



Swiss IPv6 Council

Memberanlass 30. Mai 2016, Zürich

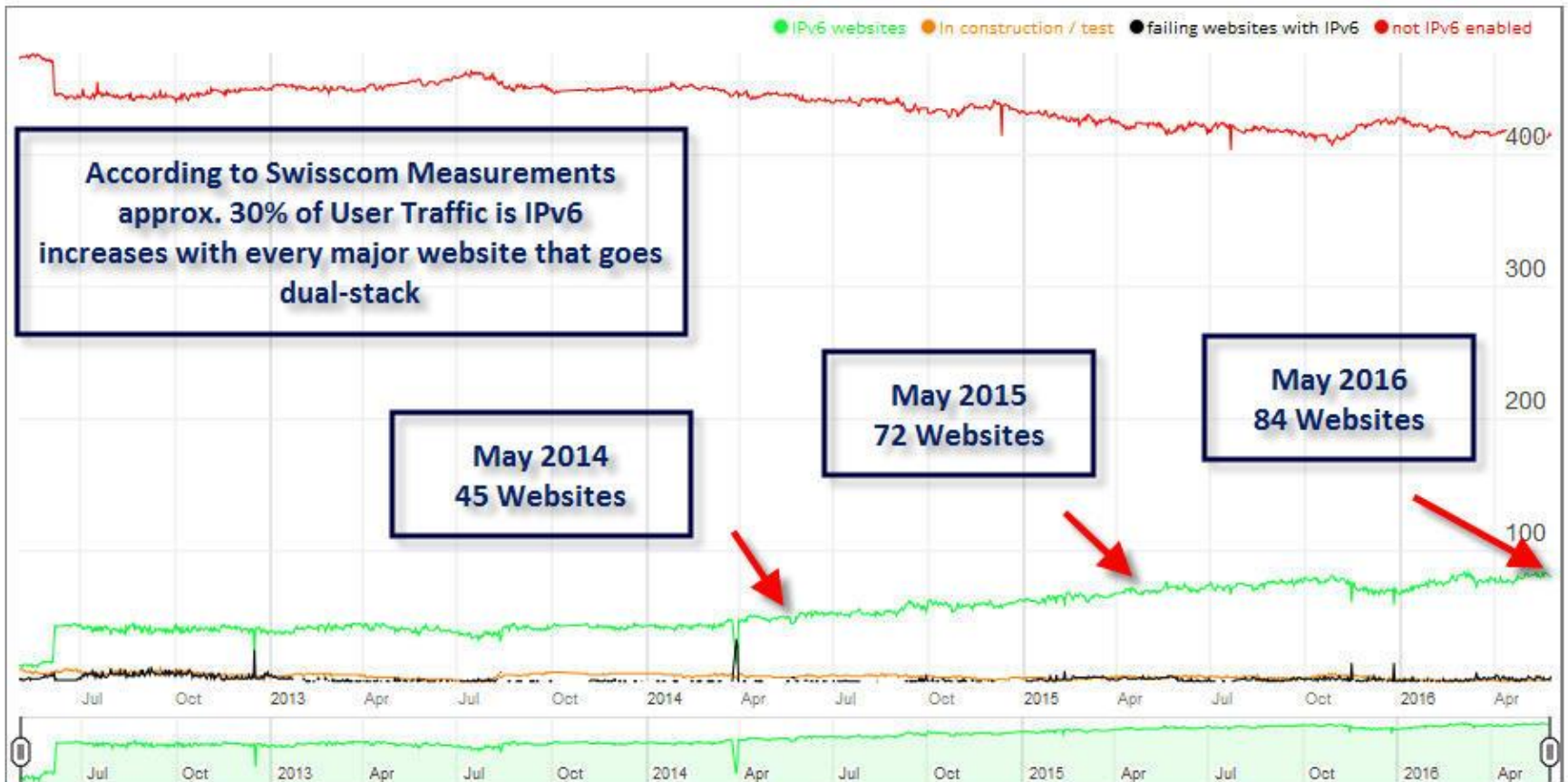
Unser Event Sponsor - **DIGICOMP**

Status today (6lab)

Top Alexa 500
for CH

Switzerland

Display Content Data ⓘ





Talking to Dualstack-Websites

Zugriffsperformance mit IPv4 und IPv6

Gabriel Müller – AWK Group AG

Silvia Hagen – Sunny Connection AG

Agenda

Introduction

- The Project
- Motivation
- Agents
- Services

The Results



- Warm-up - Facebook vs. LinkedIn
- ...

Summary

- Conclusion
- Your Input

The Project

Web Performance

-  Monitoring selected dual-stack Websites in Switzerland from different agents coming from all parts of the country
-  Comparing access performance of IPv4 vs. IPv6

Team Members

- Nephos6 – providing monitoring solution V6Sonar
- Agents – provided by members of the Swiss IPv6 Council

Measurements – February and March 2016

Motivation



- ✚ “The Swiss IPv6 Council supports and promotes the use and integration of the new Internet Protocol version 6 (IPv6) in all networks, public and private, consolidating single-source knowledge, support and various activities.”
- ✚ This requires:
 1. IPv6 access to the content
 2. Content provided over IPv6
- ✚ Therefore, the Council currently focuses on top Swiss websites
User adoption is at approx. 28%

