IPv6 Deployment in Samsung Handsets

Samsung Vietnam Mobile R&D Center

Contents

Why IPv6?

◆ **IPv4 is out of IP addresses**

    ○   Max. 4.3 billion addresses (=32 bit =2^{32})

    ○   3,410,303,904 of 4,294,967,296 IP addresses already allocated

◆ **IPv6 solves exhaustion of IP addresses**

    ○   Almost infinite addresses (=128 bit = 2^{128})

◆ **Larger address space**

    ○   Every device can have its own unique/public IP address

Transition Methods
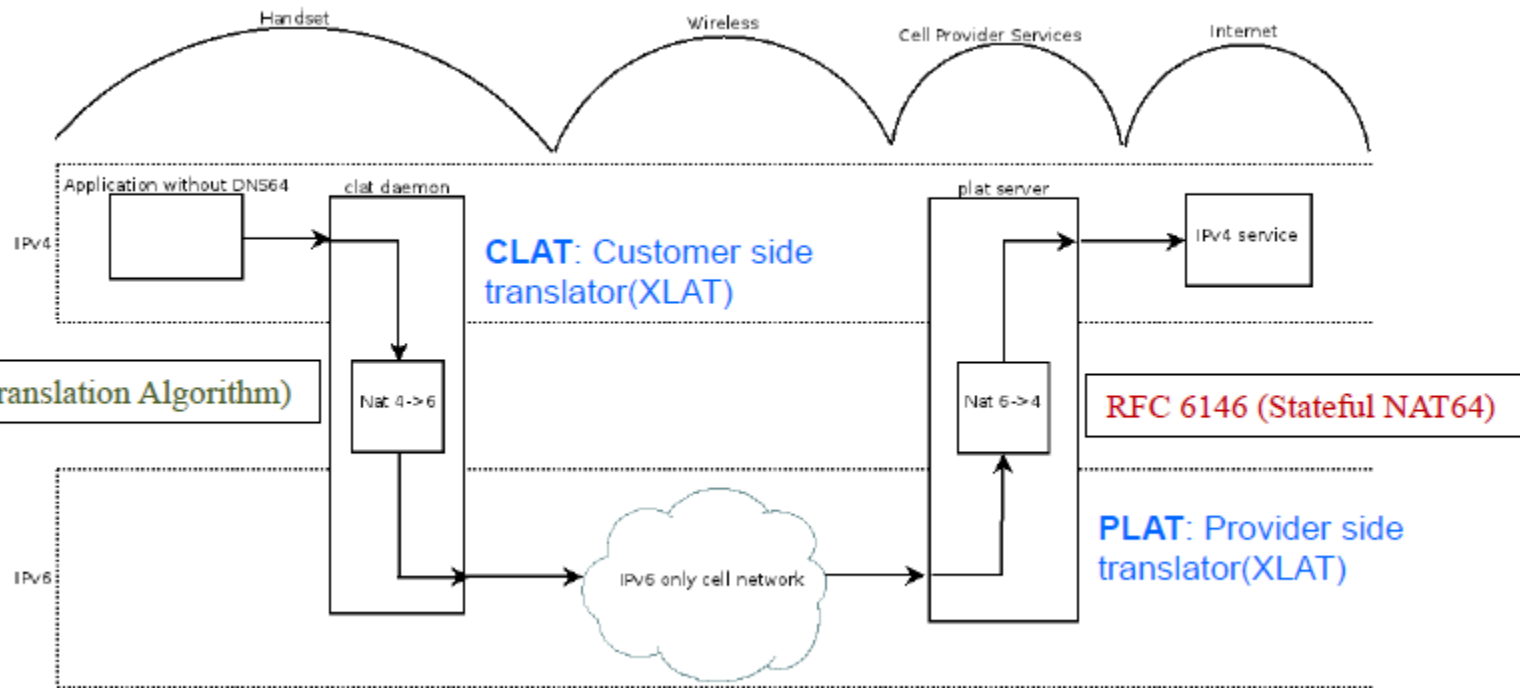
◆ **Dual Stack with IPv4v6**

    o   Does not solve IPv4 depletion problems.

