

Action Plan and Milestone Toward IPv4 Address Exhaustion ver. 2009.10

Oct 5, 2009

Task Force on IPv4 Address Exhaustion, Japan

Table of contents

| | |
|---|----|
| About this document | 3 |
| Background of the creation of this document..... | 4 |
| Milestone: Network Area (ISP, iDC etc.) | 5 |
| Milestone: Service Area(ASP/CSP) | 10 |
| Milestone/ Present Status: Business User Area(incl. National and Local Govt.) | 13 |
| Milestone: Other Players' Area | 14 |

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.

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. |
| | | |

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 Internet's Smooth Transition to IPv6*" (June 2008) *.
 - ✓ The above report predicts the exhaustion date of the remaining IPv4 address pool on the following assumptions:
 - ✓ Around mid 2010 to early 2012, exhaustion of the international address stock (IANA Pool)
 - ✓ the acquisition of new IPv4 addresses in Japan will be impossible in the beginning of 2011 to mid 2013, .
 - Geoff Huston currently estimates:
 - ✓ 2Q to 4Q 2011 as the IANA exhaustion date
 - ✓ 2Q to 3Q 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, the last minute demand etc..
 - ✓ At present the target date is set as early 2011, as a result.

* Report of "Study Group on Internet's Smooth Transition to IPv6"

(http://www.soumu.go.jp/main_sosiki/joho_tsusin/eng/pdf/080617_1.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.

Milestone: Network Area (ISP, iDC etc.)

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

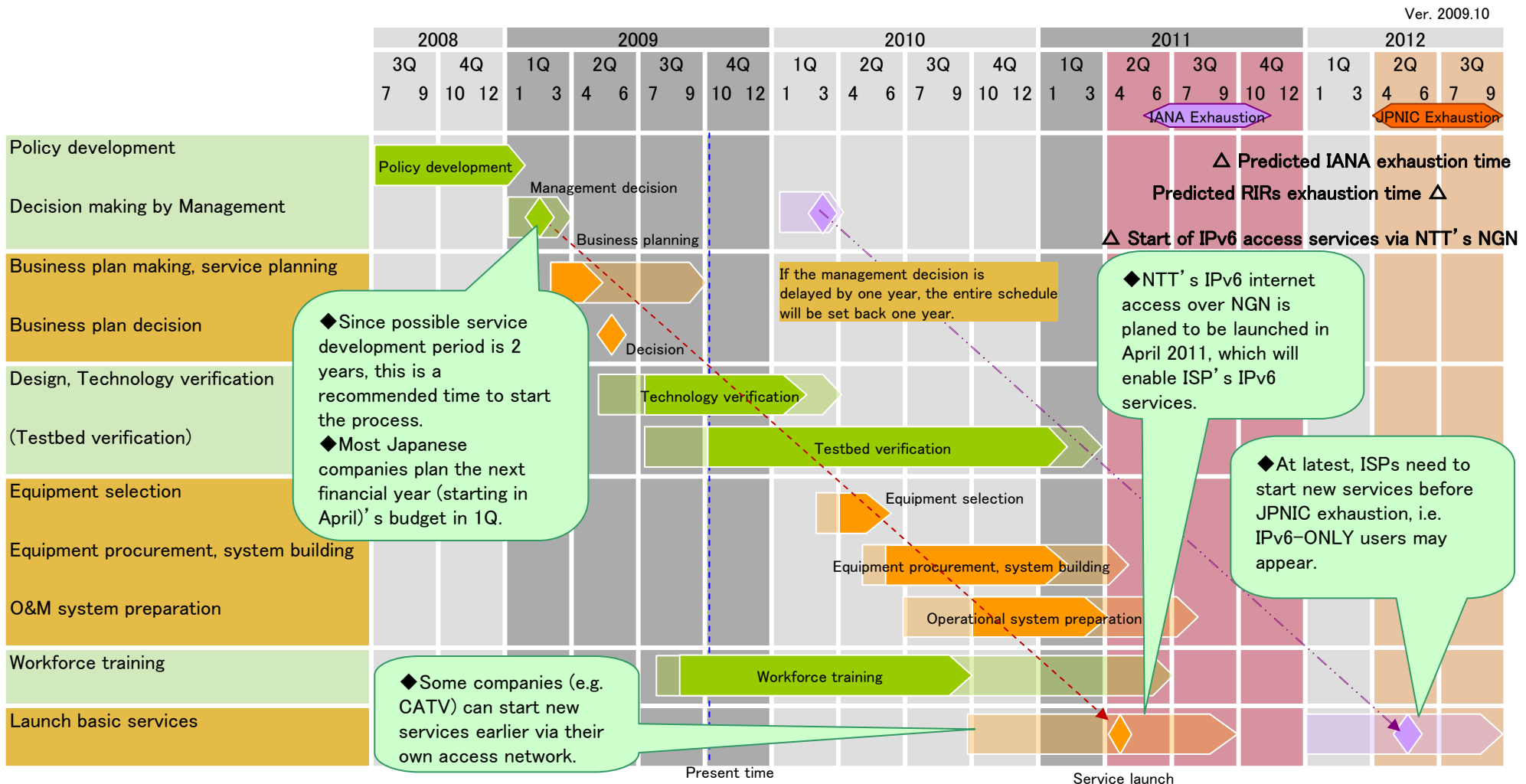
(* Refer to the action items in the diagram on the next page.)

