Experiences from an IPv6-Only World at Ericsson

What if there was no IPv4?

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Moving to an IPv6-Only Network

Our sites had been in dual stack for years

It all worked very well, so clearly we had to try something else

› At some point someone will move to this type of a network

We had several goals:

› Find out what works or breaks with IPv6-only

› Build an understanding to recommend dual stack and IPv6-only for the right situations

› Test our implementations

A Small Side Tour to IPv6 & Cellular...

Lots of talk and technology, ~~no~~ little commercial use
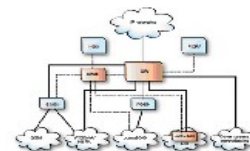What's the to-do-list for IPv6 deployment in cellular?

› Step 1: Just turn it on: standards, networks, even phones in place
(lots of practical work involved, of course)

› Step 2: Some improvements can be useful, however

IMS

› Step 3: Choose the right use cases

facebook.

The IPv6-Only Experience

› Three sites, a small group of opt-in users

› IPv6-only network design
  – NAT64 + DNS64 in various configurations on the different sites
  – IPv6 was already in 24x7 use, dual stack retained as alternate

› Plenty of things work well
  – Browsing, e-mail, software updates, streaming, many chat systems

› On some handsets, 100% functionality

› Some issues in general environments
  – Host OS testing issues, usability, some applications fail, some appliances have no IPv6, some firewall issues

Example Issues in Messaging and Gaming

Messaging System	Works?
Facebook on the web (http)	Yes
Facebook via a client (xmpp)	Yes
Jabber.org chat service (xmpp)	Yes
Gmail chat on the web (http)	Yes
Gmail chat via a client (xmpp)	Yes
Gtalk client	No
AIM (AOL)	No
ICQ (AOL)	No
Skype	No
MSN	No

Game	Works in LAN/NW mode?
Web-based (e.g. armorgames)	Yes
Runescape (on the web)	No
Flat out 2	No
Battlefield	No
Secondlife	No
Guild Wars	No
Age of Empires	No
Star Wars: Empire at War	No
Crysis	No
Lord of the Rings: Conquest	No
Rome Total War	No
Lord of the Rings: Battle for Middle Earth 2	No

Some High Level Observations

› Dual stack should still be our preferred mode of operation

› IPv6-only can also be recommended today

  – Particularly for early adopters, mobile networks, ...

› And tomorrow for everyone, but this needs some work

› Call for action:

  – Fixing bugs, DNS discovery, cleaning the Internet of IPv4 literals

  – IPv6 support for Skype, messaging and gaming

  – Measurements on failures and delays, analysis of reasons

  – Much of this is a one-time effort