TWNIC Update

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Outline

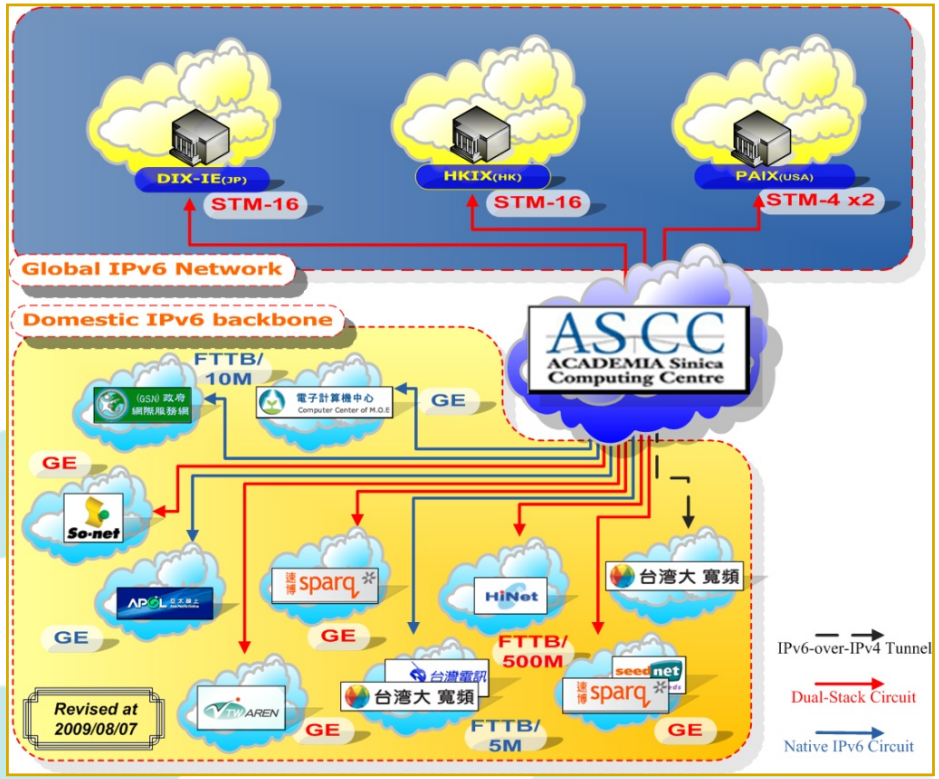
- Background
- The current IPv6 status of Taiwan ISPs and academic network
- Taiwan government transition to IPv6-IPv6 Upgrade Promotion Program
- Conclusion

Background

- IPv4 address exhaustion
  - The IANA IPv4 address exhaustion happened on 3, Feb. 2011.
  - APNIC reached the IPv4 final /8 stage on April 15. 2011
- IPv6 adoption at critical phase
  - In this phase, it is important to do IPv6 transition and development for internet stakeholders.

Taiwan ISPs IPv6 Current Status

- Infrastructure
  - 10 ISPs had depolyed IPv6 backbone.
  - IPv6 IX – ASNet Internet eXchange v6 (ASIX6)
- Access
  - Chung-Hwa Telecom(HiNet) NGN (FTTX) provides IPv4 and IPv6 dual services since 2011.
  - IPv6 Tunnel Services are provided in most ISPs (HiNet, Sparq, SONET, APOL, TFN) since 2007.



TANet(Taiwan Academic Network) IPv6 Network Deployment

- Fully scaled deployment of primary and high schools at 2010
  - 95% of schools provide IPv4/IPv6 dual stack access, IPv6 accessibility of WWW, DNS, SMTP
  - 68% of classes provide IPv4/ IPv6 dual stack VoIP service

Taiwan IPv6 Readiness Survey

- Measure the status of IPv6 deployment in Taiwan since 2009
  - http://v6readiness.ipv6.org.tw/
  - http://v6directory.twnic.net.tw

IPv6 Readiness Items	Aug-10	Aug-11	Growth
International IPv6 Traffic (Mbps)	32.9	110.5	336%
IPv6 Server	922	8,294	900%
IPv6 Websites	716	7,341	1,025%
IPv6 / IPv4 DNS Query Ratio	0.46%	0.91%	198%

Users	• Web query from IPv6 • DNS query from IPv6
Applications	• IPv6 servers in Web, and DNS
Access Network	• Traffic in IPv6 Tunnel Broker
Core Network	• Number of ISPs within IPv6 allocations that are advertised in BGP • IPv6 traffic that in/out of Taiwan

Vendors

- IPv6 Ready Logo Phase I & Phase II

Source: Taiwan Network Information Center (TWNIC)