Motivation

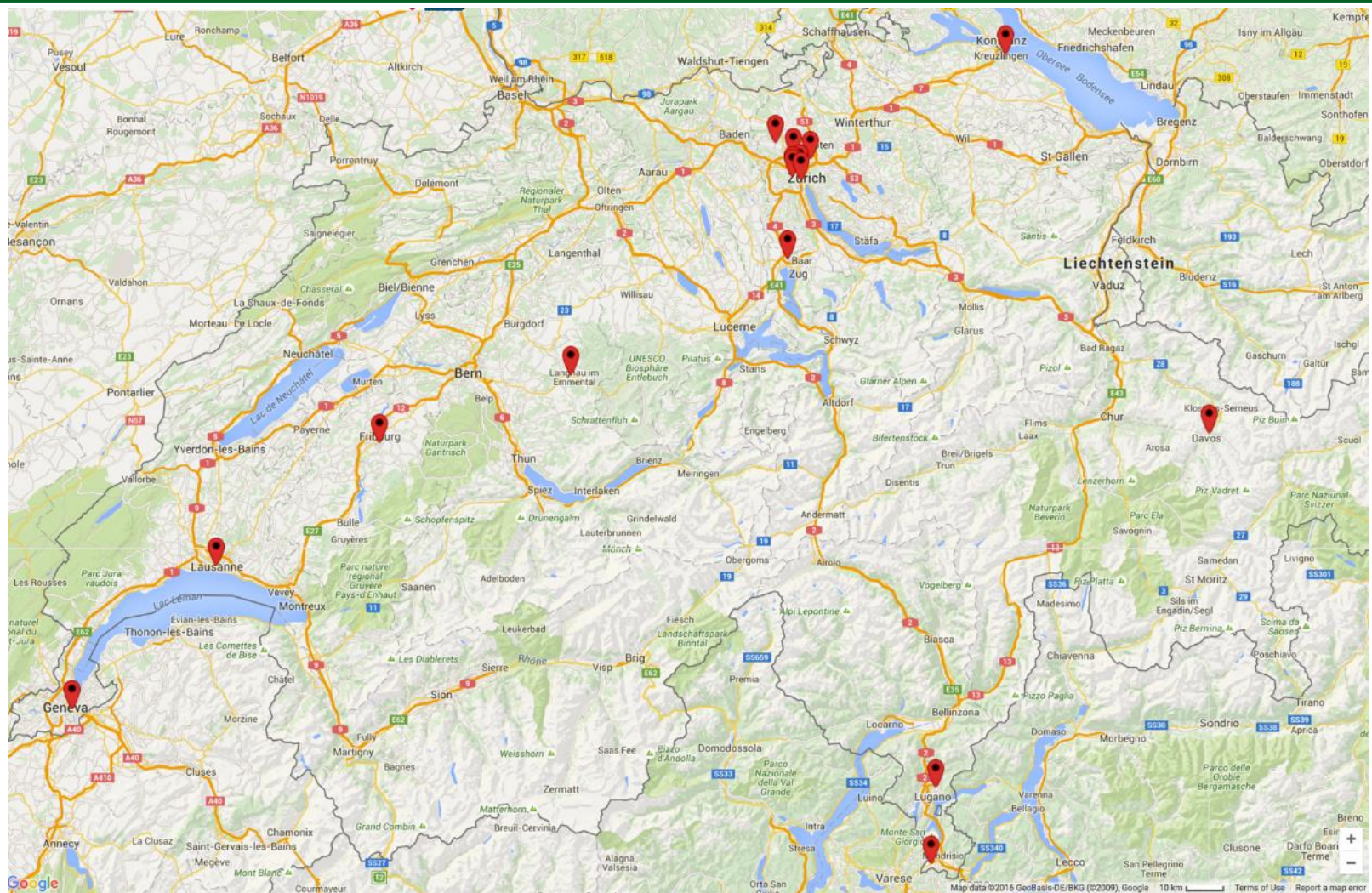
Ranking	Name	Website Test	Mail Exchange Test	Nameserver Test
1	Google Schweiz (google.ch)	OK	OK	FAIL
2	Facebook (facebook.com)	OK	FAIL	OK
3	Google (google.com)	OK	OK	FAIL
4	YouTube – Broadcast yourself (youtube.com)	OK	OK	FAIL
5	Wikipedia (wikipedia.org)	OK	OK	FAIL
6	Yahoo! (yahoo.com)	OK	FAIL	OK
7	→ Amazon.com (www.amazon.com)	FAIL	FAIL	OK
8	→ Blick (blick.ch)	FAIL	OK	OK
9	→ Ricardo.ch	FAIL	FAIL	OK
10	→ Windows Live (live.com)	FAIL	FAIL	OK
11	→ 20 Minuten (20min.ch)	FAIL	OK	FAIL
12	Amazon DE (www.amazon.de)	FAIL	FAIL	OK
13	→ Bluewin (bluewin.ch)	FAIL	FAIL	FAIL
14	→ LinkedIn (www.linkedin.com)	OK	OK	OK
15	→ Twitter (twitter.com)	FAIL	OK	OK
16	→ Search.ch	OK	FAIL	OK
18	→ Schweizer Radio und Fernsehen (www.srf.ch)	FAIL	FAIL	OK
19	→ Google Deutschland (google.de)	OK	OK	FAIL
20	→ Portal der Schweizer Regierung (www.admin.ch)	FAIL	FAIL	OK
27	Tagesanzeiger (tagesanzeiger.ch)	FAIL	OK	OK
28	SBB (www.sbb.ch)	OK	FAIL	FAIL
33	Blogspot (www.blogspot.ch)	OK	UNKNOWN	FAIL
39	Apple (www.apple.com)	OK	FAIL	FAIL

Agents

- ✚ 19 agents deployed all over Switzerland
 - with dualstack Internet connection
 - Dedicated device or virtual machine
- ✚ Measurement every 10 minutes
 - DNS, ICMP, traceroute
 - HTTP connect (v4 and v6)
 - TCP handshake
 - http get, wait, receive
- ✚ Based on this, metrics are calculated
 - page load time
 - APDEX



