



Load Balancing

La solution pour la transition ?

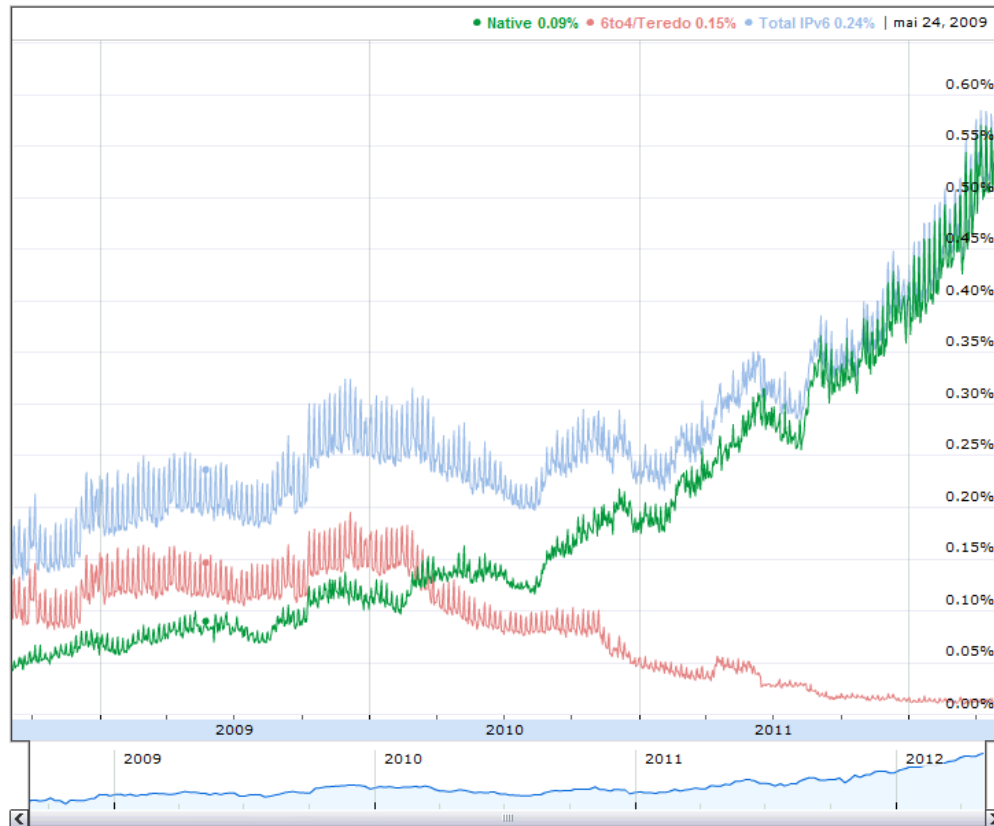
*Fabien Broillet
Project Manager
eb-Qual SA*

Conférence IPv6
Lausanne

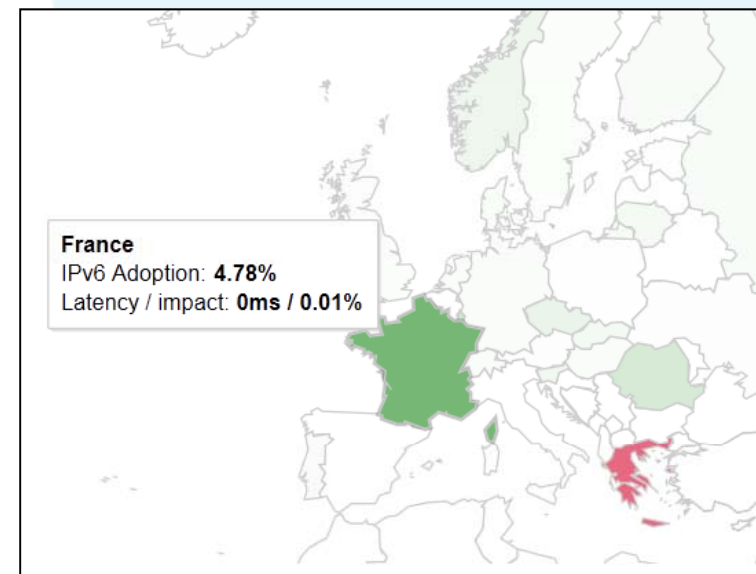
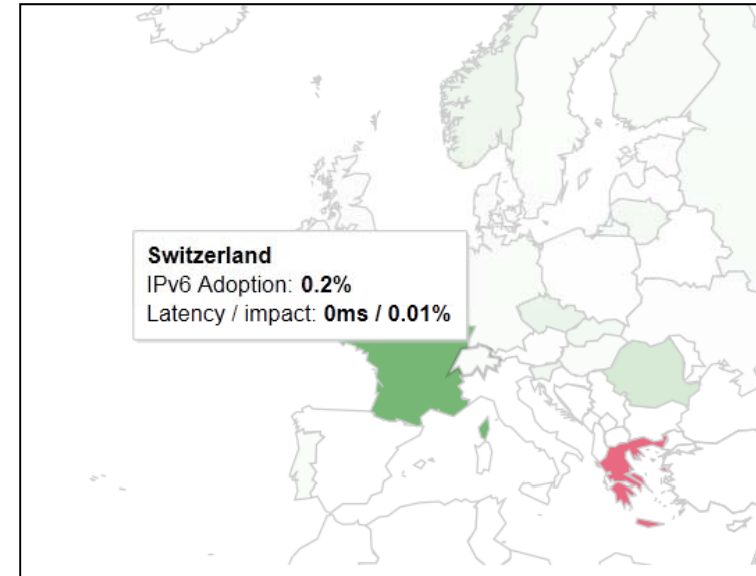
10 mai 2012