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

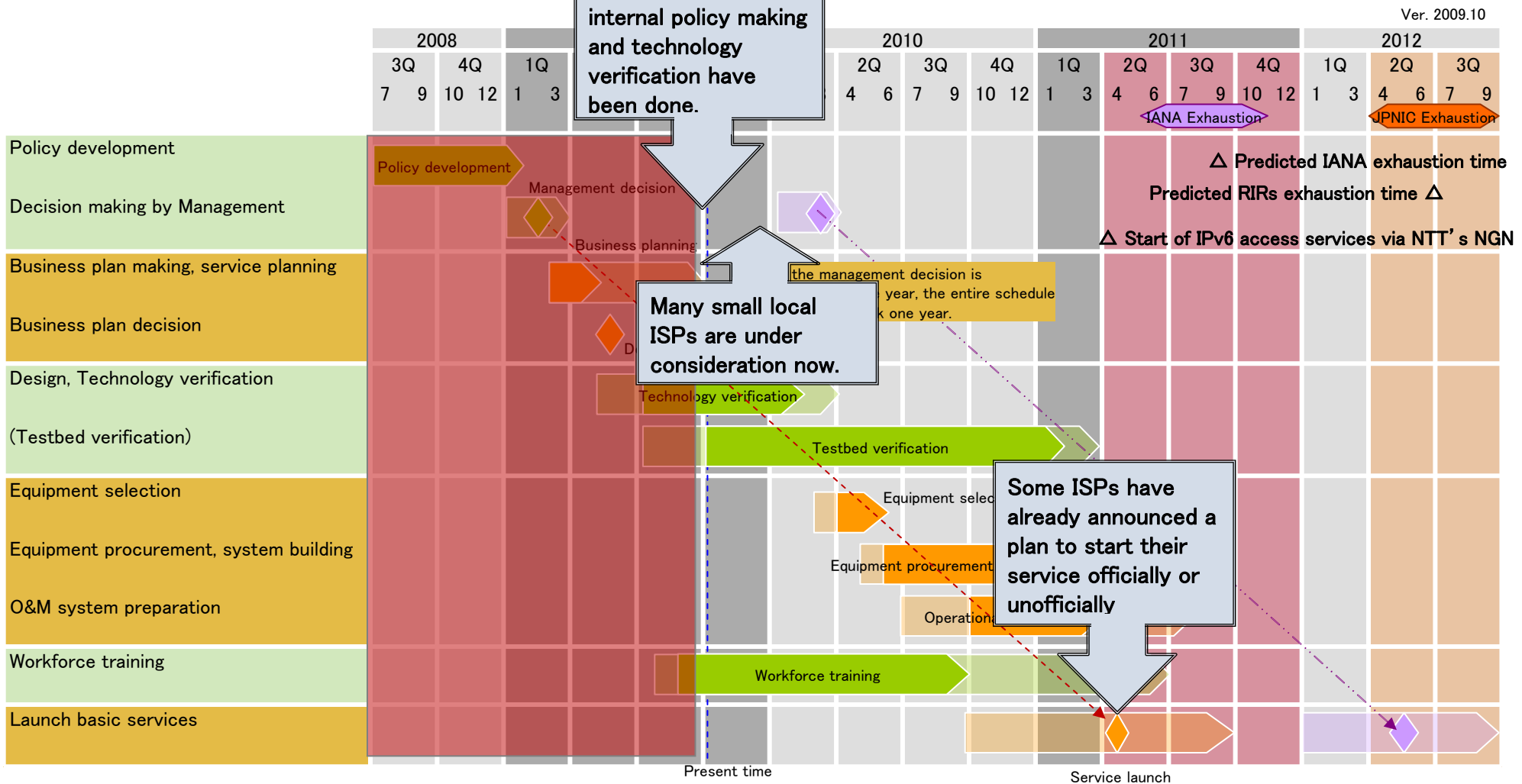
Action Plan for Network Players (ISPs)