Agent Map



Source: multiplottr.com

Service Map

~~egovernment~~
schweiz · suisse · svizzera

comparis.ch

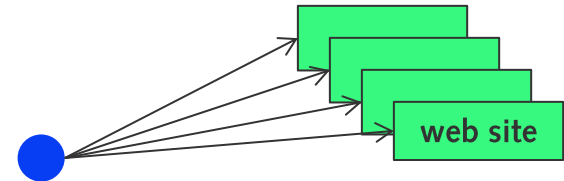


Perspectives



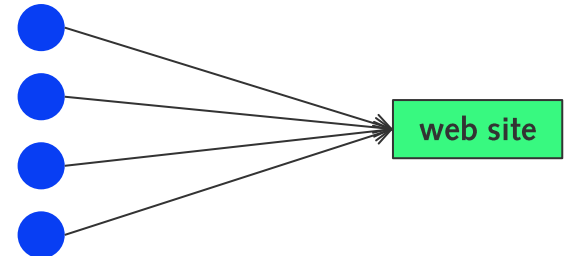
The Agent Perspective

- How does an agent sees the monitored web sites

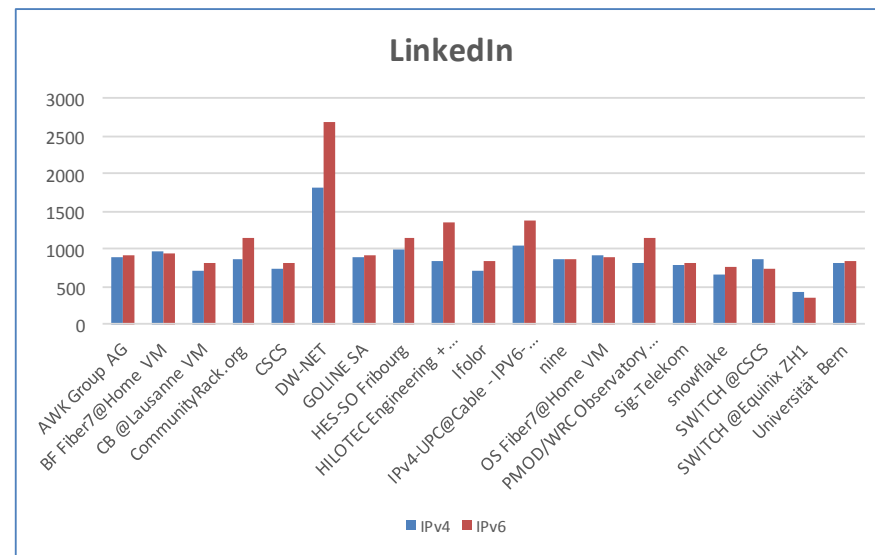
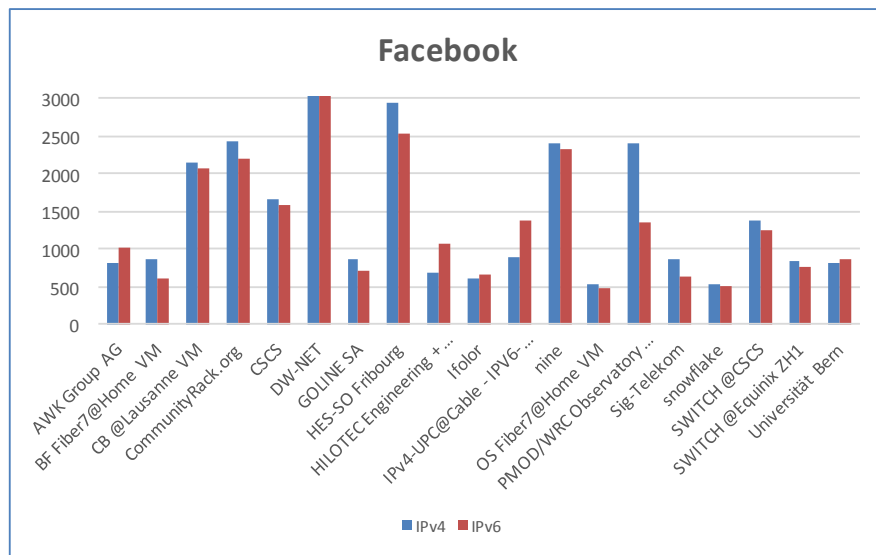


The Service Perspective

- How does one service (web site) looks like, observed by the agents



Warm Up – Facebook vs. LinkedIn



Average Page Load IPv6: 1331 msec

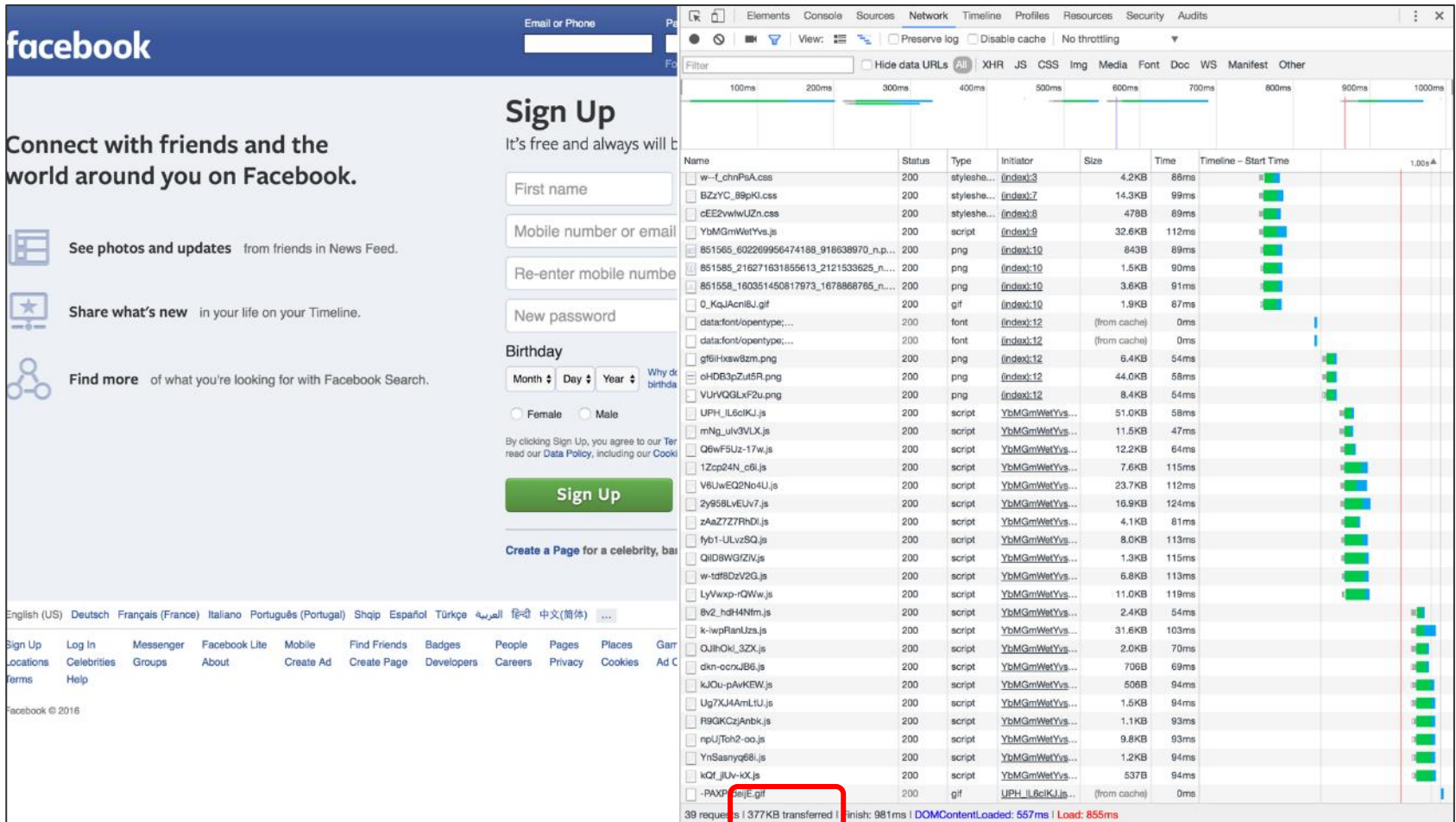
Average Page Load IPv6: 1022 msec

✚ Why does it take longer to load Facebook site, but Facebook IPv6 experience is still better ?