IPv6 Adoption: Google IPv6 Client Statistics

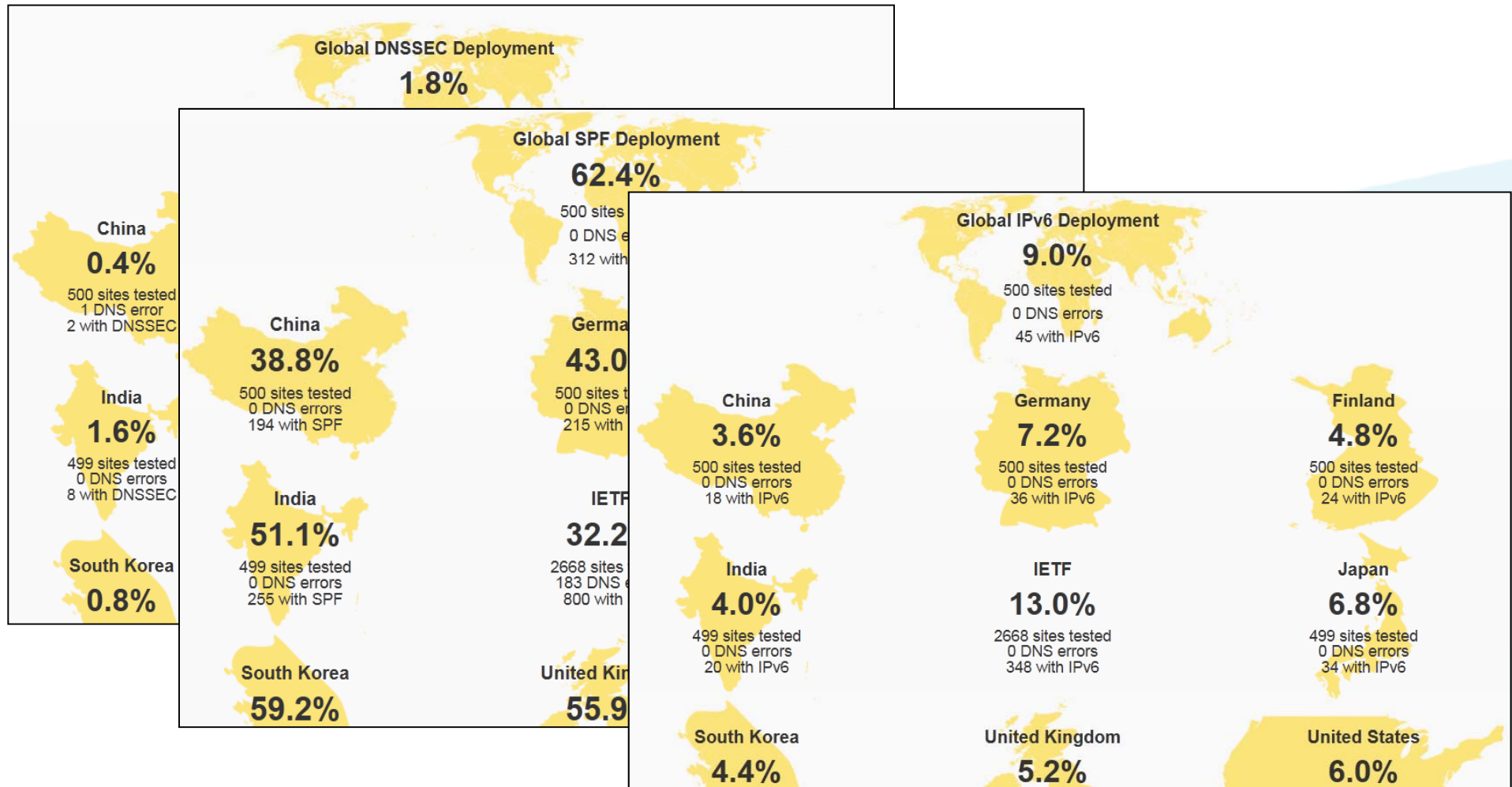


Zurich Fribourg Genève



Référence: <http://www.google.com/intl/en/ipv6/statistics/>

IPv6 Adoption: compared to other new trends ...