◆ **Single Stack with NAT64**

    o   Good but not enough for full IPv4 replacement.

    o   Solution: 464XLAT

IPv6 on Samsung Handsets (1/5)

IPv6 on Samsung Handsets (2/5)

Galaxy Note 3

Galaxy Light

Galaxy Mega

IPv6 on Samsung Handsets (3/5)
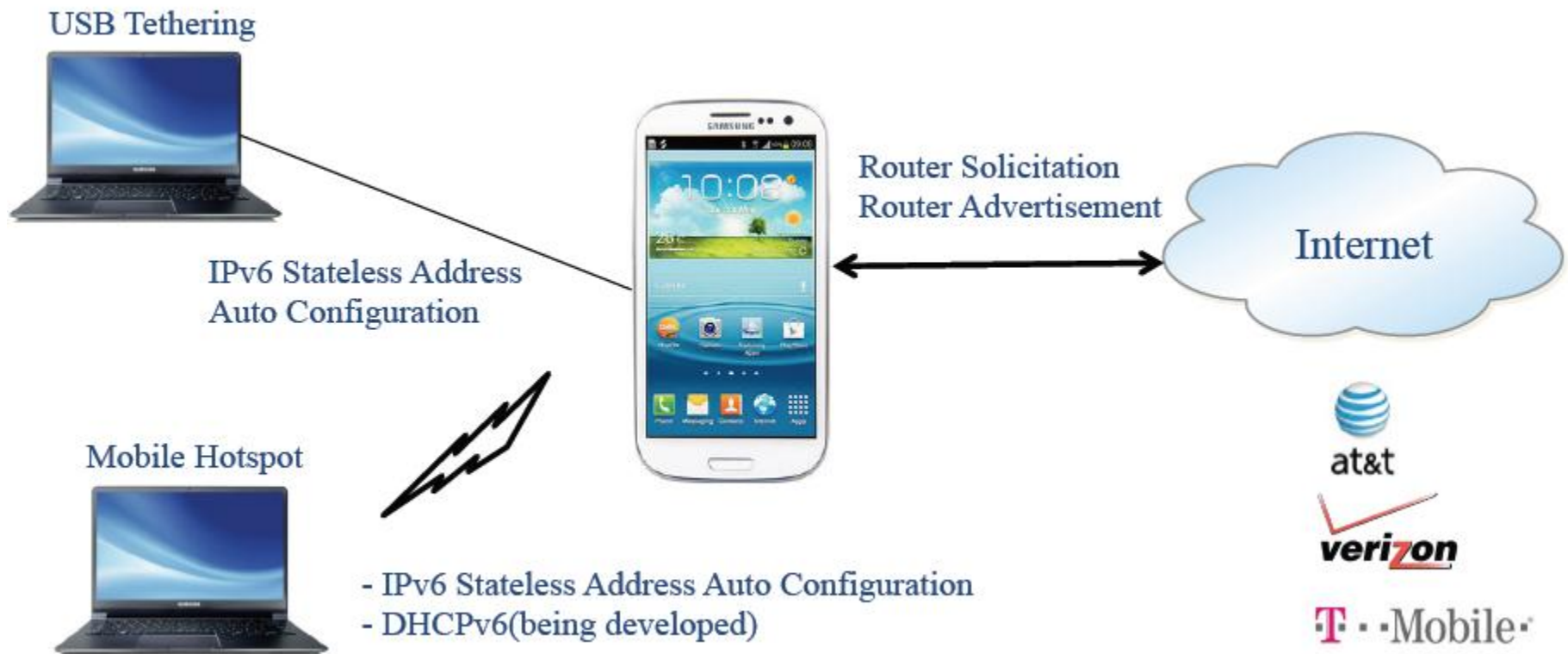
IPv6 support on Applications
Browser, Email, Skype, Games etc...

IPv6 support on TCS/IP Stack
Android, iOS, Windows Phone etc...

IPv6 support on Modem
Samsung, Qualcomm, Marvell etc...

