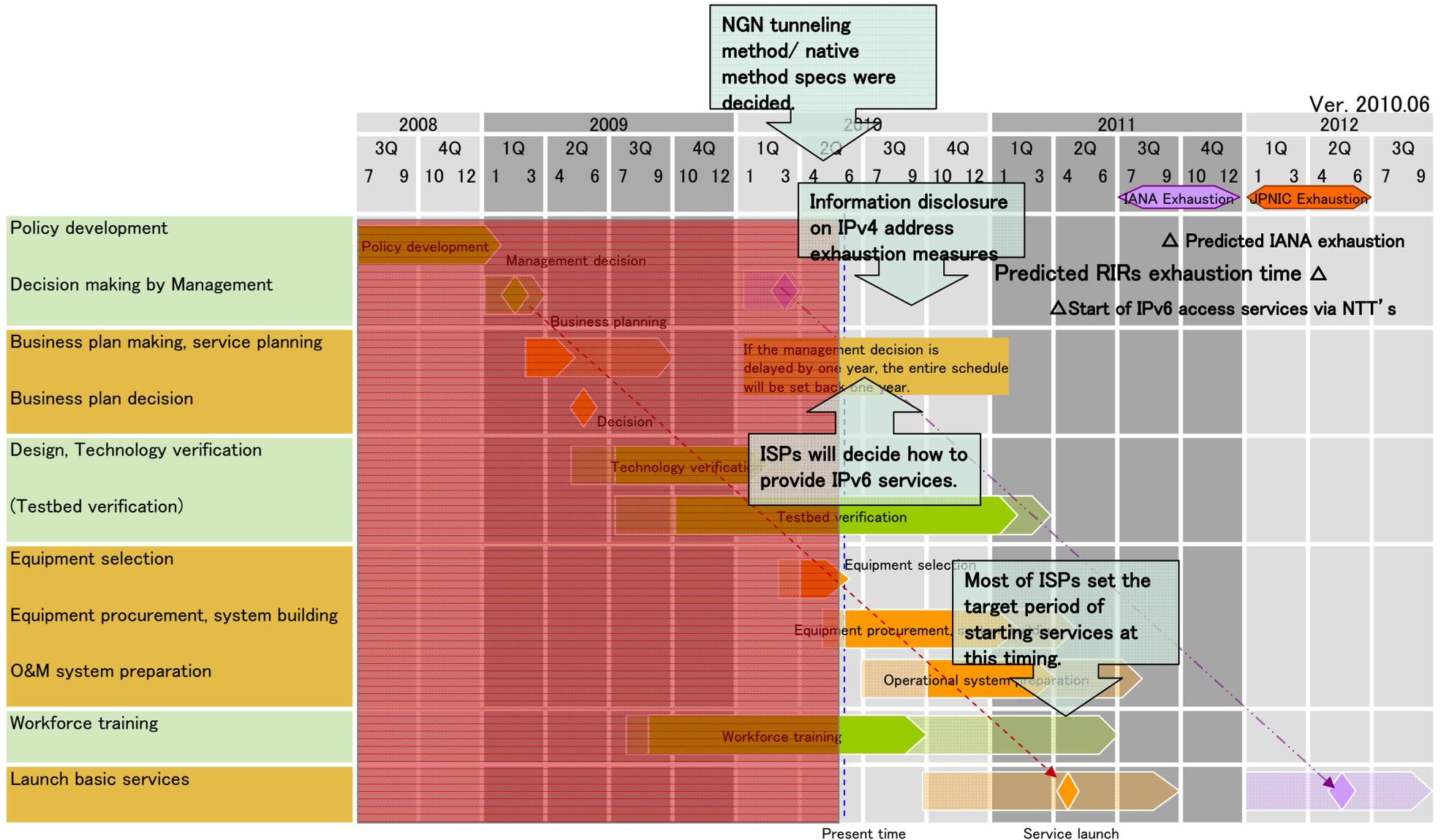
Action Plan for Network Players (ISPs)



Present Status of Progress : Network Area (ISPs)

-----▶ Recommended Schedule

-----▶ Latest start Schedule



Action Plan: Network Area (iDC)