- Local analysis
- V6Sonar introduction

Warm Up – Facebook vs. LinkedIn

Local analysis



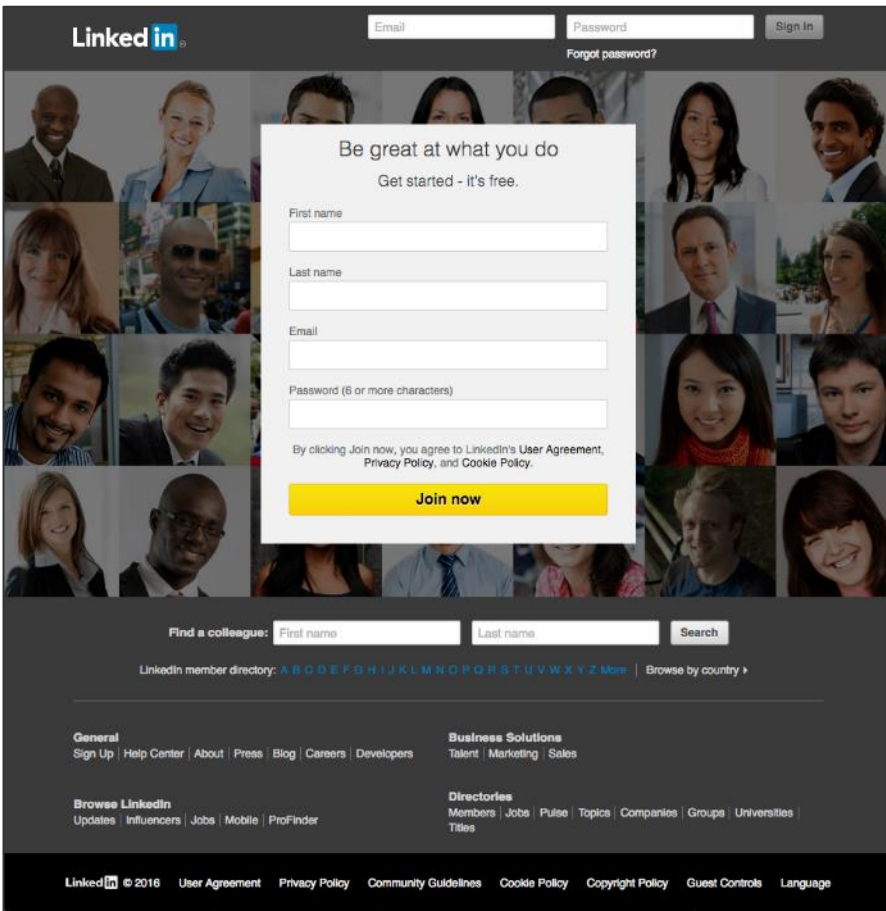
The screenshot shows the Facebook Sign Up page on the left and the Chrome DevTools Network tab on the right. The Network tab displays a list of resources loaded during the page visit. A red box highlights the entry for 'UPH_IL6cIKJ.js', which is a JavaScript file of 51.0KB loaded from 'YbMGMWetYys...'. The status is 200, and the time taken to load it is 58ms. The timeline bar for this resource shows it was loaded between approximately 600ms and 650ms.

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time
w-f_chnPsaA.css	200	stylesheet	(index):3	4.2KB	86ms	
BZzYC_89pKJ.css	200	stylesheet	(index):7	14.3KB	99ms	
cEE2vwlwUZn.css	200	stylesheet	(index):8	478B	89ms	
YbMGMWetYys.js	200	script	(index):9	32.6KB	112ms	
851565_602269956474188_918638970_n.p...	200	png	(index):10	843B	89ms	
851565_216271631855613_2121533625_n...	200	png	(index):10	1.5KB	90ms	
851565_160351450817973_1678868765_n...	200	png	(index):10	3.6KB	91ms	
Q_KqAcrnI8J.gif	200	gif	(index):10	1.9KB	87ms	
data:font/opentype;...	200	font	(index):12	(from cache)	0ms	
data:font/opentype;...	200	font	(index):12	(from cache)	0ms	
g6lH-xsw8zm.png	200	png	(index):12	6.4KB	54ms	
cHDB3pZu5R.png	200	png	(index):12	44.0KB	58ms	
VUvQGLxF2u.png	200	png	(index):12	8.4KB	54ms	
UPH_IL6cIKJ.js	200	script	YbMGMWetYys...	51.0KB	58ms	
mNg_ulv3VLX.js	200	script	YbMGMWetYys...	11.5KB	47ms	
Q6wF5Uz-17w.js	200	script	YbMGMWetYys...	12.2KB	64ms	
1Zcp24N_c6i.js	200	script	YbMGMWetYys...	7.6KB	115ms	
V6UwEQ2No4U.js	200	script	YbMGMWetYys...	23.7KB	112ms	
2y958LVEUv7.js	200	script	YbMGMWetYys...	16.9KB	124ms	
zAaZ7Z7RHdI.js	200	script	YbMGMWetYys...	4.1KB	81ms	
fyb1-ULvzSQ.js	200	script	YbMGMWetYys...	8.0KB	113ms	
QID8WGVZIV.js	200	script	YbMGMWetYys...	1.3KB	115ms	
w-tdf8DzV2G.js	200	script	YbMGMWetYys...	6.8KB	113ms	
LyVwxp-iQWw.js	200	script	YbMGMWetYys...	11.0KB	119ms	
8v2_h0f4Hfm.js	200	script	YbMGMWetYys...	2.4KB	54ms	
k-iwpRlanUzs.js	200	script	YbMGMWetYys...	31.6KB	103ms	
QJH-Oki_3ZK.js	200	script	YbMGMWetYys...	2.0KB	70ms	
dKn-ocnJB6.js	200	script	YbMGMWetYys...	706B	69ms	
kJOu-pAwKEW.js	200	script	YbMGMWetYys...	506B	94ms	
Ug7XJ4AmLU.js	200	script	YbMGMWetYys...	1.5KB	94ms	
R9GKCzAnbk.js	200	script	YbMGMWetYys...	1.1KB	93ms	
npUJToh2-oo.js	200	script	YbMGMWetYys...	9.8KB	93ms	
YnSaanyq68i.js	200	script	YbMGMWetYys...	1.2KB	94ms	
kQf_jlUw-iXJ.js	200	script	YbMGMWetYys...	537B	94ms	
-PAXP...E.gif	200	gif	UPH_IL6cIKJ.js...	(from cache)	0ms	