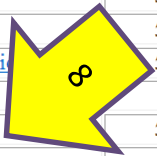


IPv6 Adoption: what about Switzerland ?



WEB

Rank	Country	Sample	Green	Orange
1	Brazil	50	32.0% (16)	0.0% (0)
2	Slovenia	50	26.0% (13)	0.0% (0)
3	Portugal	50	18.0% (9)	0.0% (0)
4	Moldova	50	16.0% (8)	0.0% (0)
5	Netherlands	50	14.0% (7)	2.0% (1)
6	Czech Republic	50	12.0% (6)	10.0% (5)
7	Buthan	9	11.1% (1)	0.0% (0)
8	Switzerland	50	8.0% (4)	4.0% (2)
9	Sweden	50	8.0% (4)	0.0% (0)
10	Luxembourg	50	8.0% (4)	0.0% (0)
11	Norway	50	6.0% (3)	6.0% (3)
12	Poland	50	6.0% (3)	4.0% (2)
13	Germany	50	6.0% (3)	2.0% (1)
14	Indonesia	50	6.0% (3)	2.0% (1)
15	Denmark	50	6.0% (3)	0.0% (0)
16	Hungary	50	6.0% (3)	0.0% (0)
17	Nepal	50	6.0% (3)	0.0% (0)
18	France	50	6.0% (3)	0.0% (0)



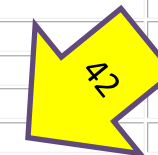
EMAIL

Rank	Country	Sample	Green	Orange
1	Buthan	9	33.3% (3)	0.0% (0)
2	Netherlands	50	16.0% (8)	0.0% (0)
3	Haiti	8	12.5% (1)	0.0% (0)
4	Moldova	50	12.0% (6)	0.0% (0)
5	Jamaica	9	11.1% (1)	0.0% (0)
6	Norway	50	8.0% (4)	2.0% (1)
7	Guyana (Republic of)	13	7.7% (1)	0.0% (0)
8	Seychelles	42	7.1% (3)	0.0% (0)
9	Senegal	28	7.1% (2)	0.0% (0)
10	Kenya	50	6.0% (3)	0.0% (0)
11	Belgium	50	6.0% (3)	0.0% (0)
12	Luxembourg	50	6.0% (3)	0.0% (0)
13	Mauritius	50	6.0% (3)	0.0% (0)
14	Switzerland	50	6.0% (3)	0.0% (0)
15	Cambodia	37	5.4% (2)	0.0% (0)
16	Serbia	50	4.0% (2)	0.0% (0)
17	Georgia	50	4.0% (2)	0.0% (0)
18	Sweden	50	4.0% (2)	0.0% (0)
19	Slovenia	50	4.0% (2)	0.0% (0)
20	Algeria	50	4.0% (2)	0.0% (0)
21	Portugal	50	4.0% (2)	0.0% (0)
22	Czech Republic	50	4.0% (2)	0.0% (0)
23	Poland	50	4.0% (2)	0.0% (0)






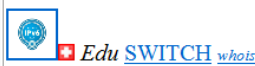














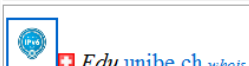
DNS

Rank	Country	Sample	Green	Orange
31	Liechtenstein	50	22.0% (11)	0.0% (0)
32	Canada	50	22.0% (11)	0.0% (0)
33	Hong Kong	50	22.0% (11)	0.0% (0)
34	United States of America	50	22.0% (11)	0.0% (0)
35	Cote d'Ivoire	24	20.8% (5)	0.0% (0)
36	Sri Lanka	50	20.0% (10)	2.0% (1)
37	Samoa	50	20.0% (10)	2.0% (1)
38	Mauritius	50	20.0% (10)	0.0% (0)
39	Armenia	50	20.0% (10)	0.0% (0)
40	Turkmenistan	15	20.0% (3)	0.0% (0)
41	Slovakia	50	20.0% (10)	0.0% (0)
42	Switzerland	50	20.0% (10)	0.0% (0)
43	Suriname	5	20.0% (1)	0.0% (0)
44	Maldives	10	20.0% (2)	0.0% (0)
45	Malaysia	50	18.0% (9)	6.0% (3)
46	Belgium	50	18.0% (9)	4.0% (2)
47	Serbia	50	18.0% (9)	2.0% (1)
48	Spain	50	18.0% (9)	0.0% (0)
49	Greece	50	18.0% (9)	0.0% (0)
50	Laos	50	18.0% (9)	0.0% (0)
51	Pakistan	50	18.0% (9)	0.0% (0)
52	Trinidad and Tobago	23	17.4% (4)	0.0% (0)
53	Timor-Leste	35	17.1% (6)	0.0% (0)
54	Congo (Democratic Republic)	18	16.7% (3)	0.0% (0)



IPv6 Adoption: what about Switzerland ?



