

# IPv6 in Real Life

## (Update)

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# The objective?

- Again: If our wives had a computer with only IPv6 connectivity, what would they see?
- N.B.: Our wives are lawyers and they manage to live without computer skills

# Why?

- Everybody says IPv4 address space is depleted (now seems to be serious stuff)
- Everybody says “we have to deploy IPv6”
- But... there is such a thing as real life in IPv6 ?
- Is IPv6 really useful for something more than theoretical discussions or just small talk?



# Investigative method

YOU ARE LEAVING  
THE AMERICAN SECTOR  
ВЫ ВЫЕЗЖАЕТЕ ИЗ  
АМЕРИКАНСКОГО СЕКТОРА  
VOUS SORTEZ  
DU SECTEUR AMÉRICAIN  
SIE VERLASSEN DEN AMERIKANISCHEN SEKTOR  
US ARMY

# Investigative method

- No rocket science here
- Just plain lookups in DNS space, some easy-to-do tests
- Plus some web and mail digging
- No traffic analysis here



# Investigative method (2)

- Go get the most visited webs per country  
Source: <http://www.alexa.com/>
- And then:
  - Ask the DNS of that domain for...
  - an AAAA DNS entry for the web service and the email (MX), a DNS server with an IPv6 address



# Investigative method (3)

- If there is a IPv6 entry in the DNS, verify that it works following three steps:
  - Open the web page with an IPv6 navigator
  - Telnet to port 25 and do some basic SMTP dialog
  - Dig to the IPv6 DNS server



# Investigative method (4)

- Give ipv6 a chance...
- Though you can associate A and AAAA records to [www.example.com](http://www.example.com), many domains do it by different ways:
  - [www.ipv6.example.com](http://www.ipv6.example.com)
  - [www6.example.com](http://www6.example.com)
  - [ipv6.example.com](http://ipv6.example.com)



Periodic scan results are available at:

[http://www.lab.bt.es/ipv6/global\\_results.html](http://www.lab.bt.es/ipv6/global_results.html)

[http://www.lab.bt.es/ipv6/country\\_select.html](http://www.lab.bt.es/ipv6/country_select.html)



# Investigative method (5)

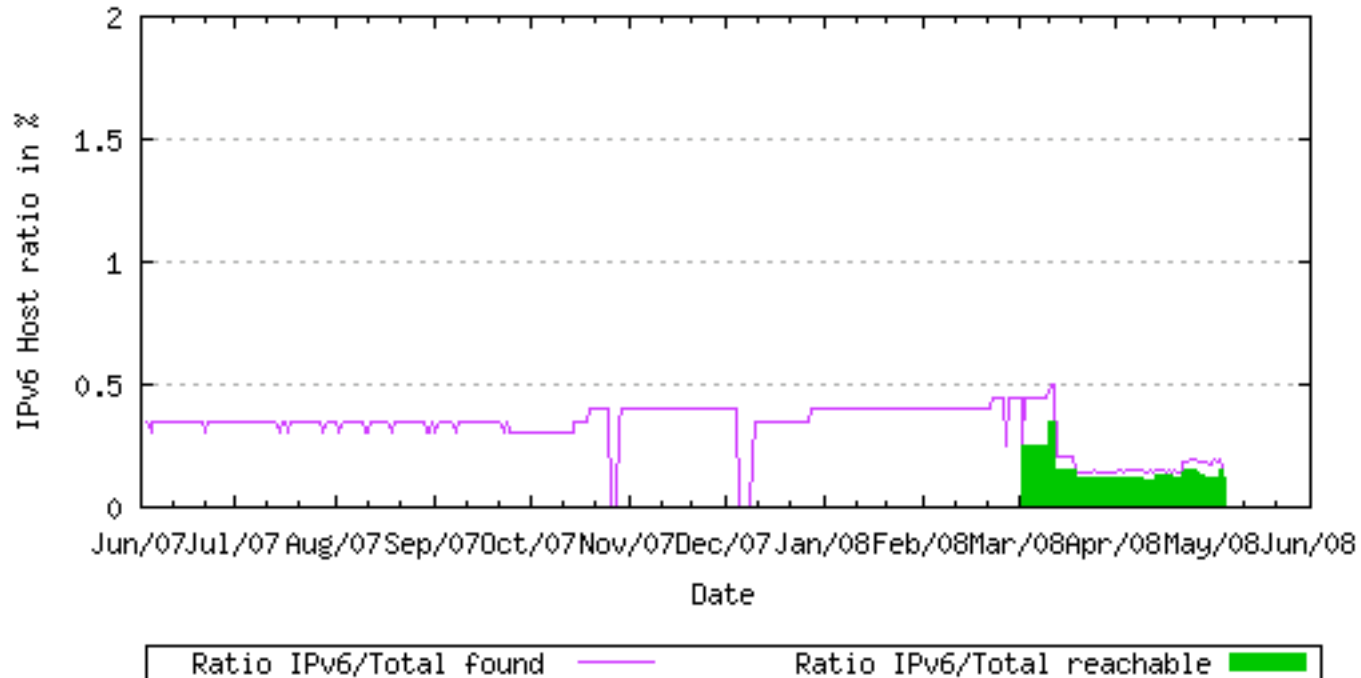
- We also do a small check on the DNS hierarchy
  - Root servers with AAAA addressing
  - TLD (gTLD and ccTLD) with AAAA addressing  
(to be increasingly automated by some scripts...)