39 requests | 377KB transferred | Init: 981ms | DOMContentLoaded: 557ms | Load: 855ms

Warm Up – Facebook vs. LinkedIn

Local analysis



LinkedIn

Email Password Sign In

Forgot password?

Be great at what you do
Get started - it's free.

First name

Last name

Email

Password (6 or more characters)

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Join now

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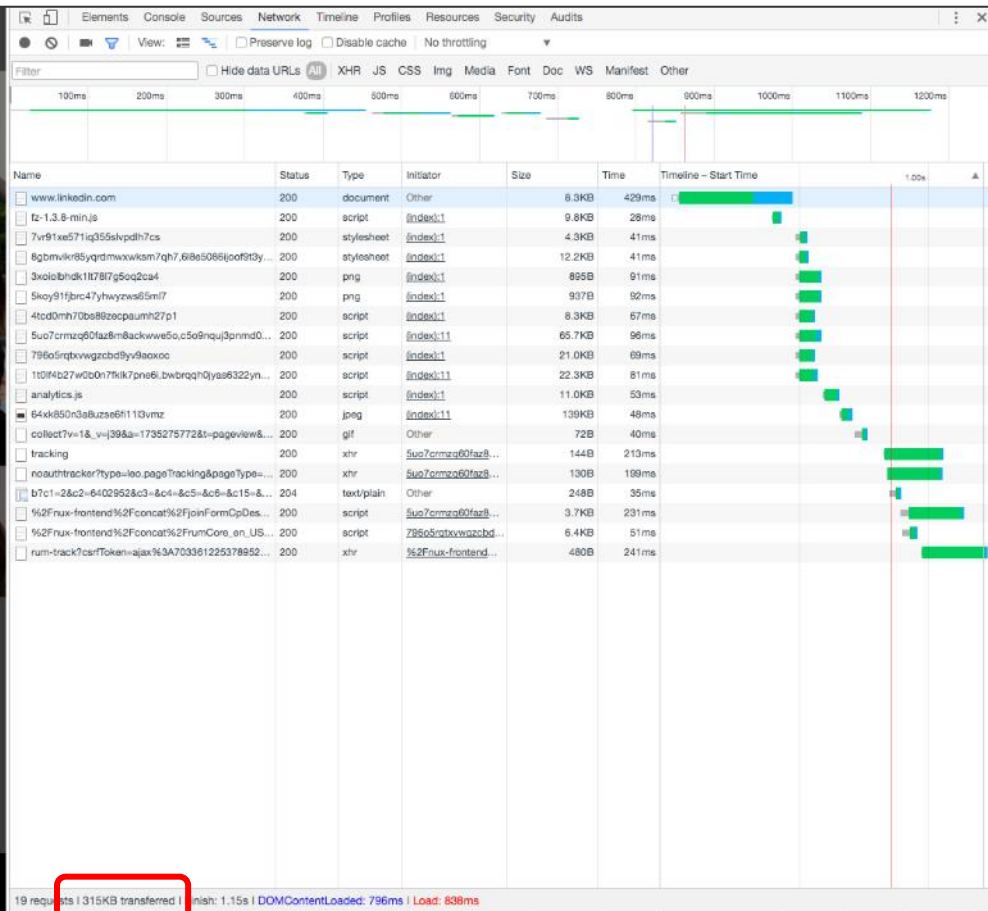
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Elements Console Sources Network Timeline Profiles Resources Security Audits