IPv6 On Samsung Handsets (4/5)

USB Tethering

IPv6 Stateless Address
Auto Configuration

Router Solicitation
Router Advertisement

Internet

Mobile Hotspot

- IPv6 Stateless Address Auto Configuration
- DHCPv6(being developed)

at&t

verizon

T··Mobile·

IPv6 On Samsung Handsets (5/5)

◆ **Android dnsmasq**

- o http://www.thekelleys.org.uk/dnsmasq/doc.html

- o Version 2.6.2, support IPv6 tethering

- o Does not use NAT, but instead Neighbor Discovery Proxy (Neighbor Solicitation / Neighbor Advertisement)
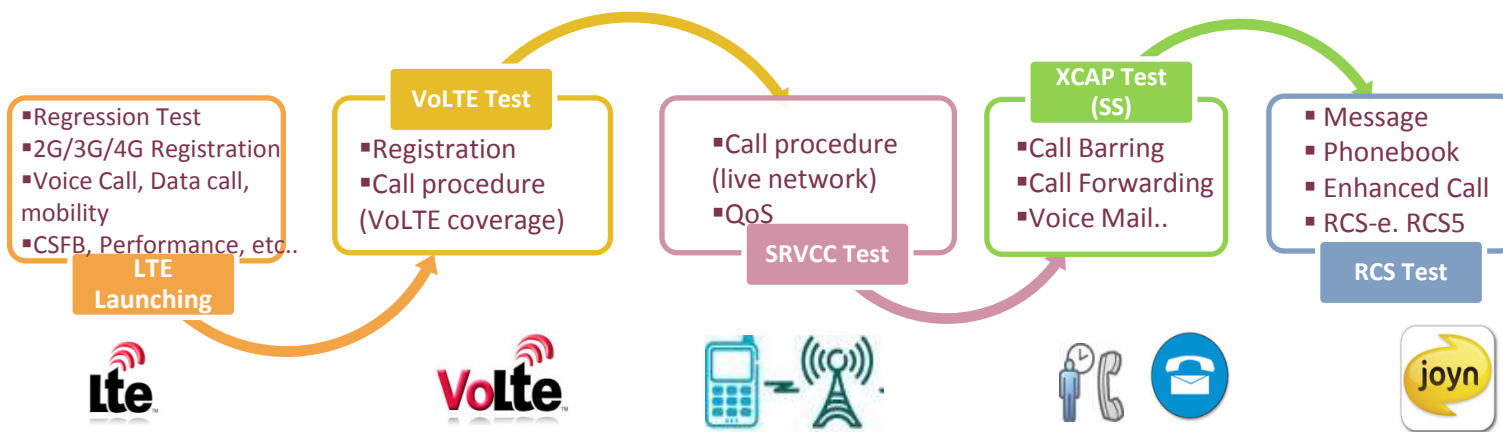
VoLTE Deployment & Issues (1/2)

LTE Trial & Launching

Countries	Operator
Singapore	SingTel, StarHub
Indonesia	FirstMedia, XL, Telkomsel, Indosat
ThaiLand	DTAC, AIS, TrueMove
Philippines	Globe, Smart
Malaysia	Celcom, Maxis, DIGI
Vietnam	Vinaphone, Mobiphone, Viettel
Indochina	TBD

Full IOT Support & VoLTE Deployment

LTE Launching
- Regression Test
- 2G/3G/4G Registration
- Voice Call, Data call, mobility
- CSFB, Performance, etc..

VoLTE Test
- Registration
- Call procedure (VoLTE coverage)

SRVCC Test
- Call procedure (live network)
- QoS

XCAP Test (SS)
- Call Barring
- Call Forwarding
- Voice Mail..

RCS Test
- Message
- Phonebook
- Enhanced Call
- RCS-e. RCS5

VoLTE Deployment & Issues (2/2)