# Results

Ipv6 hosts in the Top sites Global list



# Results

- In all countries one more site found
- We'll call it "IETF meeting effect"



# The big numbers on web servers

	<b>RIPE 53</b>	<b>RIPE 54</b>	<b>RIPE 55</b>	<b>RIPE 56</b>
<b>Countries</b>	75	102	103	109
<b>Unique domains</b>	4315	4937	4572	5415
<b>Unique web servers on IPv6</b>	12	10	15	34

# Incorrect webs servers

- Usefull information: 10
- Some servers displayed “test”, “it works”, blah, blah... (2)
- Others simply didn't answer (12)



# SMTP & DNS servers

- SMTP servers

- 18 domains with IPv6 server that answered
- 3 didn't

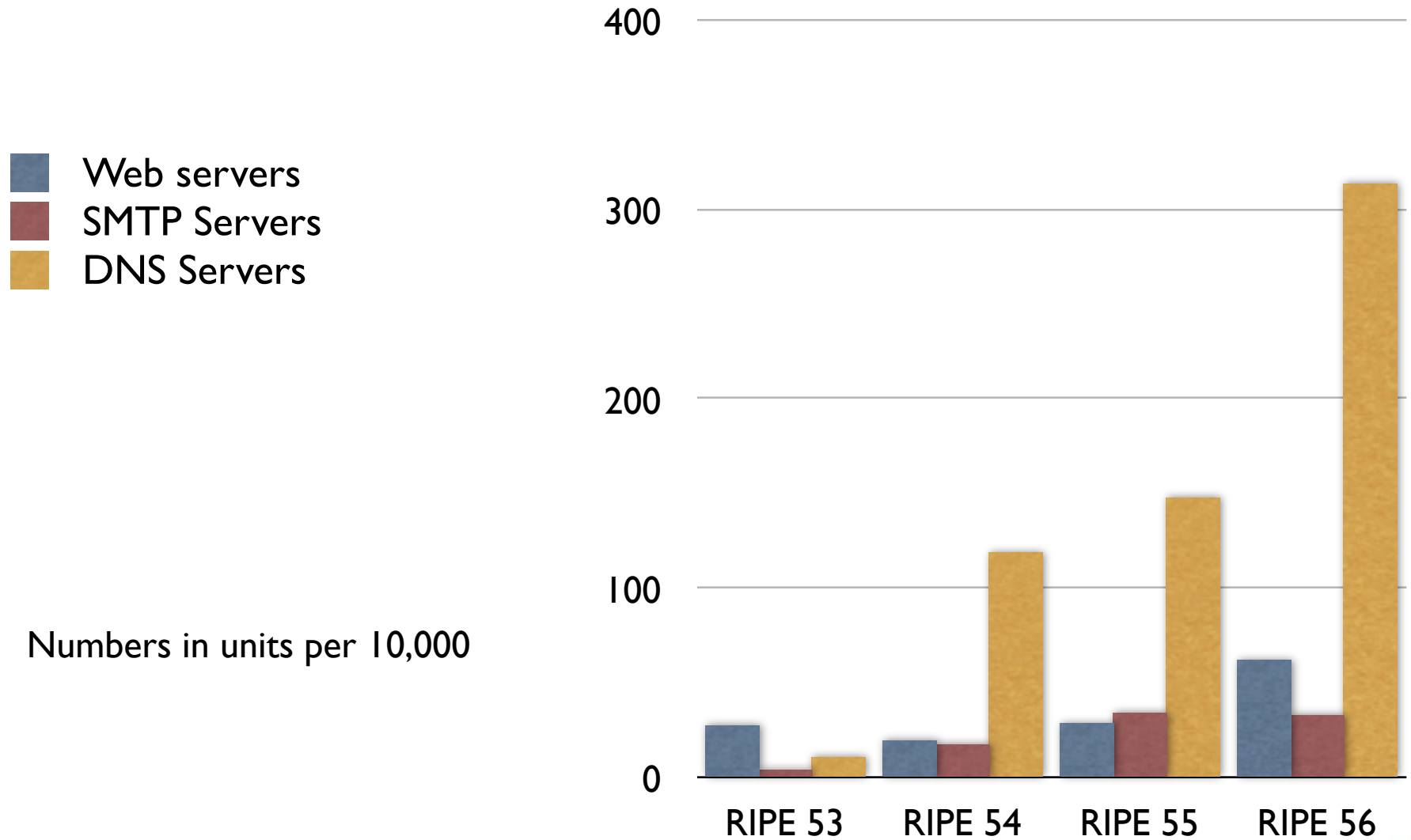
- DNS servers

- 170 answered
- 29 didn't

Texto



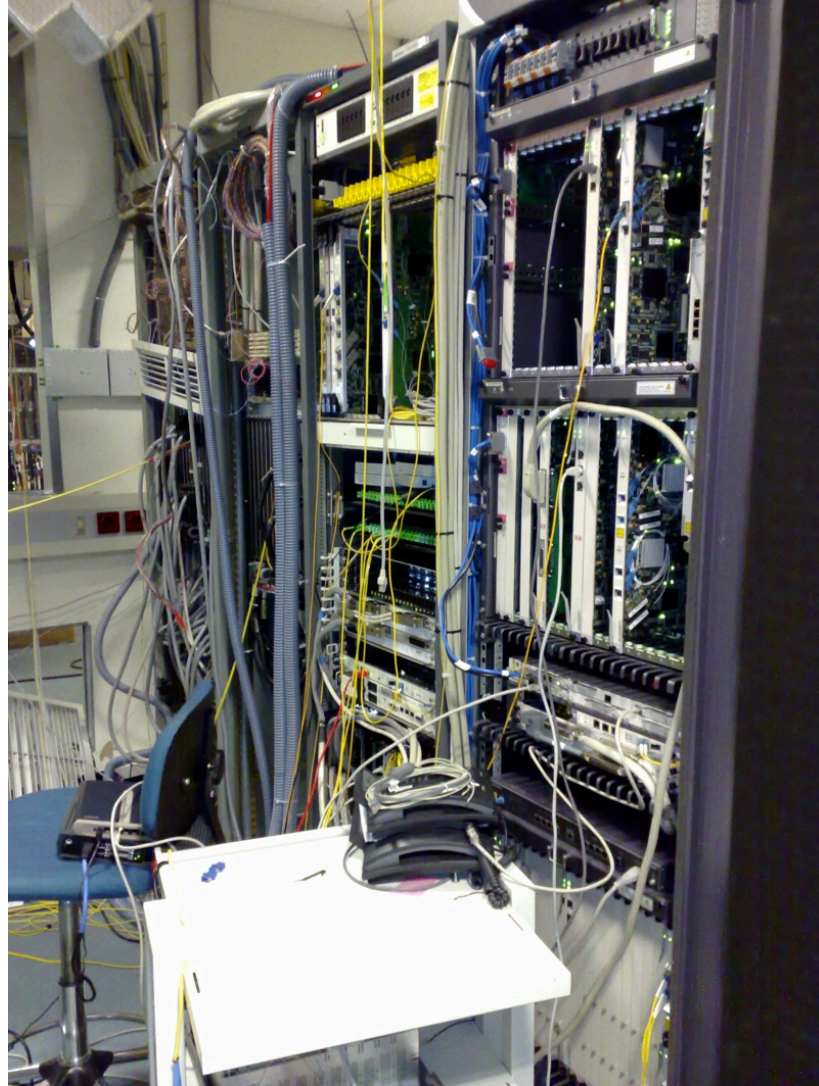
# “Growing” rate in IPv6 servers





# Funs and Facts

(Not too much changes from previous editions)





# facts from top 500/100 lists

- (ipv6)Microsoft STILL present (and unreachable) everywhere
- (ipv6)hp.com still there (and unreachable), but in much less countries
- (ipv6)elmundo.es has stopped providing service, although the name still solved to AAAA
- telegraaf.nl has replaced to elmundo

100,000 Lemmings  
can't be wrong!