		WEB	EMAIL	DNS
	95/47243	FAILED	FAILED	FAILED
	96/47373	FAILED	FAILED	FAILED
	97/48530	FAILED	FAILED	FAILED
	98/48938	www.switch.ch 2001:620::14:0:0:0:c 2010-07-30	lagalb.switch.ch 2001:620::1b:0:0:0:28 2010-07-30	scsnms.switch.ch merapi.switch.ch 2001:620::5 2/2 2010-12-11
	99/51088	FAILED	FAILED	ns2.arcade.ch ns1.arcade.ch 2a02:1368:1:51::51 2/3 2011-10-25
	100/51525	FAILED	FAILED	scsnms.switch.ch 2001:620::1 1/3 2011-05-02
	101/53052	FAILED	FAILED	FAILED
	102/53285	FAILED	fallbackmx.spamexperts.eu 2a01:4f8:100:7262:bc:28:60:d1 2011-09-10	FAILED
	103/53575	FAILED	FAILED	FAILED
	104/54551	www.qoqa.ch 2001:788:2:124::3 2011-11-21	is1.qoqa.com 2001:788:2:124::2 2011-11-21	ns4.qoqa.com 2001:788:2:124::2 1/4 2011-11-21
	105/54567	FAILED	FAILED	FAILED
	106/55073	FAILED	FAILED	FAILED
	107/55929	FAILED	FAILED	FAILED
	108/56448	FAILED	FAILED	FAILED
	109/57753	FAILED	FAILED	FAILED
	110/59101	FAILED	FAILED	ns2.domaindiscount24.net ns3.domaindiscount24.net 2a00:12c0:1012:100:193:46:215:55 2/3 2012-04-17
	111/59554	FAILED	FAILED	FAILED
	112/62241	FAILED	FAILED	FAILED
	113/62574	www.unibe.ch 2001:620:400:2023::215 2011-06-07	FAILED	ns1.unibe.ch ns2.unibe.ch scsnms.switch.ch 2001:620::1 3/3 2011-06-07

Il est temps d'améliorer la situation ...