View: ☐ Preserve log ☐ Disable cache ☐ No throttling

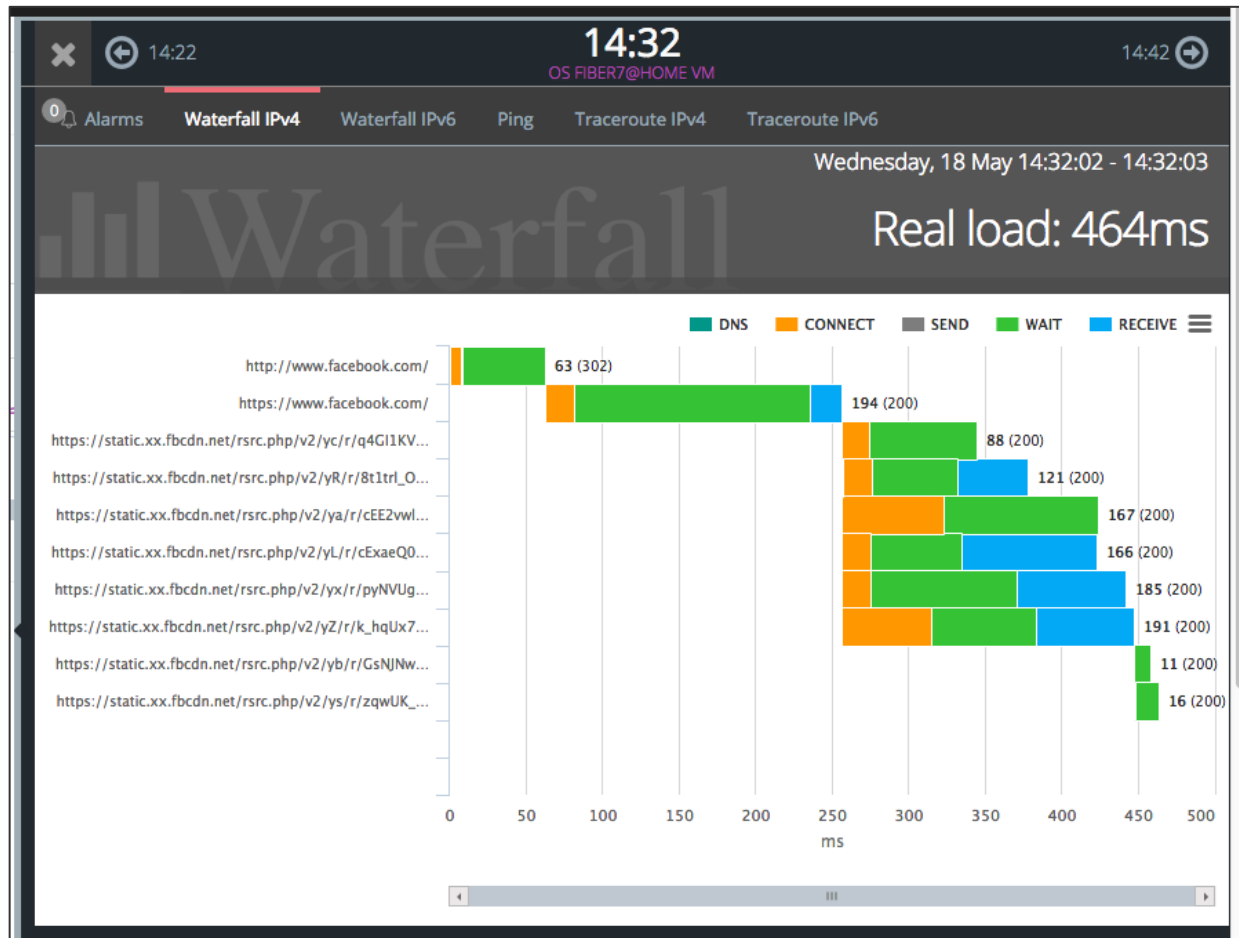
Filter: ☐ Hide data URLs ☒ XHR ☐ JS ☐ CSS ☐ Img ☐ Media ☐ Font ☐ Doc ☐ WS ☐ Manifest ☐ Other

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time
www.linkedin.com	200	document	Other	8.3KB	429ms	
tz-1.3.8-min.js	200	script	[index:1]	9.8KB	28ms	
7vr91xe571q355slvph7cs	200	stylesheet	[index:1]	4.3KB	41ms	
8qbmvlkr85yqdmwoskxm7qh7.6Be5086jloof9t3y...	200	stylesheet	[index:1]	12.2KB	41ms	
3xoidbhdck1lt78t7g5oc2ca4	200	png	[index:1]	895B	91ms	
5koy91fjbr47yhwyzwa5ml7	200	png	[index:1]	937B	92ms	
4tcd0mh70be89zccpaumh27p1	200	script	[index:1]	8.3KB	67ms	
5uo7crmuzq60faz8m8ackwwe5o.c5o9nquj3prmd0...	200	script	[index:11]	65.7KB	96ms	
796o5rqbvwgzcdb9y9aococ	200	script	[index:1]	21.0KB	69ms	
10t94b27w0b0n75kl7pne6i.bwbrqhq0ya9322yn...	200	script	[index:11]	22.3KB	81ms	
analytics.js	200	script	[index:1]	11.0KB	53ms	
64kh850n3a8uzse6f113vmz	200	png	[index:11]	139KB	48ms	
collect?v=1&_v=39&a=1735275772&t=pageview&...	200	gif	Other	72B	40ms	
tracking	200	xhr	5uo7crmuzq60faz8...	144B	213ms	
noauthtracker?type=leo.page&tracking&pageType=...	200	xhr	5uo7crmuzq60faz8...	130B	199ms	
b7c1=2&c2=6402952&c3=&c4=&c5=&c6=&c15=&...	204	text/plain	Other	248B	35ms	
%2Fnx-frontend%2Fconcat%2FjoinFormOpDes...	200	script	5uo7crmuzq60faz8...	3.7KB	231ms	
%2Fnx-frontend%2Fconcat%2FrunForm_on_US...	200	script	796o5rqbvwgzcdb9...	6.4KB	51ms	
rum-track?carfToken=ajax%3A703361225378952...	200	xhr	%2Fnx-frontend...	480B	241ms	

19 requests | 315KB transferred | Finish: 1.15s | DOMContentLoaded: 796ms | Load: 838ms