Present Status of Progress : Network Area (ISPs)

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

Action Plan for Network Players (ISPs)



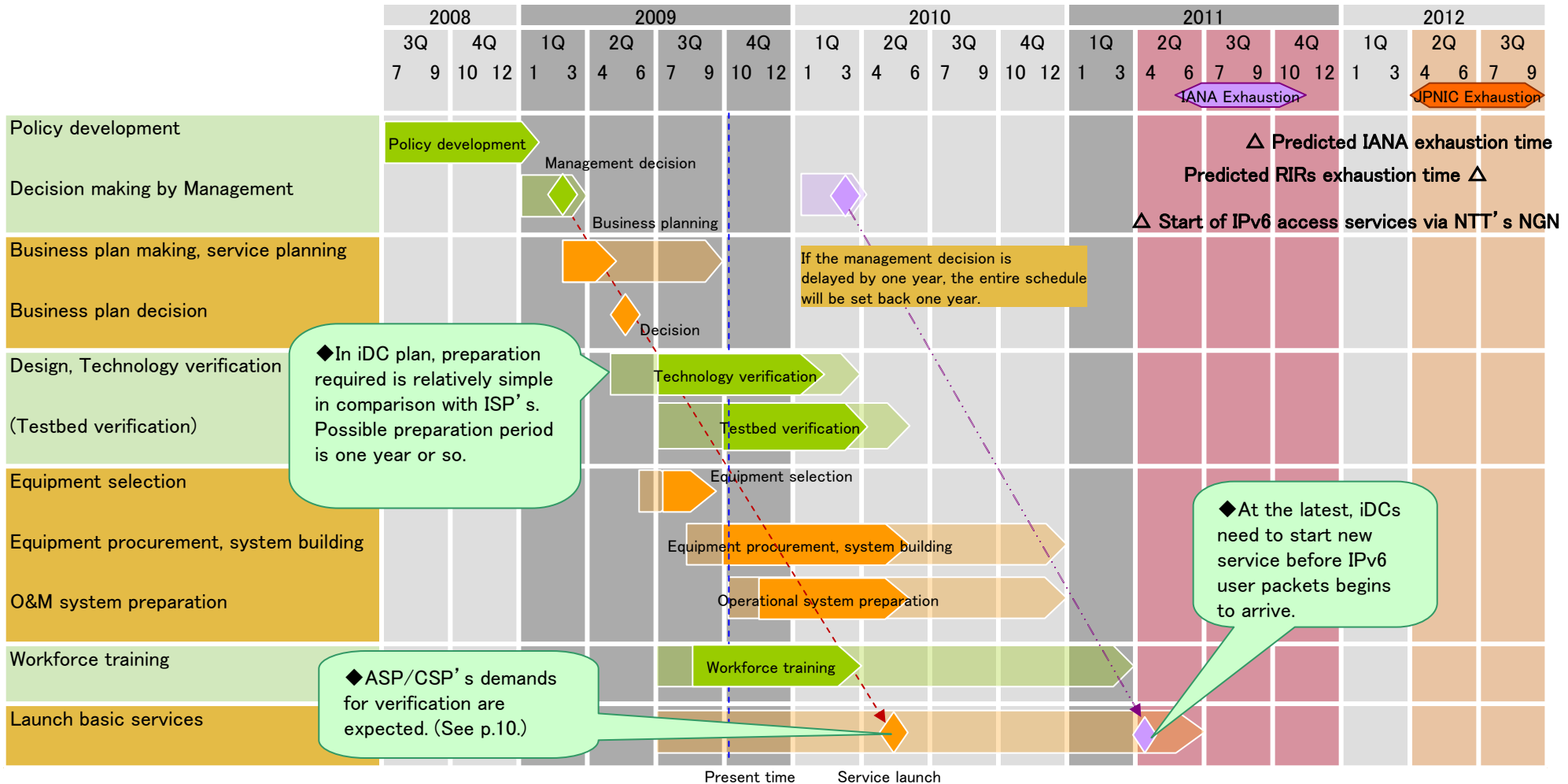
Action Plan: Network Area (iDC)