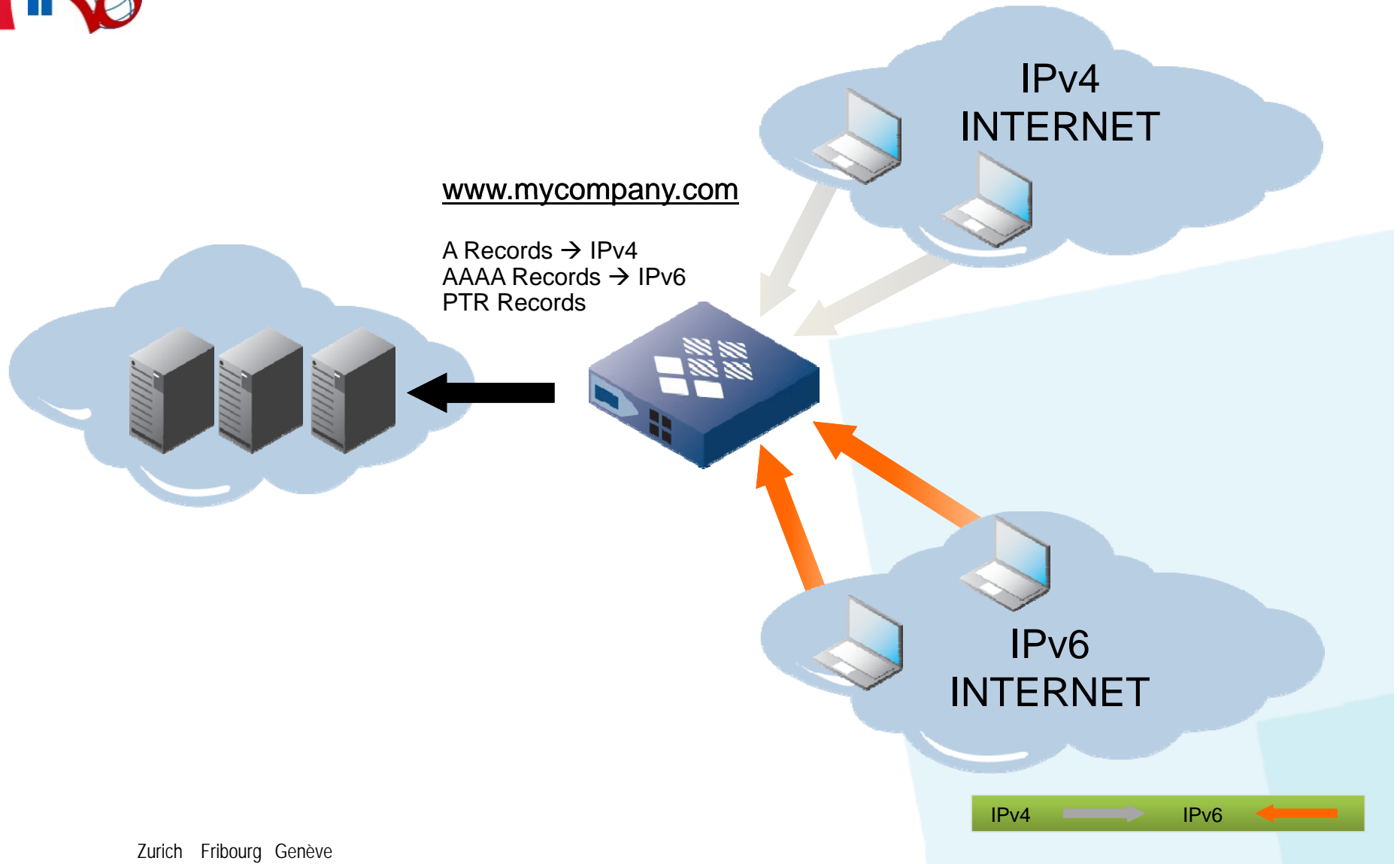
Service DNS Publique

Soyons bilingue, soyons ambidextre !

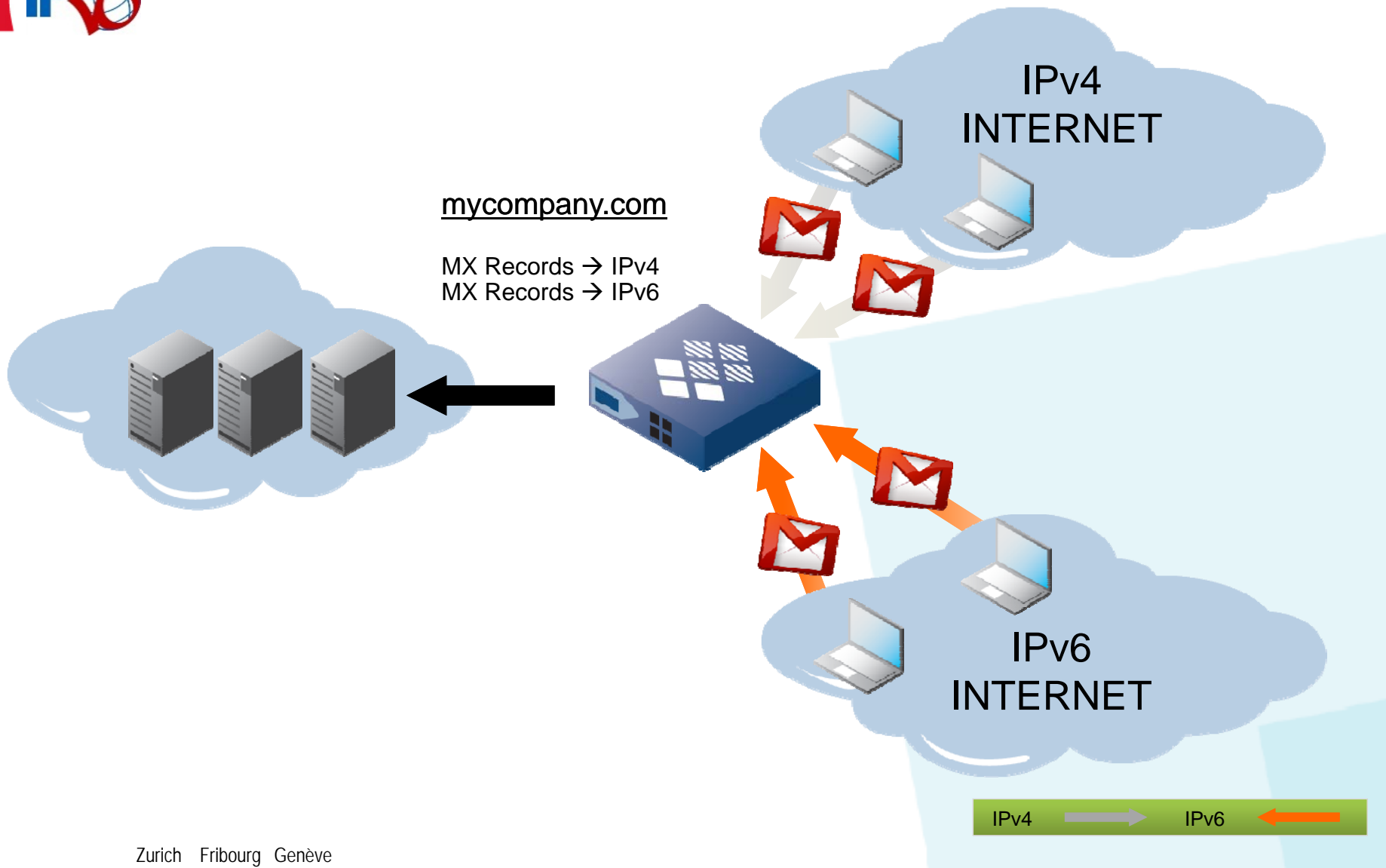
- Zones DNS Forward/Reverse IPv4 & IPv6
- Enregistrements IPv4 & IPv6
 - A & AAAA Records
 - MX Records
 - NS Records
 - Etc.
- Connexions réseaux IPv4 & IPv6