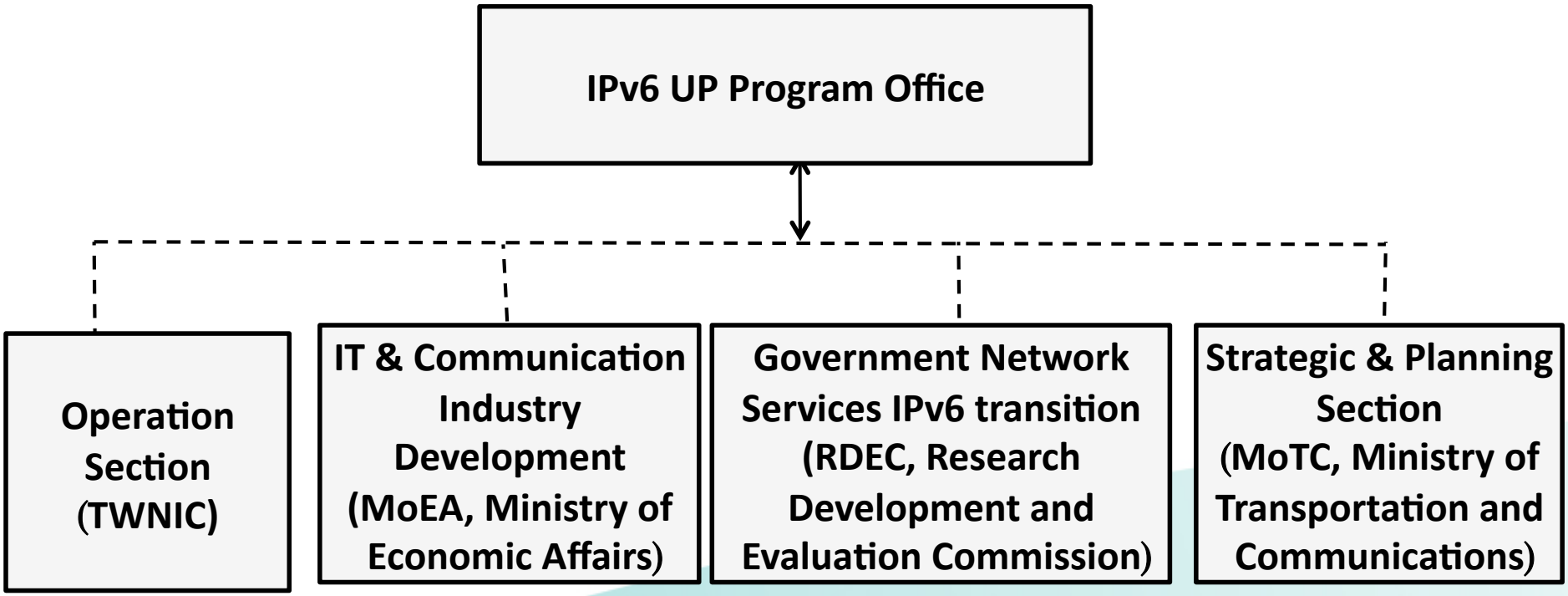
IPv6 UP- The Program of Taiwan government network services transition to IPv6

IPv6 UP (IPv6 Upgrade Promotion Program)

T0 Position Statement	Ta Main External Network Services	Tb Secondary External Network Services	Tc Internal Use & All IPv6
Government Official Support	**Web, DNS, email, infrastructure**	**Web, DNS, office facility room, broadband access**	**Internal access network, web site, database, applications, PC**

	Schedule	Reason	Remark
T0	**2011/12/30**	Ref : Activation Time	necessary
Ta	**2013/12/31**	1. Taiwan ISPs will face IPv4 address exhaustion within 3 years. 2. Ref other country policy	necessary
Tb	**2015/12/31**		necessary
Tc	**2016~**		Adjusted by Budget

The Architecture of IPv6 UP Program



- The program was official approved by Executive Yuan and was launched on 2011/12/30.
- The program office is under National Information and Communications Initiative Committee(NICI), a Committee under Executive Yuan.

The tasks of the program

- Every government agency must
  - Designate an IPv6 Transition Manager by Jan. 31, 2012.
  - Finish detail stocktaking of infrastructure and application related devices by Mar. 31, 2012.
  - All the government IT staffs take IPv6 training course by Jun. 31, 2012.
  - Finish the list of proposed procurement for IPv6 transition by Jun. 31, 2012.
  - Upgrade 50% public network service (Web, DNS, Email) to be dual stack enabled by Dec. 31, 2013. (Necessary)
  - Upgrade the other 50% public network service to be dual stack enabled by Dec. 31, 2015. (Necessary)
  - Upgrade the internal network by Dec. 31, 2016. (Suggestion)

Budget

- Estimated based on other country's experience/ estimation
- Expect total budget is NT$ 2.2 billions
  - ~ 0.75 billion US dollars
  - It is not additional budget, it uses the same information and hardware budget for every government agency.

Conclusion

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  - “IPv6 UP” Program is not only preparing, but also doing actual Taiwan Government IPv6 transition.
  - It will also help ISPs, ICPs, SIs, training units, software developers, equipment venders to be ready for the upcoming transition of commercial units.

Q&A