

# IPv6 Business Conference

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## Deployment Incentives what works, what does not work?

Panel discussion moderated by Gert Döring, SpaceNet

Swiss IPv6 Business Conference  
16.06.2016 Zürich

# Intro: Gert Döring

- \* Gert Döring, SpaceNet AG
- \* travelling IPv6 salesman since 1997 - because it's interesting and the benefits of the increased address size are so obvious
- \* SpaceNet AG is a small business ISP in Munich, DE, targeting small and medium sized businesses, and offering commercial IPv6 services since 15 years
- \* category: „no hats today, just moderating“

## Intro: Jen Linkova

- \* Jen Linkova, Google
- \* Have been working as a network engineer for ISPs, vendors (Cisco) and currently looking after the network infrastructure and IPv6 at Google. Co-Chair of the RIPE IPv6 WG.
- \* Google is one of the first commercial providers to offer large-scale and large-volume content over IPv6
- \* category: „network operator“

## Intro: Marcus Keane

- \* Marcus Keane, Microsoft IT
- \* Doing networking for 20 years in four different countries. Has been working for Microsoft IT on Microsoft's corporate backbone for 17 years, and doing IPv6 for 10 years
- \* Microsoft is a software company that does IPv6. Microsoft IT manages the global corporate network in 94 countries.
- \* category: „very large enterprise network“

## Intro: Enno Rey

- \* Enno Rey, ERNW
- \* Enno is an old school networking geek with some background in large scale network operations and security. He has been involved with IPv6 since 1999 and regularly blogs about IPv6 (security) topics
- \* ERNW is a german consulting company focusing on enterprises
- \* category: „enterprise networks (consulting)“

# Intro: Manuel Schweizer

- \* Manuel Schweizer, Cloudscale.ch AG
- \* Spends his nights reading through RFCs for IPv6 providing enough evidence to report bugs and send RFEs to various vendors
- \* Works at cloudscale.ch which has been named “Best Self-Service Cloud Platform – Switzerland”, providing Linux cloud servers to developers who care
- \* category: „cloud services provider“

# Intro: Stephanie Schuller

- \* Stephanie Schuller, **LinkedIn**
- \* Stephanie Schuller implements IPv6 at LinkedIn together with a talented companywide task force. She drives infrastructure initiatives for LinkedIn Global Operations, spanning networking, datacenters, systems, and the team culture needed to build at scale. Prior to LinkedIn, she led the IPv6 initiative at Cisco WebEx and implemented IPv6 at the edge at Yahoo.
- \* LinkedIn is the largest professional network on the Internet with more than 400 million members in over 200 countries.
- \* category: „global content provider“

## Intro: Mukom Tamon

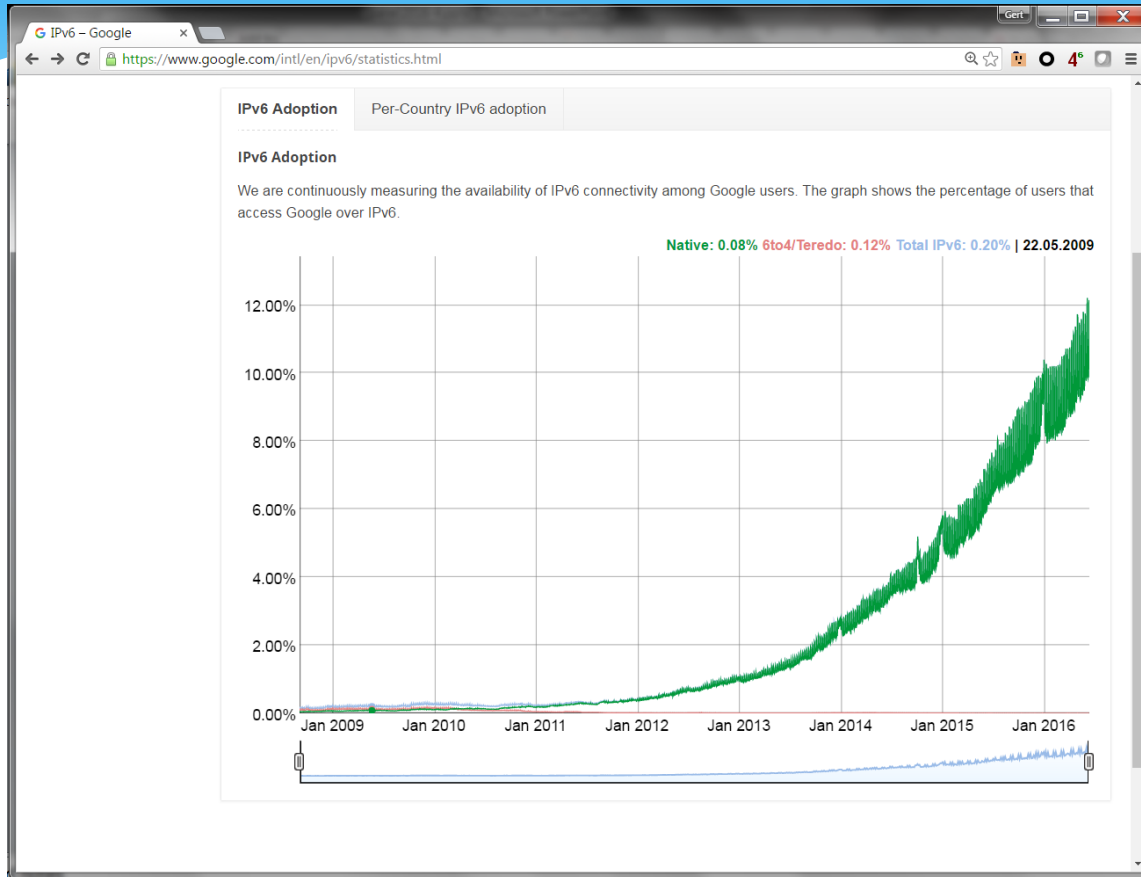
- \* Mukom Tamon, AfriNIC
- \* Head of Capacity Building & lead trainer at AFRINIC where he has created their IPv6 training program. He has trained over 2000 network engineers from more than 50 countries. Teaches IPv6 because he wants to prepare African network engineers to build scalable networks to power the continent's Internet growth.
- \* AfriNIC is the address registry for Africa
- \* category: „address registry (RIR), training“