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

Action Plan for Network Players (iDC)

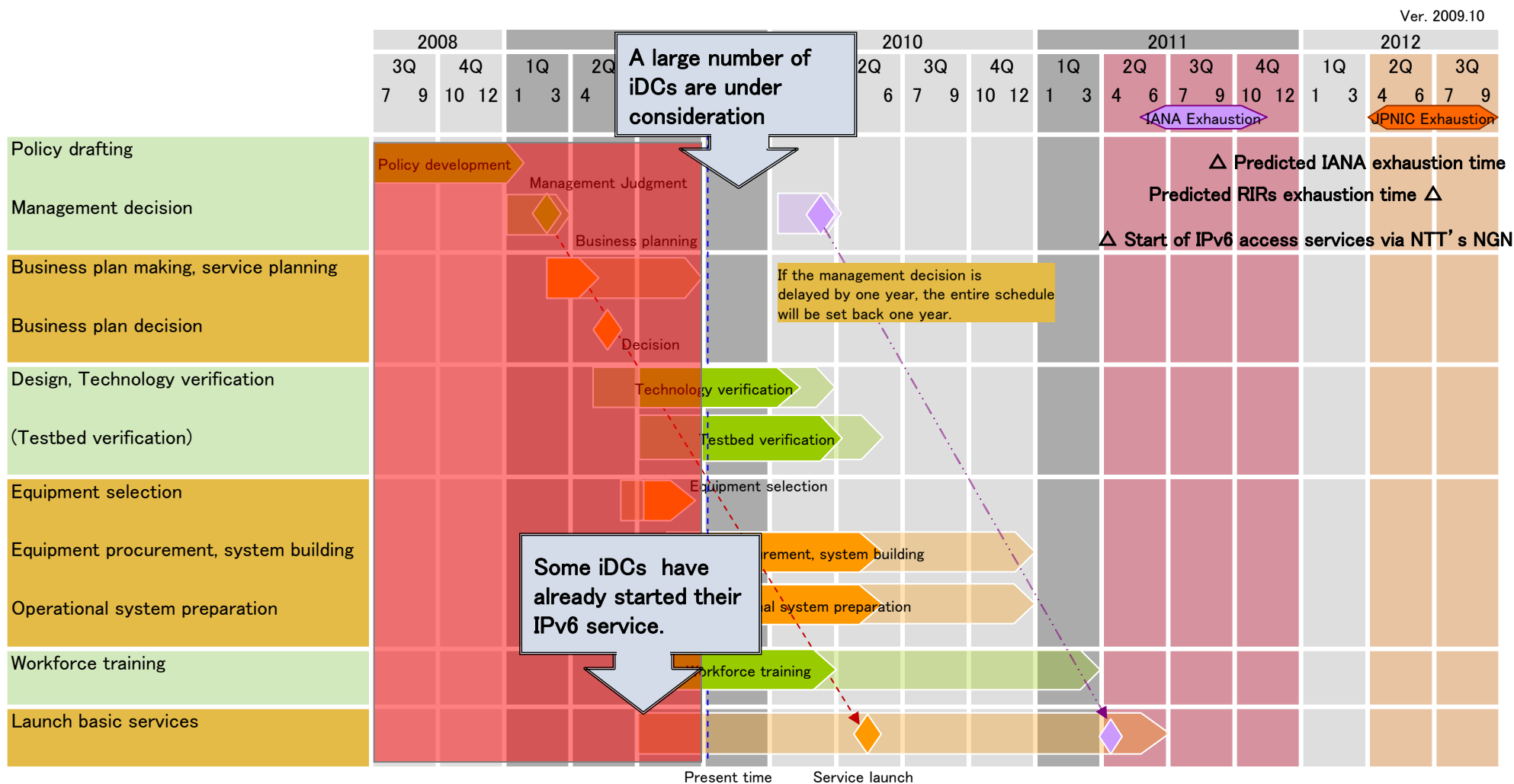
※This page is especially for BtoC (The plan for enterprise can be found in Business user Area page)

