NIH IPv6 Migration Plan and Experience

December 12, 2007

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

The NIH Role as IPv6 Leader

- NIH serves as the technical lead for the DHHS IPv6 proof of concept deployment to meet the Federal objectives
- Serves as co-chair of the DHHS transition team on the Federal IPv6 Working Group

NIH IPv6 Timetable

Date	Event/Milestone	Status
06 June 06	IP-aware IPv6 Inventory	Complete
06 July 07	Meeting to discuss the NIH/HHS IPv6 initiative	Bi-weekly
10 July 07	Establish NEB internal IPv6-Tech list	Complete
22 Aug 07	Request IPv6 Allocation	Complete (HHS /32 Address Assignment Received Nov 6th)
07 Oct 07	Determine Transition Strategy Determine Transition Plan	Complete (Dual Stack) Complete
15 Oct 07	Test Plan (Identify test equipment)	Complete
31 Oct 07	Start Internal Management Briefings	Ongoing
31 Oct 07	Initiate Training Program development	Ongoing

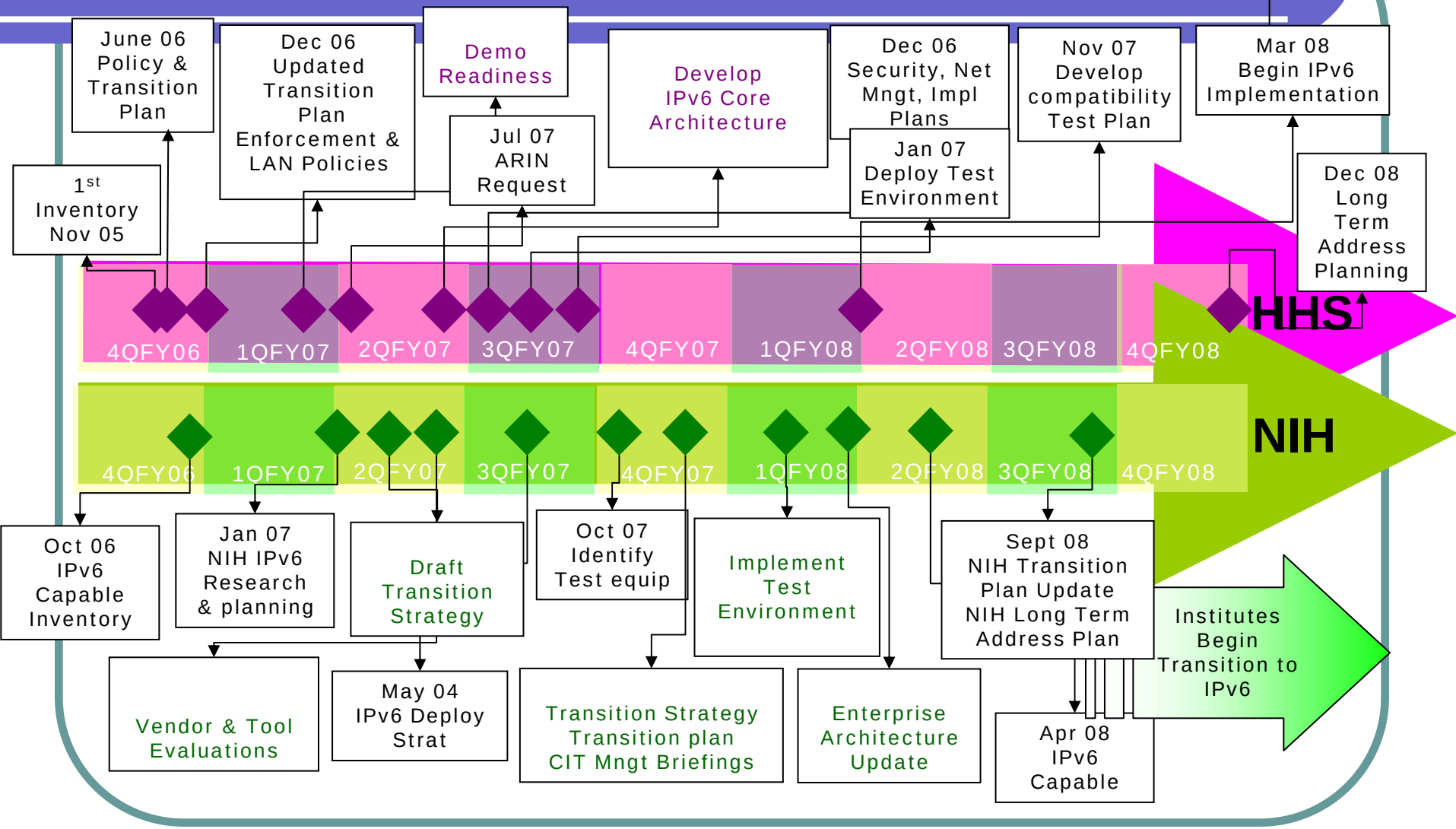
NIH IPv6 Schedule (cont'd)