## Intro: Eric Vyncke

- \* Eric Vyncke, Cisco
- \* Eric started in 2005 about the security aspects of IPv6 in Cisco. He helped deploy IPv6 in Belgium with the IPv6 Council and now is exploring how IPv6-centric networks can unleash the power of IPv6
- \* Cisco is one of the first vendors of network equipment that provided IPv6 support
- \* category: „security researcher“ (and maybe a bit „vendor“)

# Deployment numbers: clients



## Clients that can use Google over IPv6:

- \* 12% world wide
- \* 42% in Belgium
- \* 26% in Switzerland
- \* 23% in Germany
- \* 11% in France
- \* 4.6% in Austria

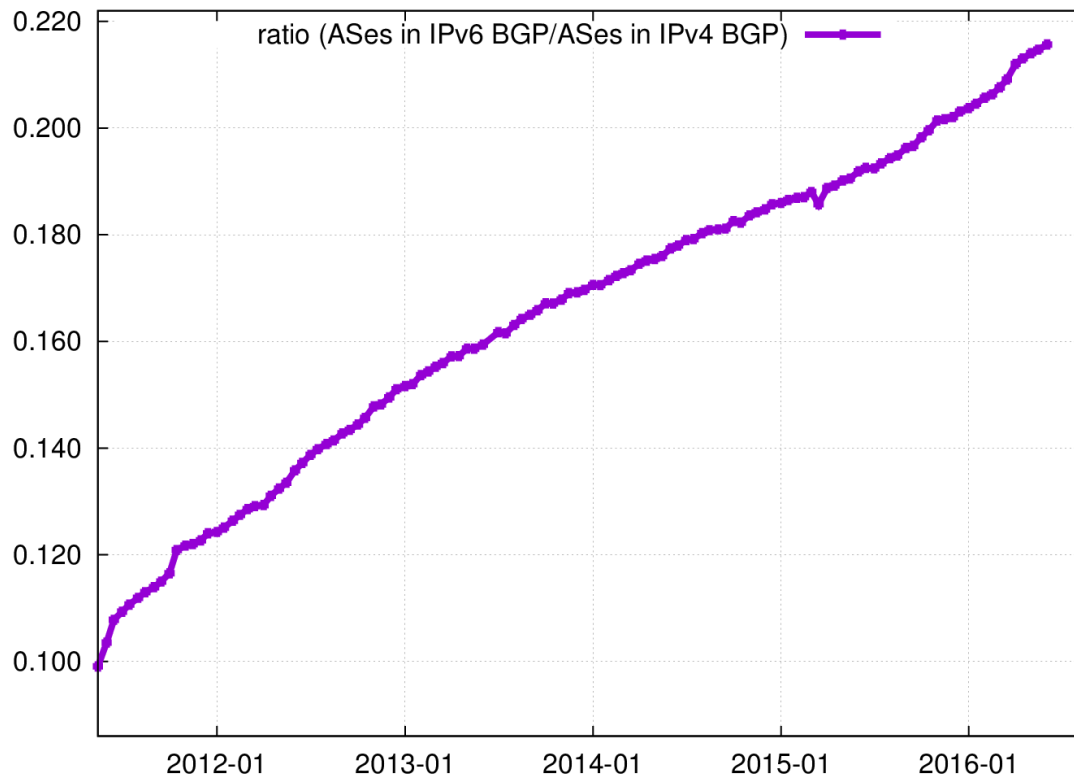
# Deployment numbers: web sites

Rank	Website	Web	Mail	DNS
1/279	www.google.ch	2a00:1450:4007:80d::2003 2011-06-08	alt1.aspmx.l.google.com 2a00:1450:4010:c04::1a 2012-07-26	FAILED
2/292	blastingnews.com	FAILED	aspmx2.googlemail.com 2a00:1450:4010:c04::1a 2016-02-27	FAILED
3/608	uploaded.net	FAILED	FAILED	ns3.p21.dynect.net ns1.p21.dynect.net 2001:500:80:1::21 2/4 2013-03-18
4/976	uefa.com	FAILED CDN	FAILED	FAILED
5/1426	www.doodle.com	2a02:418:6057:149 2012-07-06	alt3.aspmx.l.google.com 2a04:6800:4008:c02::1a 2012-07-25	ns6.nine.ch ns5.nine.ch 2001:67c:2f98:5::5 2/2 2012-07-06
6/1754	th11.ch	2400:cb00:2048:1::8d65:787a 2016-04-21 CDN	FAILED	bayan.ns.cloudflare.com hope.ns.cloudflare.com 2400:cb00:2048:1::ndf5:3aa3 2/2 2016-03-04
7/2829	Gov.who.int	FAILED	FAILED	ext-dns-2.cern.ch 2001:1458:1:2::100:85 1/5 2012-11-15
8/3161	bluewin.ch	FAILED	FAILED	FAILED
9/3191	arduino.cc	FAILED	aspmx.l.google.com 2a00:1450:400c:c07::1a 2014-08-22	FAILED
10/3405	blick.ch	FAILED	alt2.aspmx.l.google.com 2a04:6800:4003:c01::1b 2015-06-06	ns-cloud-b3.googledomains.com ns-cloud-b1.googledomains.com ns-cloud-b4.googledomains.com ns-cloud-b2.googledomains.com 2001:4860:4802:34::6b 4/4 2015-10-31
11/4302	Press.20.minutes.on-line	FAILED CDN	alt1.aspmx.l.google.com 2a00:1450:4010:c0f::1b 2015-11-03	FAILED
12/4525	ricardo.ch	FAILED	FAILED	pdns2.cscdns.net pdns1.cscdns.net 2620:74:19::33 2/2 2014-01-01
13/4931	B2C.nespresso.com	www.nespresso.com 2a02:26fd:24:38a::763 2012-09-06 CDN	FAILED	a1-86.akam.net a16-67.akam.net a8-64.akam.net 2600:1403:a::40 3/6 2013-03-26
14/5161	stf.ch	FAILED CDN	FAILED	ns1.p23.dynect.net ns3.p23.dynect.net 2001:500:94:1::23 2/4 2012-12-21