DNS Publique – nos services Web



DNS Publique - nos services E-mails





Comment agir rapidement & efficacement ?



Infrastructure DMZ 100% Dual-Stack

- Une démarche lourde et longue



Managed Services

- Coûts équivalents à la bande passante

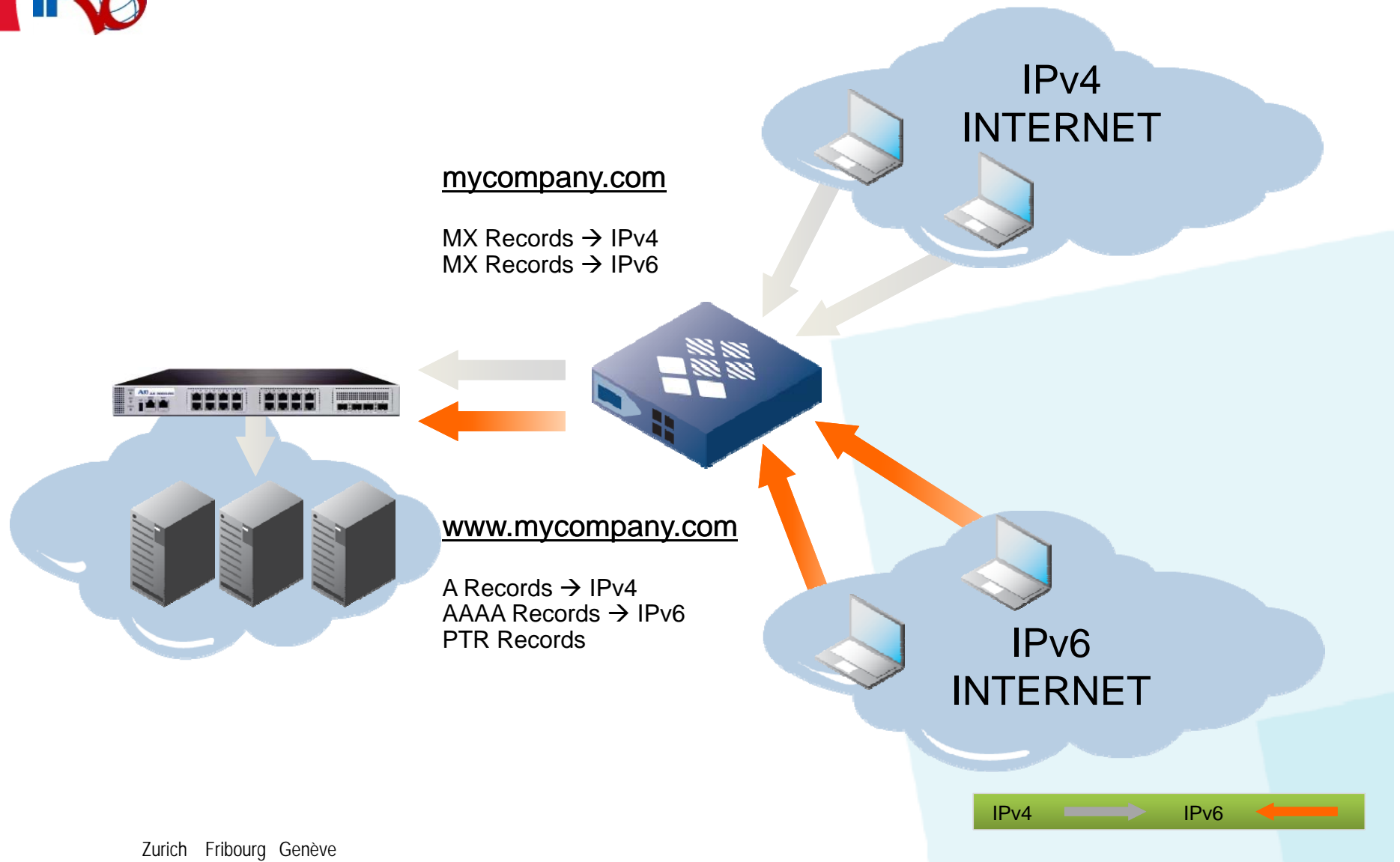


Load-Balancing IPv6

- 1 seul équipement
- Aucun changement d'infrastructure en DMZ
- Totalement transparent pour les utilisateurs finaux
- 2 Virtual IP (IPv4 & IPv6) !