Ver. 2009.10



Present Status of Progress: Network Area (iDC)

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



Action Plan: Service Area (ASP/CSP)

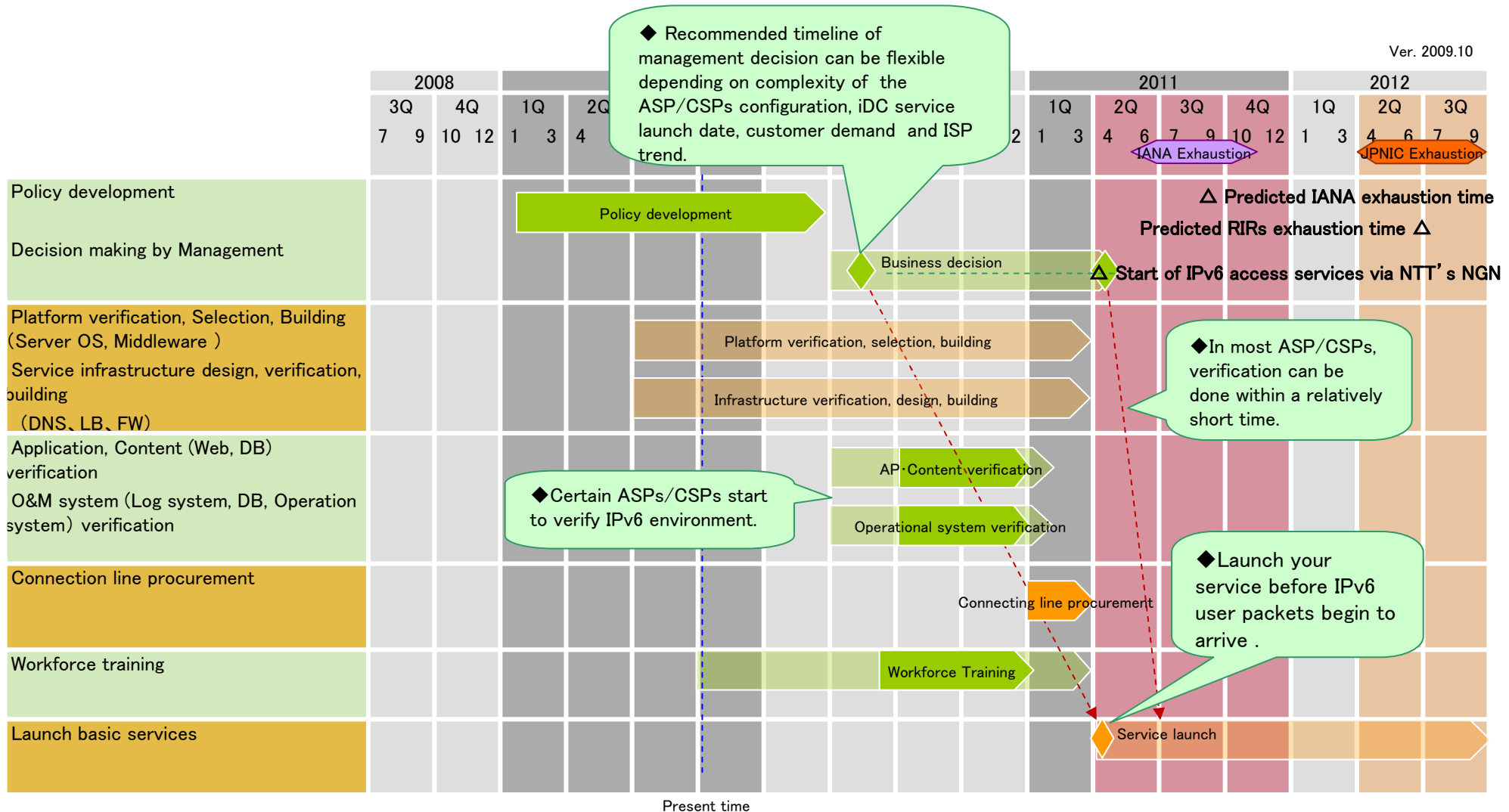
The following represents recommendations of typical actions for Service (ASP/CSP: Application Service Provider/Contents Service Provider) Area are as follows.