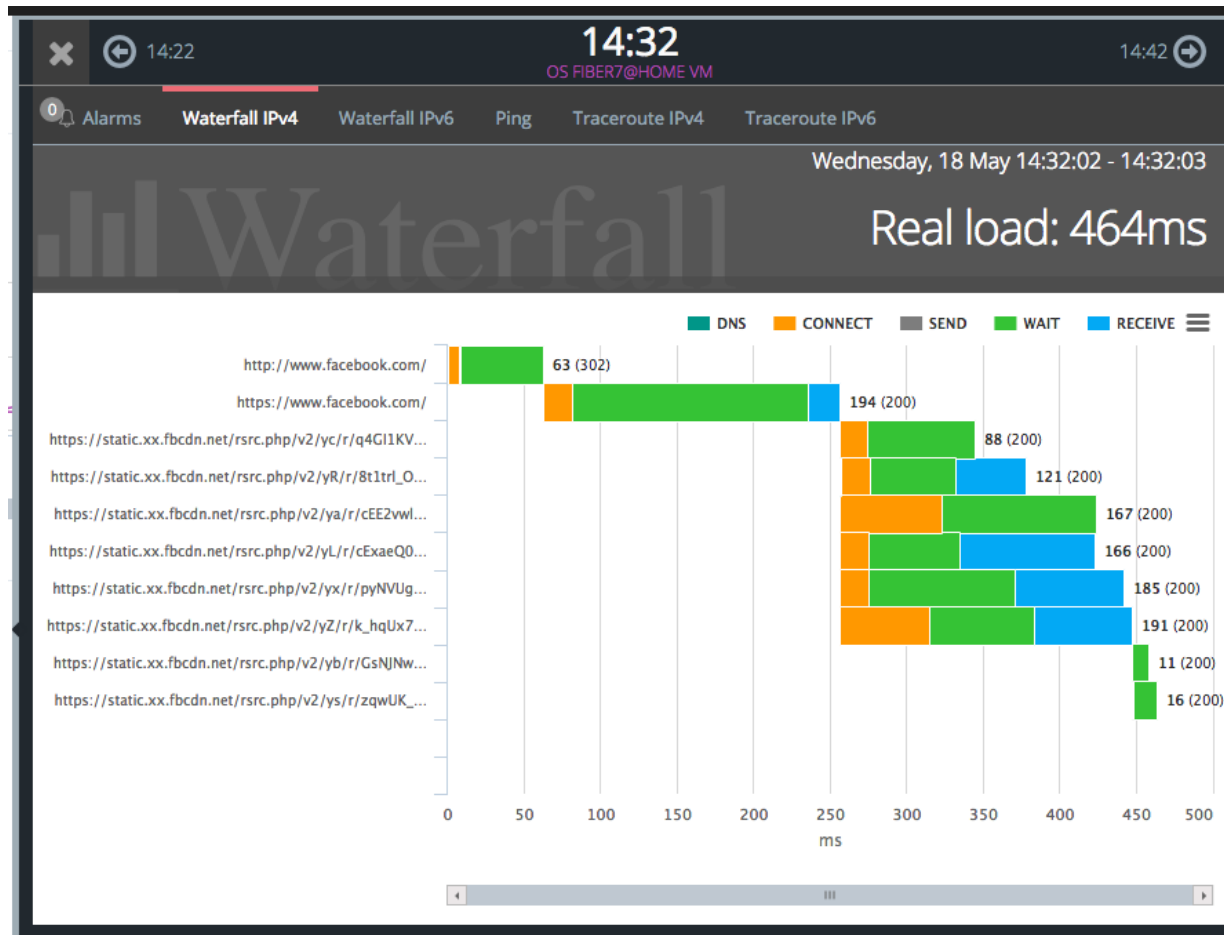
Warm Up – Facebook vs. LinkedIn

V6Sonar Introduction – Waterfall IPv4



Warm Up – Facebook vs. LinkedIn

V6Sonar Introduction – Waterfall IPv6



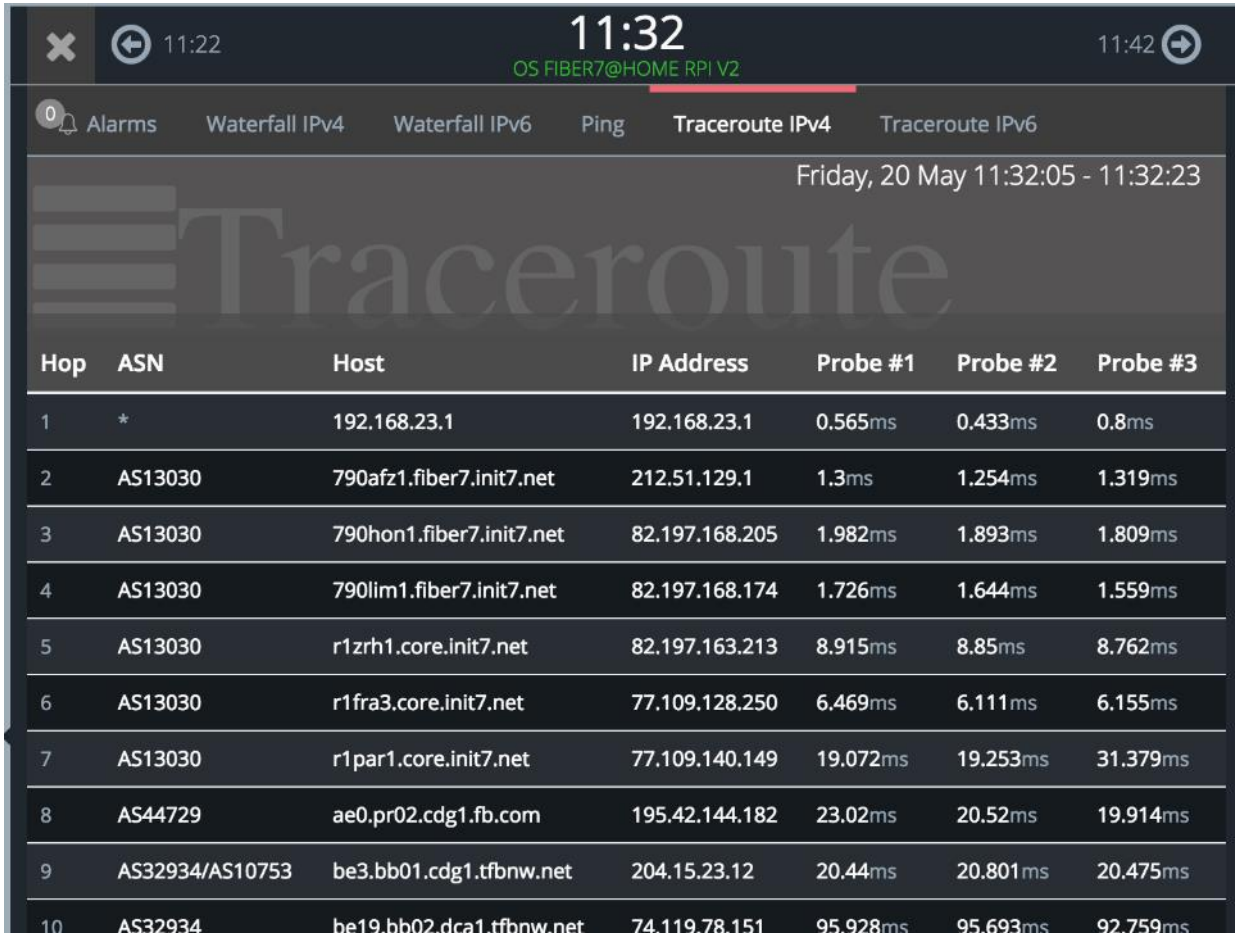
Warm Up – Facebook vs. LinkedIn

V6Sonar Introduction – Ping



Warm Up – Facebook vs. LinkedIn

V6Sonar Introduction – Traceroute IPv4

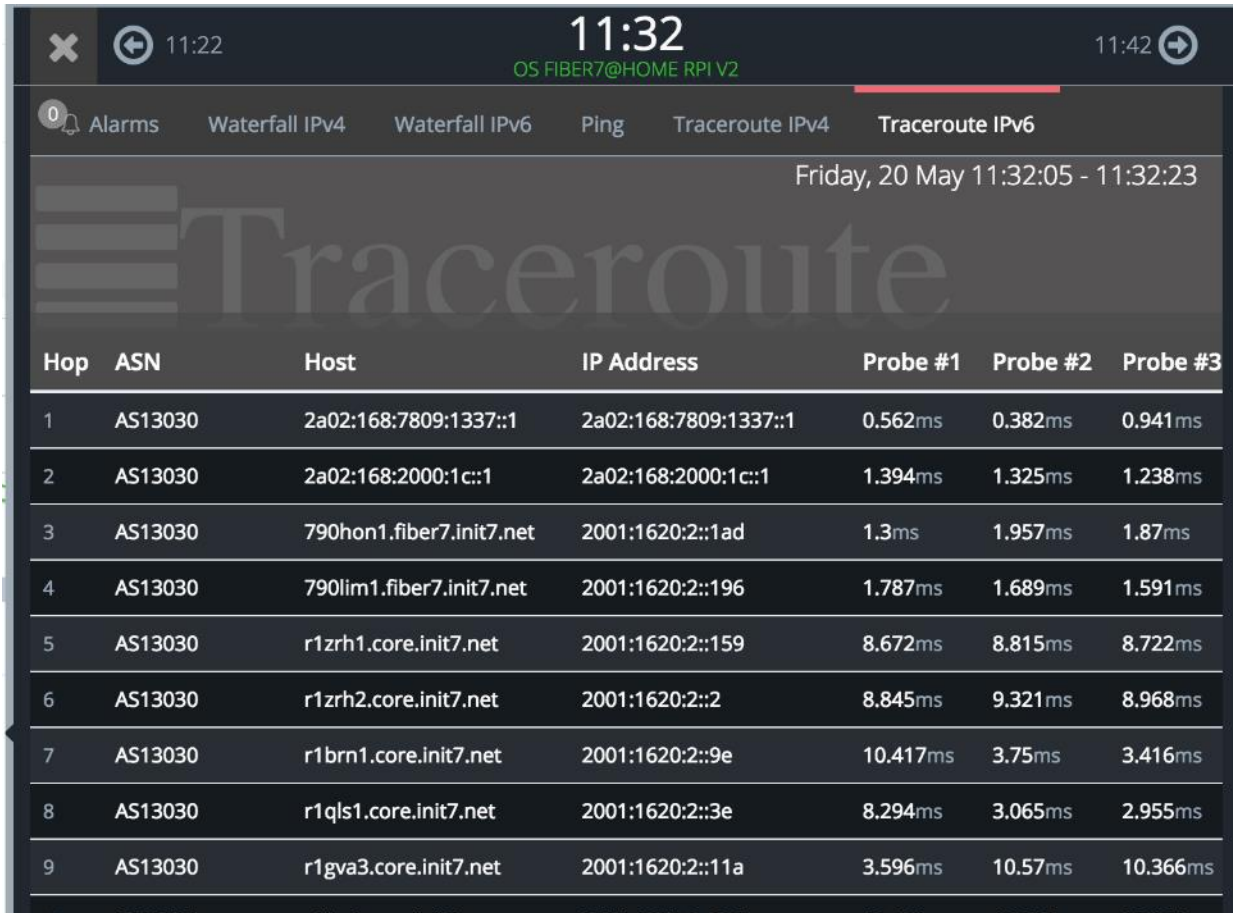


The screenshot shows the V6Sonar Traceroute IPv4 interface. At the top, there's a status bar with a close button, a back arrow, the time 11:22, the device name OS FIBER7@HOME RPI V2, and a forward arrow with the time 11:42. Below this is a navigation bar with tabs: Alarms, Waterfall IPv4, Waterfall IPv6, Ping, Traceroute IPv4 (selected), and Traceroute IPv6. The main area displays the title 'Traceroute' and the time range 'Friday, 20 May 11:32:05 - 11:32:23'. A table follows, showing the traceroute results with columns for Hop, ASN, Host, IP Address, and three probe times (Probe #1, Probe #2, Probe #3).

Hop	ASN	Host	IP Address	Probe #1	Probe #2	Probe #3
1	*	192.168.23.1	192.168.23.1	0.565ms	0.433ms	0.8ms
2	AS13030	790afz1.fiber7.init7.net	212.51.129.1	1.3ms	1.254ms	1.319ms
3	AS13030	790hon1.fiber7.init7.net	82.197.168.205	1.982ms	1.893ms	1.809ms