15/5211	fifa.com	FAILED CDN	FAILED	ns1-14.akam.net use5.akam.net ns1-215.akam.net 2600:1401:2::d7 3/7 2014-06-08
16/5489	Edu.Eidgenössische Technische Hochschule Zürich	www.ethz.ch 2001:67c:10ec:4380::216 2011-05-19	FAILED	ns2.switch.ch ns1.ethz.ch ns2.ethz.ch 2001:67c:10ec::b 3/3 2010-09-23
17/5743	admin.ch	FAILED	FAILED	ns3.admin.ch 2a00:c38:2:28:0:ffff:d467:4855 1/3 2015-11-28
18/5783	www.search.ch	FAILED	FAILED	ns1.search.ch ns2.search.ch 2001:4803:3:3::22

## Top 408 sites for .ch:

- \* 79 (19%) have IPv6 web
- \* 90 (22%) have IPv6 mail
- \* 216 (53%) have IPv6 DNS

## Deployment numbers: networks



Worldwide routing:  
about 22% of all AS numbers  
visible in in BGP („networks  
in global routing“) are  
announcing IPv6 space

# Are these numbers „good“? Do they highlight a „problem“?

- \* Jen Linkova, Google
  - \* Marcus Keane, Microsoft
  - \* Enno Rey, ERNW
  - \* Manuel Schweizer, Cloudscale.ch
  - \* Stephanie Schuller, LinkedIn
  - \* Mukom Tamon, AfriNIC
  - \* Eric Vyncke, Cisco
- network operator
  - very large enterprise
  - enterprise (consulting)
  - cloud services provider
  - global content provider
  - address registry (RIR), Africa
  - security researcher

## Why do we care? (We have done our homework!)

- \* Jen Linkova, Google
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## What are the *reasons* for IPv6 non-deployment?

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## What can we do to speed up IPv6 deployment?

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  - \* Marcus Keane, Microsoft
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  - \* Manuel Schweizer, Cloudscale.ch
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# What could/should others do to speed up IPv6 deployment?

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  - \* Marcus Keane, Microsoft
  - \* Enno Rey, ERNW
  - \* Manuel Schweizer, Cloudscale.ch
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# Questions from the Audience?

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  - \* Marcus Keane, Microsoft
  - \* Enno Rey, ERNW
  - \* Manuel Schweizer, Cloudscale.ch
  - \* Stephanie Schuller, LinkedIn
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