◆ **Only DNS response with IPv4 address**

◆ **Either IP configuration for IPv4/v6**

◆ **Different IPv6 address strategy on APN**

◆ **No IP layer response on during PDN connection**

Conclusion & Proposals

◆ **IPv6 is a must but needs a roadmap from operator.**

◆ **Shared Samsung's experience to support operators.**

◆ **New small features are under development (P2P, Auto-configuration)**

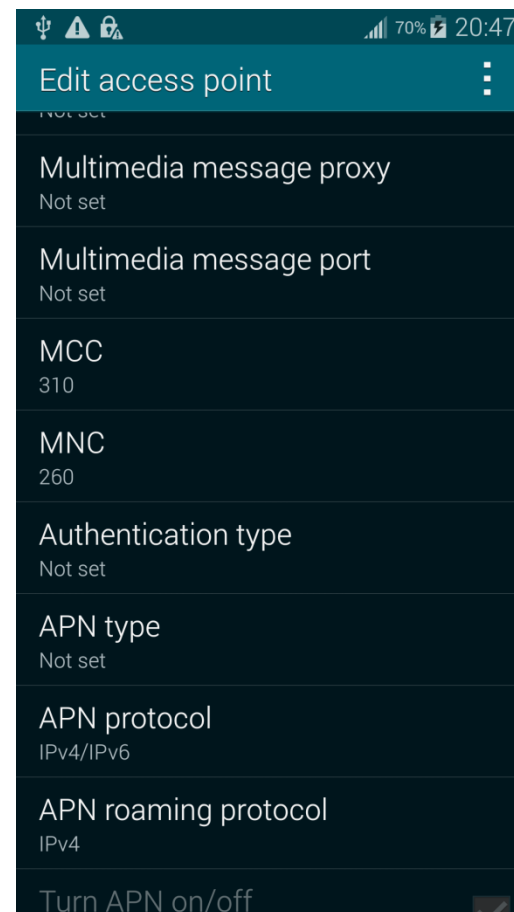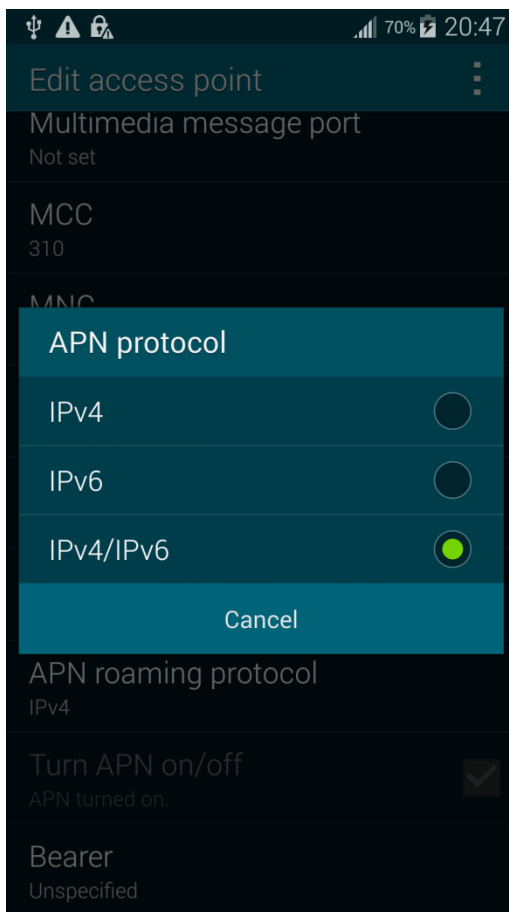◆ **Tightly collaborate with operators to deploy IPv6 successfully.**

Xin Cảm Ơn

Thank you

Configure on Samsung devices

Settings – Mobile network – Access Point Names - APN protocol – select IPv4v6 or IPv6

IPv6 connections on device

Data connection	IPv6	IP allocation
Mobile data	Supported	PDP
Wi-Fi	Supported	RS/RA
Wi-Fi (static)	No supported	
USB tethering	Supported	RS/RA
Hotspot	Supported	RS/RA

DHCPv6
- Not supported on Android platform
- DNS is supported

RS/RA
- Router Solicitation / Router Advertisement
- DNS is NOT supported

What operators support IPv6?

Region	Operator	IPv6 commercialization	IPv6 plan
USA	AT&T	IMS (IPv4v6)	
USA	TMO	IMS (IPv4v6), internet (IPv6 only)	
USA	VZW	IMS (IPv4v6), internet (IPv4v6)	
USA	SPR		Jul-14
Europe	Poland Orange	internet(IPv6 only)	
Canada	Bell	IPv4v6	
Canada	Rogers	IPv4v6	
China	CMCC	internet(IPv4V6)	
Latin America	Brazil Vivo		3Q 2014
Latin America	Brazil Oi		1Q 2015
Latin America	Brazil Claro		4Q 2014
Latin America	Brazil Tim		4Q 2014
Latin America	Mexico Telcel		1Q 2015
Korea	SKT		2H 2014
Korea	KTT		2H 2014
Korea	LGU	IMS (IPv4v6)	
Japan	NTT DOCOMO	internet(IPv4), IMS (IPv6)	Jun-14
Japan	KDDI	internet(IPv4), IMS(IPv4v6)	
Australia	Telstra	IPv4v6	