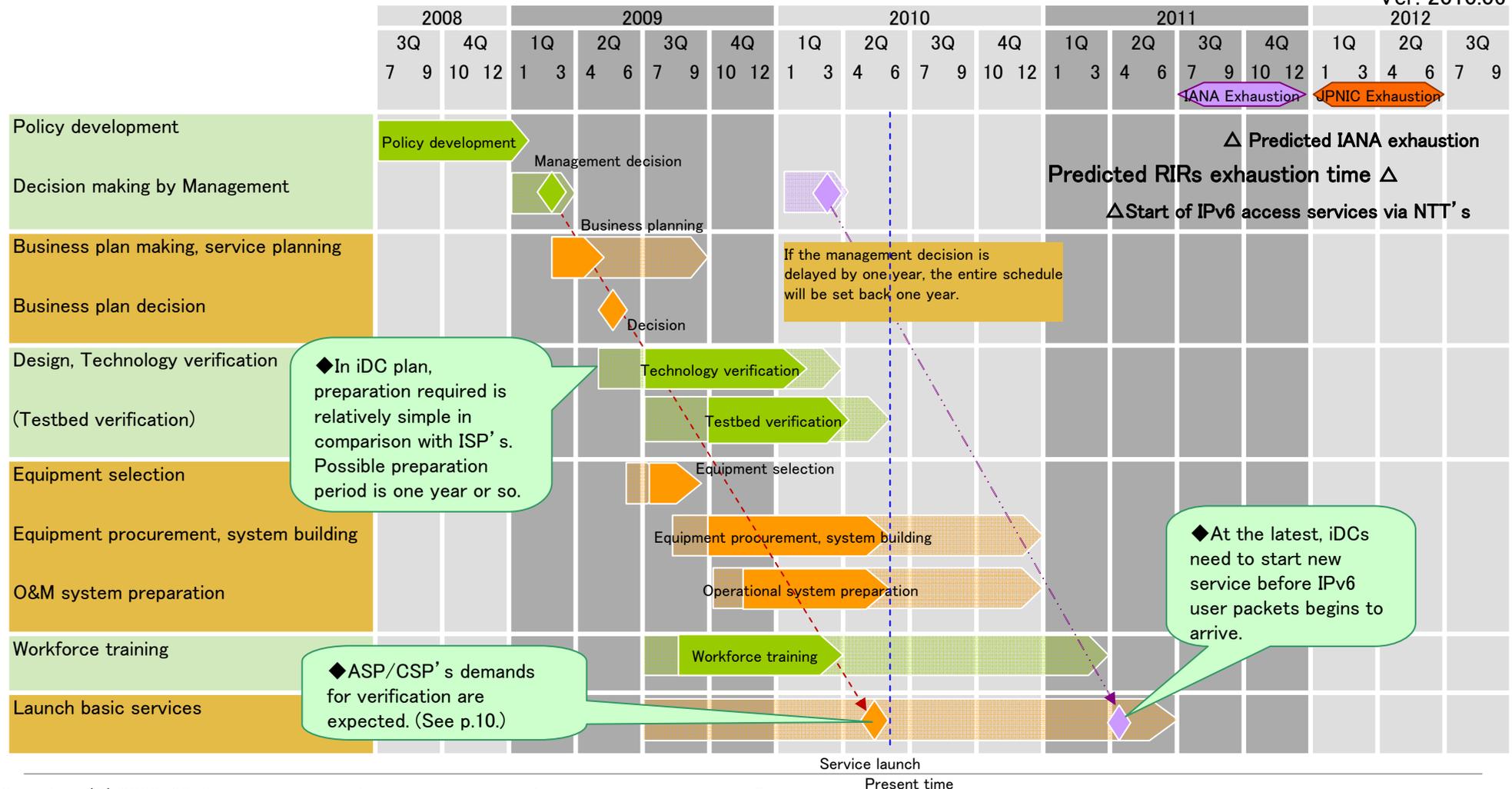
-----▶ Recommended Schedule

-----▶ Latest start Schedule

Action Plan for Network Players (iDC)