Web & E-mail: Load-Balancer IPv6





Choisissons plus qu'un Load-Balancer IPv6 ...

Des clients Web "IPv6-only" ...

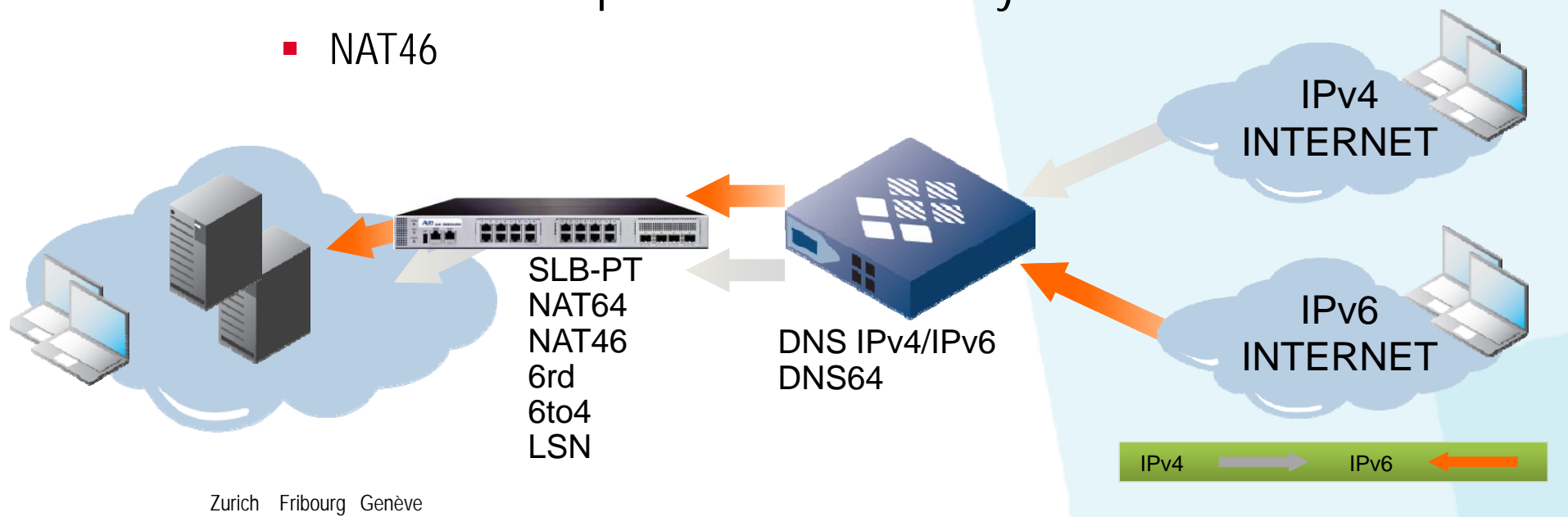
- Un service Web IPv6 désormais

No premiers équipements internes "IPv6-only"

- NAT64 / DNS64

Des services Web partenaires "IPv6-only"

- NAT46



Happy Eyeballs - Success with Dual-Stack Hosts

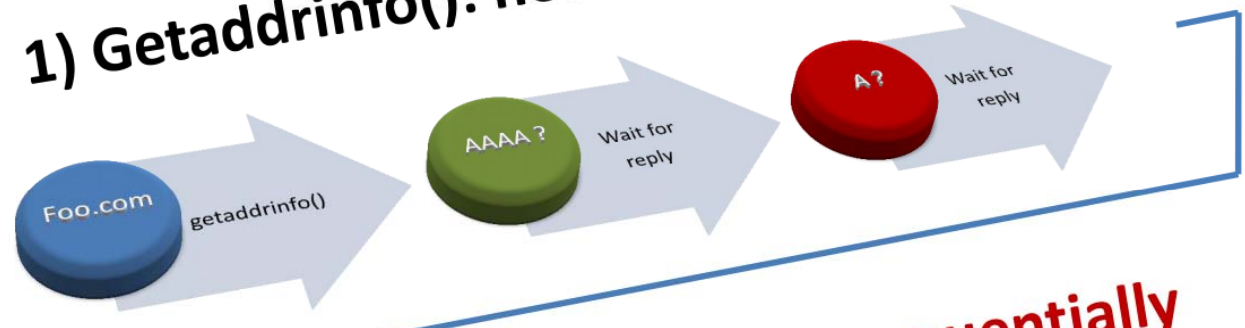


Certains résolveurs donnent la priorité aux enregistrements AAAA

- Et ce, même sans connectivité IPv6 !
- Un Fallback Timeout vers IPv4 de 21 à 186 secondes