Date	Event/Milestone	Status
31 Dec 07	Network Management Plan IPv6 Security Plan Implementation Plan NIH IPv6 Enterprise Architecture	Develop final versions of Transition Plans
31 Jan 08	Implement Test Environment	
24 Feb 08	Test Equipment Upgrades	Complete any upgrades for IPv6 functionality
29 Feb 08	Submit Test results from Pilot for internal review	
15 Mar 08	Begin Implementation of IPv6 at HHS	
15 June 08	Review and Submit NIH testing results	
30 June 08	Submit HHS-wide test results	

Periodic In-Progress-Reviews with CIO

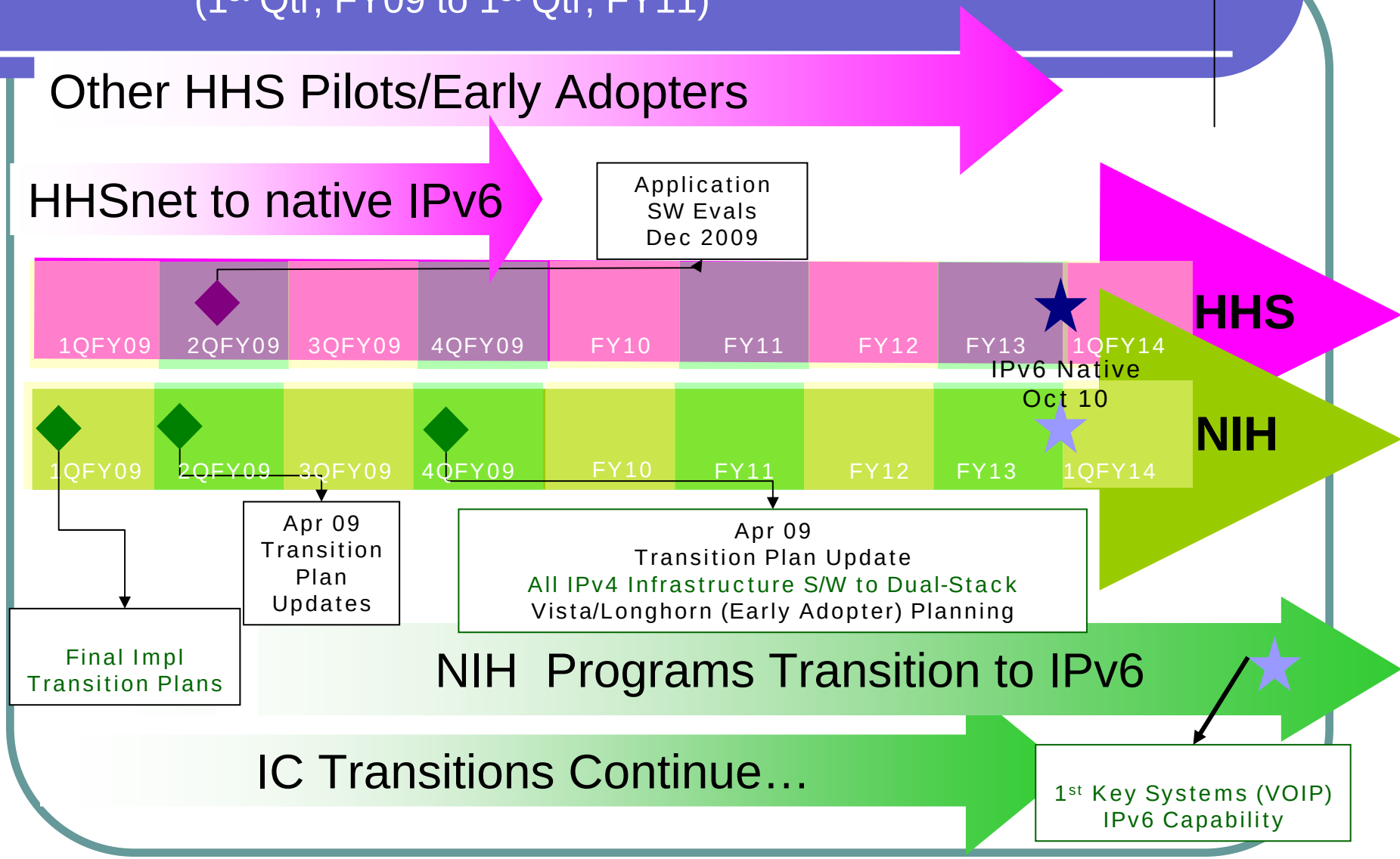
Roadmap

(4th Qtr, FY06 to 4th Qtr, FY08)



Roadmap

(1st Qtr, FY09 to 1st Qtr, FY11)



Existing Challenges (Technical)

- Vendor support for IPv6 has come a long way in recent years, *but* there are still gaps in feature sets for both applications and appliances
- IT security technology is a particular concern, not just in vendor support, but in changes to the P2P paradigm
- IPv6 is still evolving; some concepts have been deprecated (NAT-PT, site-local addresses), others recently codified, and still others await finalization

Practical example of technical challenge

- Enabling IPv6 now on certain applications and sites may cause users to perceive a degradation of service
  - Practical example: if a website allows IPv6 and IPv4 and an IPv6 DNS entry exists, some web browsers will attempt to connect via IPv6 first, even if there is no IPv6 network path to the server. The browser must wait for a timeout, which greatly delays access to the website.
- Moral: Understand how applications will react in a IPv6/IPv4 hybrid environment. Do not expect everything to work properly when you “flip the switch”

Existing Challenges (Tactical)

- Steep learning curve for all levels of technical support, software development, service delivery, etc. IPv6 is not an upgrade of IPv4, but rather an entirely different protocol. Expect an increase in the training budgets.
- Where IPv4 had a ramp-up phase over decades with a smaller user base, IPv6 will be released on a large population. Manage expectations carefully.
- No “killer application” *yet* to sell the masses outside of the obvious IP address advantage. Leverage those early adopters to build support.

CIO's Suggestions on IPv6 planning

- Prepare your Enterprise Architecture program to meet IPv6 transition goals
- Form working groups that engage all areas of organization
- Develop a tiered training program: light for business managers, technically heavy for application developers, network support staff, desktop personnel
- Be prepared to minimize exposure of IPv6 deployments to external networks until security products meet enterprise requirements.
- IP address management can no longer be handled by spreadsheets alone. Develop or procure a database application to manage the exponential IP growth.
- Consider the different strategies for deploying IPv6 (dual-stack, tunneling, etc.) to determine which best fits your environment, meets your requirements, and is supportable. You may consider multiple methods.

Questions?

Dr. Jack Jones

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