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)

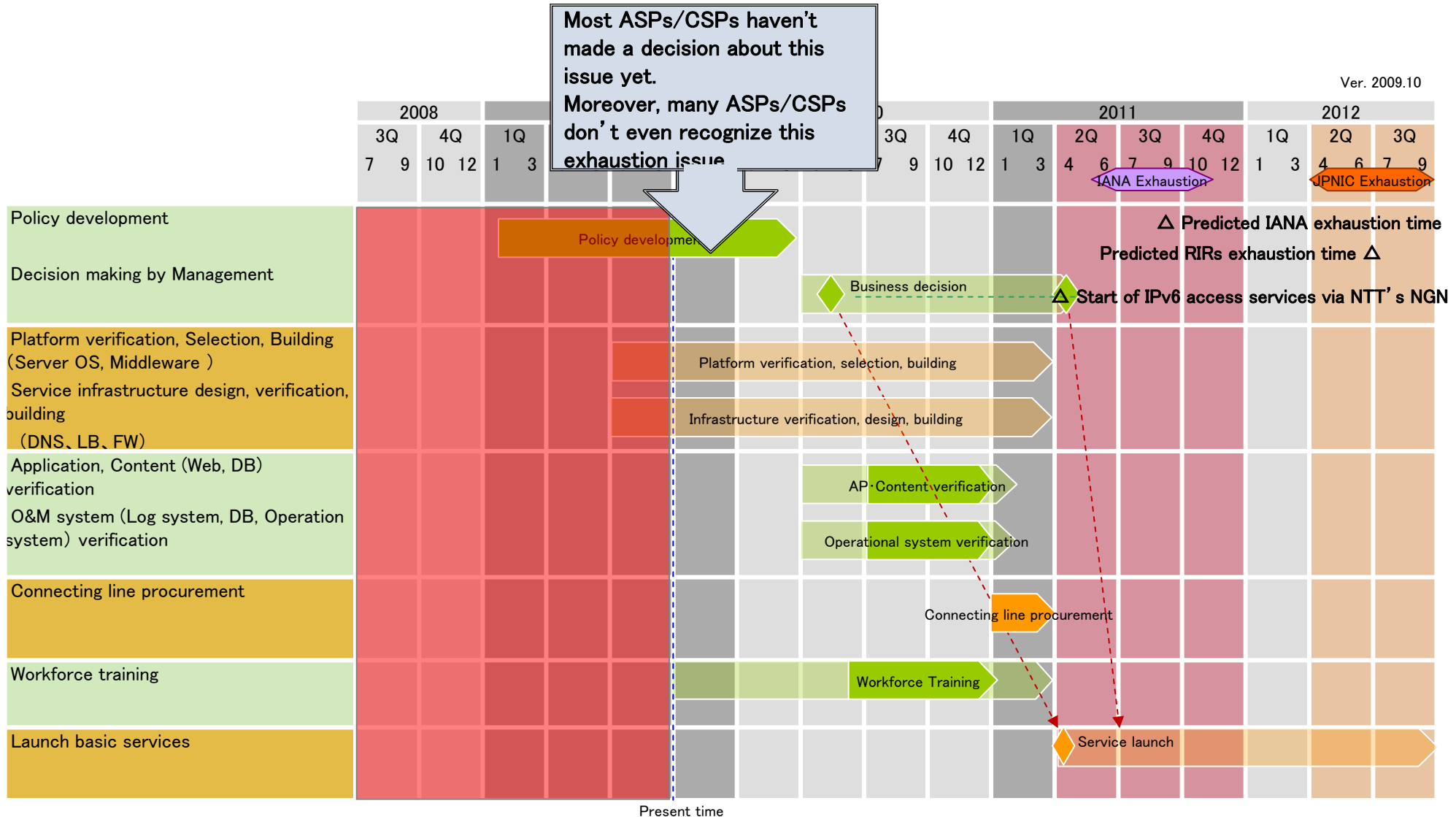
-----> Recommended Schedule

Action Plan for Service (ASP/CSP) Area



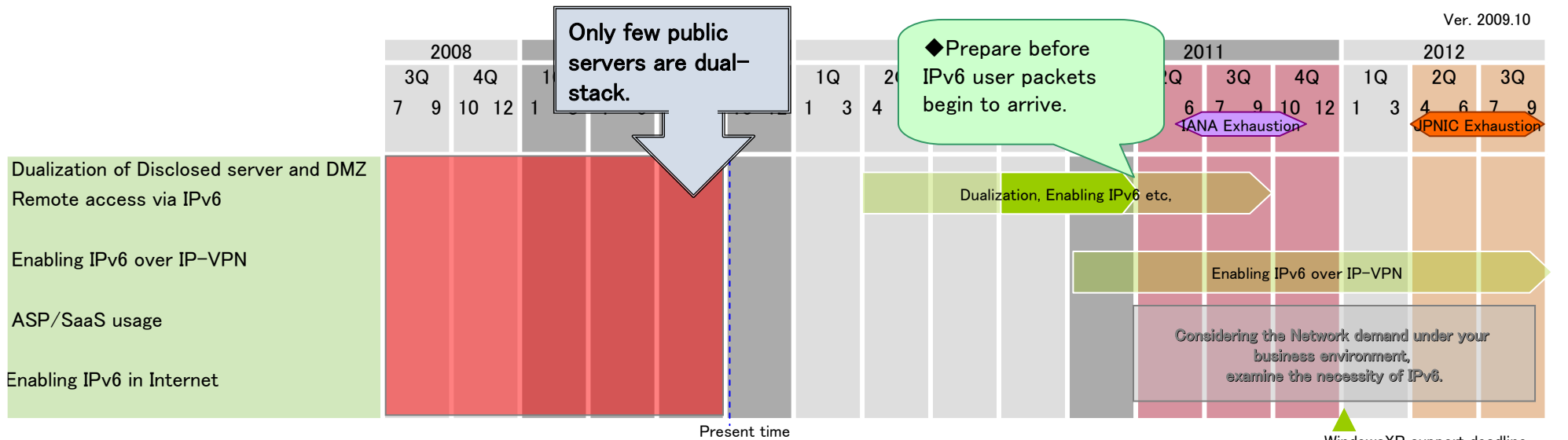
Present Status of Progress : Service Area (ASP/CSP)

-----> Recommended 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>

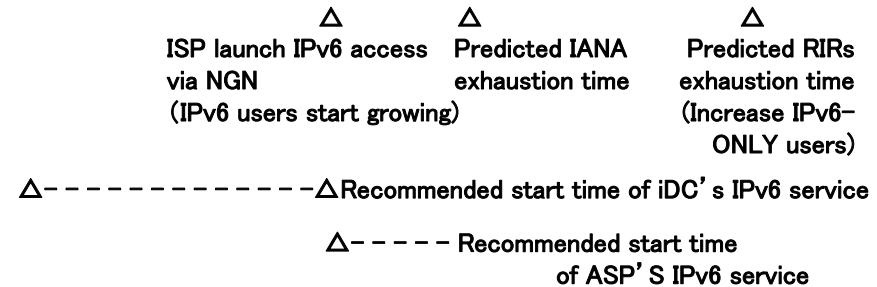
- A new branch may only be able to get IPv6 or LSN service after 2011. Preparation of IPv6 IP-VPN might be needed.

<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.)



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.