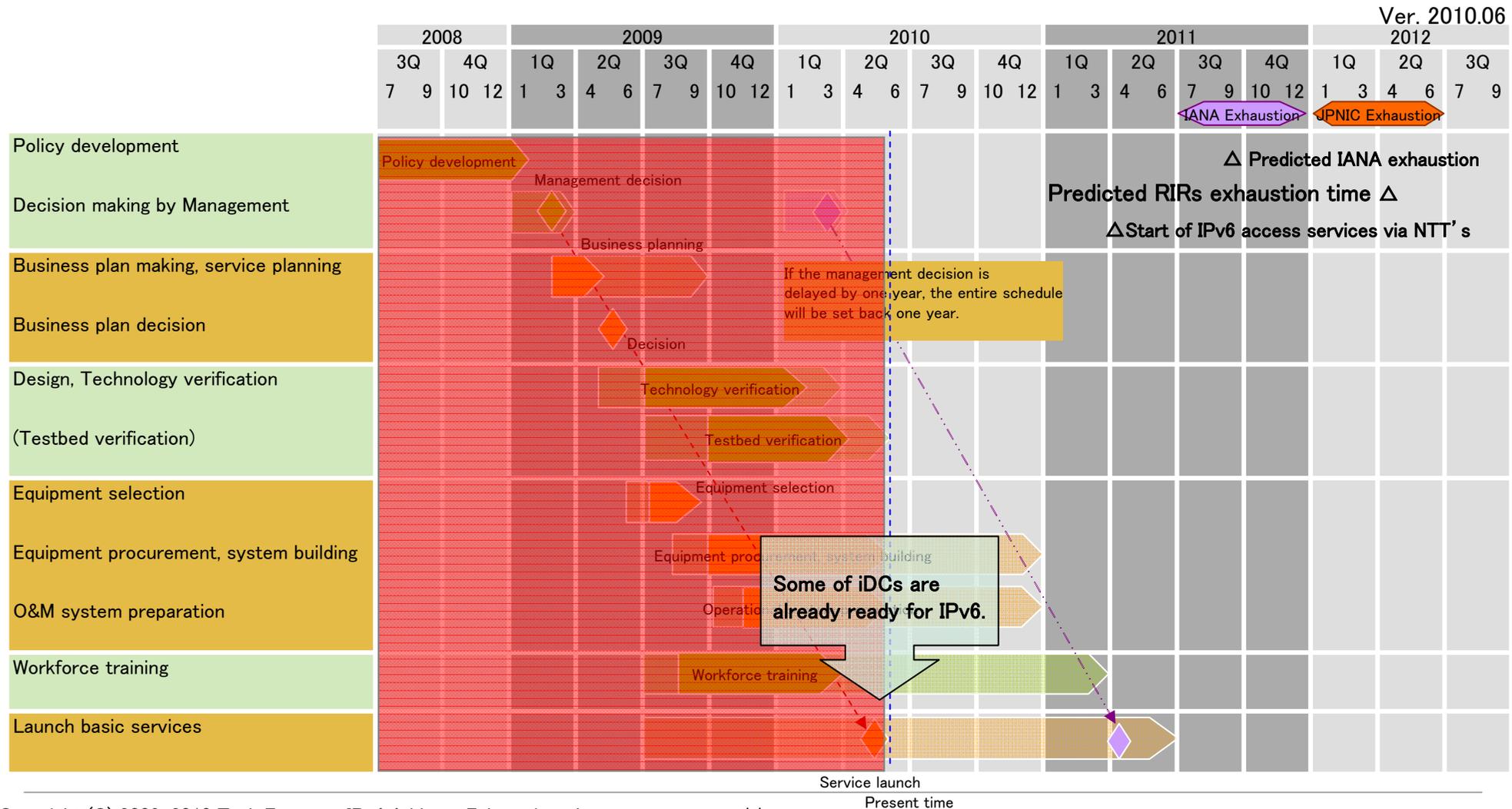
*This page is especially for BtoC (The plan for enterprise can be found in Business user Area page)

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Present Status of Progress: Network Area (iDC)

-----▶ Recommended Schedule
▶ Latest start Schedule



Action Plan: Service Area (ASP/CSP)

The following represents recommendations of typical actions for Service (ASP/CSP: Application Service Provider/Contents Service Provider) Area are as follows.