1) Getaddrinfo(): hostname => address list



2) Try the addresses sequentially

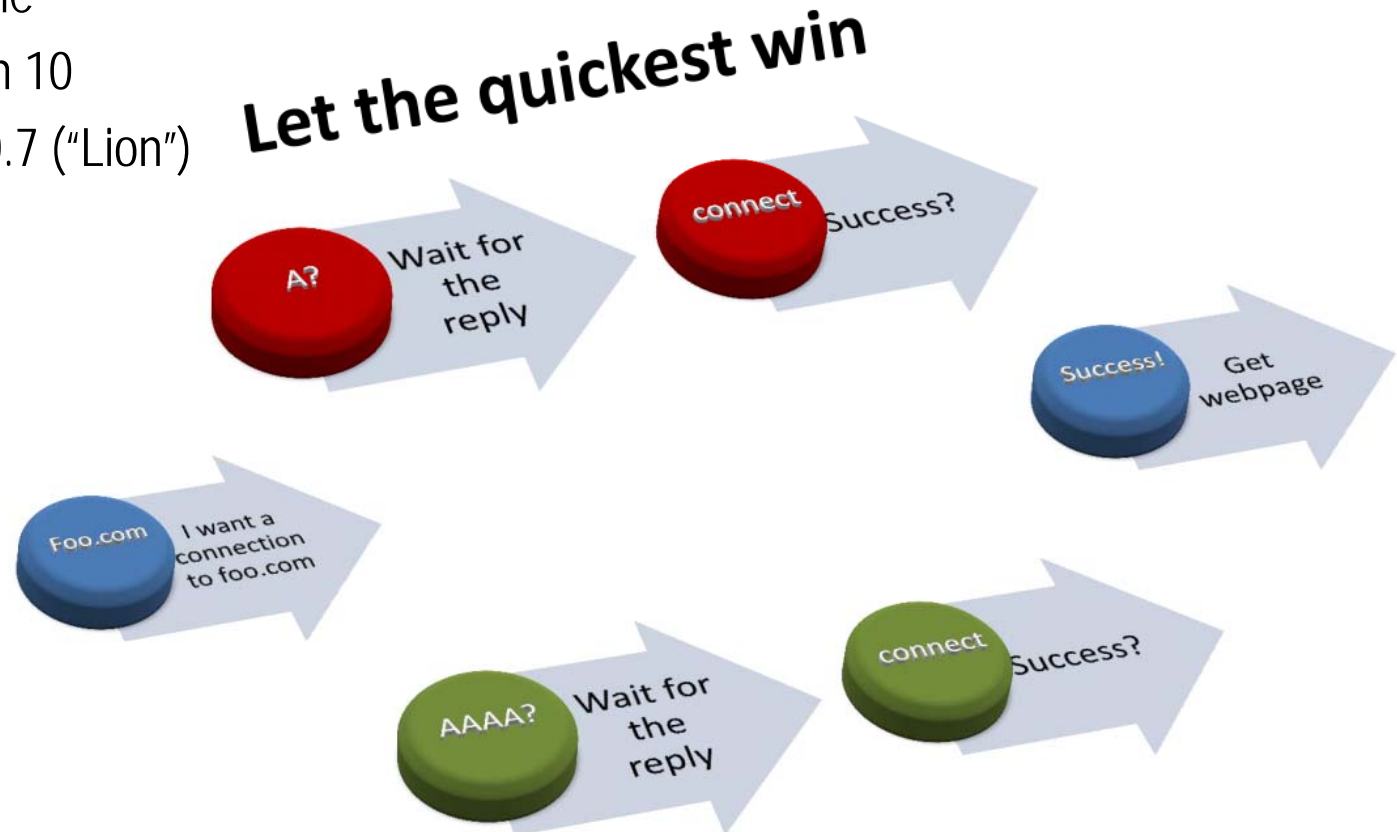




Happy Eyeballs - Success with Dual-Stack Hosts

Happy Eyeballs → RFC6555

- Google Chrome
- Firefox version 10
- Appel OSX 10.7 ("Lion")





Pour conclure ...

No Business Case

Service Web & E-mail

Load Balancing: la solution pour la transition ?

eb-Qual, IT partner, is "IPv6 Ready" ! And you ...

Merci pour votre attention !

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