# facts from top 500/100 lists (ii)

- Some “real” sites disappeared, some new came out, and also some “incorrect” sites went out.
- The general balance keeps being slightly positive (found: 0,16%, reachable: 0,12%) for the real sites.
- Almost no significant tracks of ipv6 real services in the commercial web environment.



# Servers that really works!

(and still fit on a slide...)



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Tecnocom



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[ipv6.atw.hu](http://ipv6.atw.hu)

**Tecnocom**



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[ipv6.google.com](http://ipv6.google.com)

[ipv6.paran.com](http://ipv6.paran.com)

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[www.ipv6.hinet.net](http://www.ipv6.hinet.net)



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[www.ipv6.hinet.net](http://www.ipv6.hinet.net)



# Rich & famous












# Rich & famous

	Web	MX	NS
ripe.net			
arin.net			
apnic.net			
lacnic.net			
afrinic.net			

# more usual suspects

# more usual suspects

	Web	MX	NS
iana.org			
icann.org			
ietf.org			

# DNS Hierarchy



# Root servers

- 8 root servers operating in IPv6 (BIG improvement) (according to [www.root-servers.org](http://www.root-servers.org))
- FINALLY some (6) appear in `/domain/named.root`
- B & L have IPv6 server but are not listed in `named.root`



# TLD DNS servers

	RIPE 53	RIPE 54	RIPE 55	RIPE 56
with 6 IPv6 DNS servers				6
with 5 IPv6 DNS servers	-	-	2	6
with 4 IPv6 DNS servers	17	16	16	10
with 3 IPv6 DNS servers	27	31	30	42
with 2 IPv6 DNS servers	51	51	55	64
with 1 IPv6 DNS server	72	75	69	61
without IPv6 DNS servers	97	96	109	92
<b>TOTALS</b>	<b>264</b>	<b>267</b>	<b>281</b>	<b>281</b>

# TLD DNS Servers (2)

gTLD	RIPE-53	RIPE-54	RIPE-55	RIPE-56
.int	2	2	2	2
.biz	2	2	2	2
.com	2	2	2	2
.info	2	2	2	6
.mobi	2	2	2	2
.org	3	3	5	5
.museum	-	1	0	1
.net	-	0	0	2

gTLD	RIPE-53	RIPE-54	RIPE-55	RIPE-56
.aero	1	1	1	1
.edu	0	0	0	0
.gov	0	0	0	0
.mil	0	0	0	0
.cat	-	2	2	2
.tel	-	2	2	2
.travel	-	2	2	2
.eu	-	0	0	2

# ccTLD

- On a recent survey in the European zone, about 75% of ccTLD registrars affirm that they support IPv6
  - Allow an IPv6 address as glue data for a DNS server
  - (We didn't check it)





# Popular DNS servers

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# RIPE support of DNS

- Many TLD use RIPE IPv6 DNS servers as secondary
  - 5(5)(4) TLD have two RIPE IPv6 DNS servers as secondaries
  - 61(61)(65) TLD have one



**What would be  
Internet Powered by  
IPv6 for my wife?**

**First, we said...**

**Tecnocom**

GRUPO



**Eurocomercial**

INFORMATICA Y COMUNICACIONES SA







**Tecnocom**

GRUPO



Eurocomercial  
INFORMATICA Y COMUNICACIONES SA



- Lord Howe Island



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Eurocomercial  
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- Lord Howe Island
- 11 km long by 3 km wide



**Tecnocom**  
GRUPO



Eurocomercial  
INFORMATICA Y COMUNICACIONES SA



- **Lord Howe Island**
  - **11 km long by 3 km wide**
  - **Population: 350**



**Tecnocom**  
GRUPO



Eurocomercial  
INFORMATICA Y COMUNICACIONES SA





- **Lord Howe Island**
  - **11 km long by 3 km wide**
  - **Population: 350**
  - **Nearest civilization: 700 km**



**Tecnocom**  
GRUPO



Eurocomercial  
INFORMATICA Y COMUNICACIONES SA



**Next we said...**



**...Welcome to Greenland!!!**

Extension: 2.166.086 km<sup>2</sup>,

Population: 56.300



# But based in recents events...

## **RIPE 55:**

Growth and innovation on the Internet depends on the continued availability of IP address space. The remaining pool of unallocated IPv4 address space is likely to be fully allocated within two to four years. IPv6 provides the necessary address space for future growth. We therefore need to facilitate the wider deployment of IPv6 addresses. (and so on)



**And their impact in  
the world in general**

**In (IPv6) space, nobody  
can hear you scream**



# Questions?

Suggestions & Corrections are absolutely welcome



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**Tecnocom**