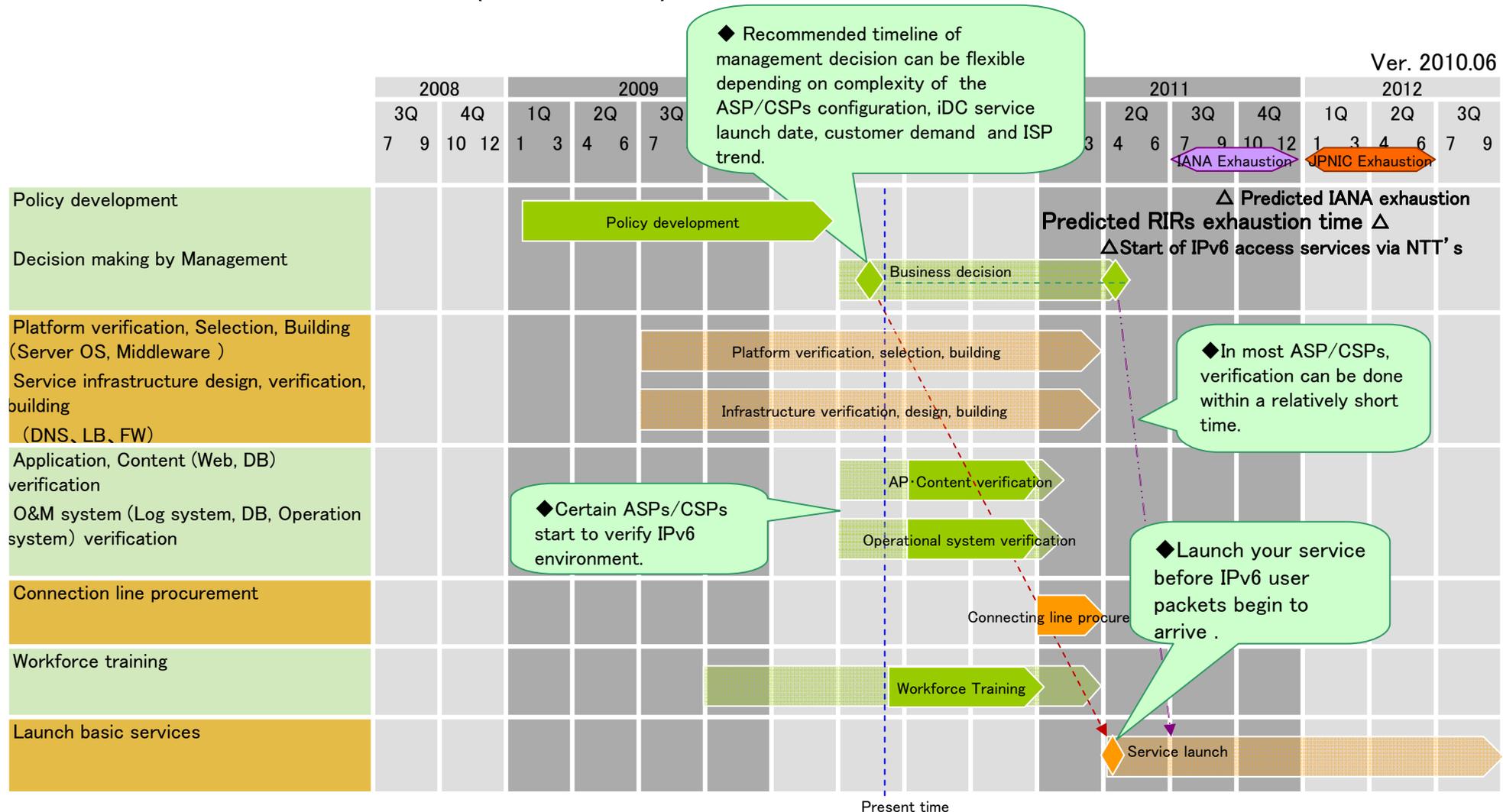
1. Policy Drafting, Management Decision Making
2. Technology Verification, System Building
 - i. Platform verification, selection, and building
 - Server OS, Middleware
 - ii. Service infrastructure design, verification and building
 - DNS, Load Balancer, Firewall etc.
3. Application, Content
 - i. Verify applications and contents under exhaustion situations (i.e. under such environments as IPv6, LSN)
4. O&M System
 - i. Verify correct behavior of system log, database, operation system under the exhaustion situation (i.e. under such environments as IPv6, LSN)
5. Connection Line Procurement
 - i. Selection of Internet connection line (dual stack access etc.), procurement, etc.
6. Workforce training
7. Launch Basic Services

Action Plan: Service Area (ASP/CSP)

-----▶ Recommended Schedule

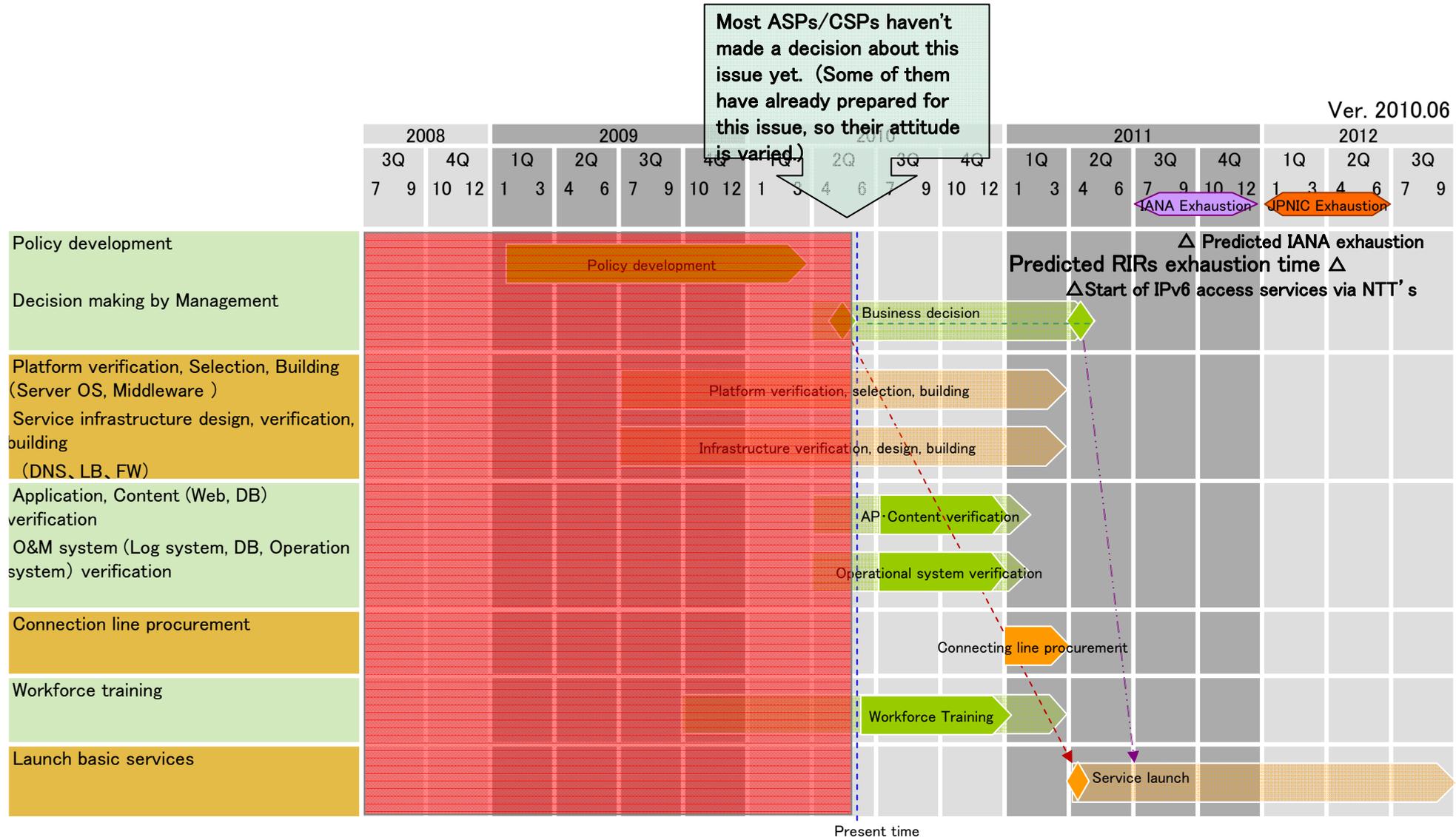
-----▶ Latest start Schedule

Action Plan for Service (ASP/CSP) Area



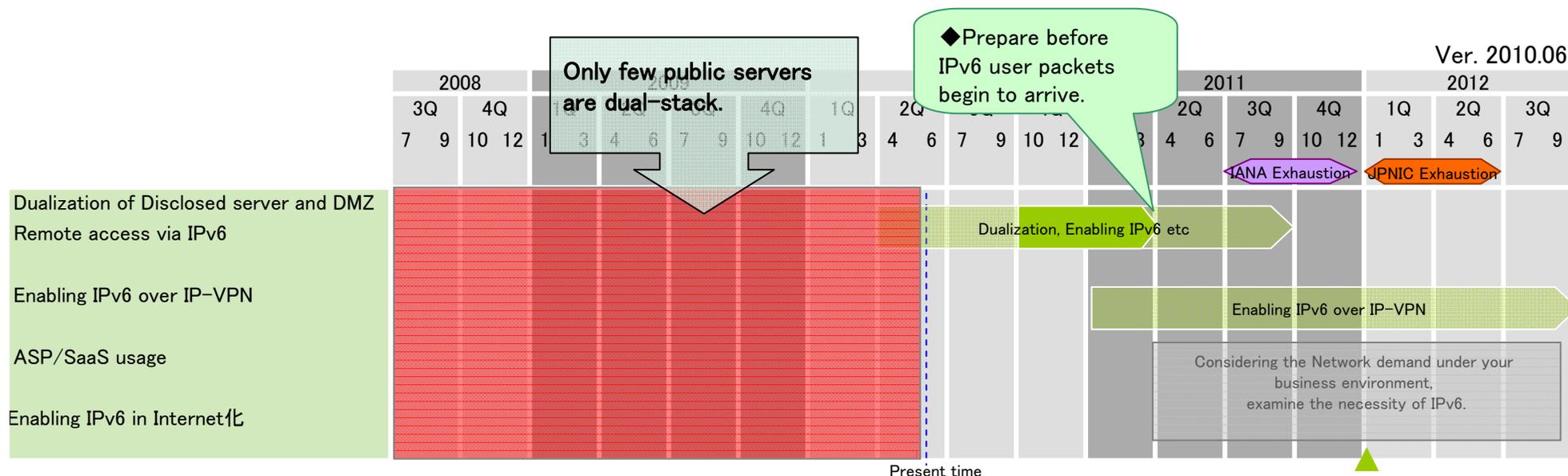
Present Status of Progress : Service Area (ASP/CSP)

-----> Recommended Schedule
 - - - - -> Latest start Schedule



Action Plan/ Status of Progress: Business User Area (incl. National and Local govt.)

Action Plan and Progress situation for Business User Area



Action recommendations

<Dual-stacking of public server and DMZ>

•Dual-stacking is required in order to deal with IPv6 accesses that will increase in 2011and later.

<Remote access>

•Remote access terminals may be under IPv6/LSN environments in 2011and later.

<IP-VPN>

•A new branch may only be able to get IPv6 or LSN service after 2011. Preparation of IPv6 IP-VPN might be needed.

<Overseas office>

•Global companies may be able to procure only IPv6 access line at their overseas office in some countries after 2011.

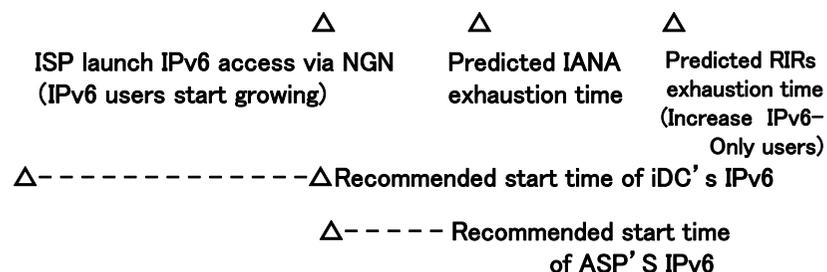
<Intranet>

•No immediate actions required.

•Security measures are necessary to deal with default IPv6 connection in Windows OS(Windows Vista, Windows 7, 2008Server etc.)

Present time

WindowsXP support deadline



Action Plan: Other Players' Area

- System Integrator / Outsourcee
 - System Integrators and outsourcees basically follow the demands of their customers. Development and verification of solution for the IPv4 address exhaustion, preempting customer's schedule and action plan, may give some advantages to their business
 - For Enterprise customer service -> Start Preparation based on the Milestone for Business User Area
 - For ISP/iDC -> Start Preparation based on the Milestone for Network Area
- Consumer electronics company etc.
 - UPnP devices are not workable under IPv4 LSN service, which may happen after 2011. Implementing IPv6 will be a vital requirement for such devices.
- Home users
 - Required actions depend on the ISP that each user connects to.
 - Basically, ISPs are trying to minimize influences to customers.