4	AS13030	790lim1.fiber7.init7.net	82.197.168.174	1.726ms	1.644ms	1.559ms
5	AS13030	r1zrh1.core.init7.net	82.197.163.213	8.915ms	8.85ms	8.762ms
6	AS13030	r1fra3.core.init7.net	77.109.128.250	6.469ms	6.111ms	6.155ms
7	AS13030	r1par1.core.init7.net	77.109.140.149	19.072ms	19.253ms	31.379ms
8	AS44729	ae0.pr02.cdg1.fb.com	195.42.144.182	23.02ms	20.52ms	19.914ms
9	AS32934/AS10753	be3.bb01.cdg1.tfbnw.net	204.15.23.12	20.44ms	20.801ms	20.475ms
10	AS32934	be19.bb02.dca1.tfbnw.net	74.119.78.151	95.928ms	95.693ms	92.759ms

Warm Up – Facebook vs. LinkedIn

V6Sonar Introduction – Traceroute IPv6



The screenshot shows the V6Sonar Traceroute IPv6 interface. At the top, there's a status bar with a close button, a refresh button, the time 11:32, the device name OS FIBER7@HOME RPI V2, and another refresh button with the time 11:42. Below this is a navigation bar with tabs: Alarms, Waterfall IPv4, Waterfall IPv6, Ping, Traceroute IPv4, and Traceroute IPv6 (which is selected). The main area displays the title 'Traceroute' and the time range 'Friday, 20 May 11:32:05 - 11:32:23'. Below the title is a table with 7 columns: Hop, ASN, Host, IP Address, Probe #1, Probe #2, and Probe #3. The table contains 9 rows of data, all from ASN AS13030, showing various hops and their corresponding IP addresses and probe times.

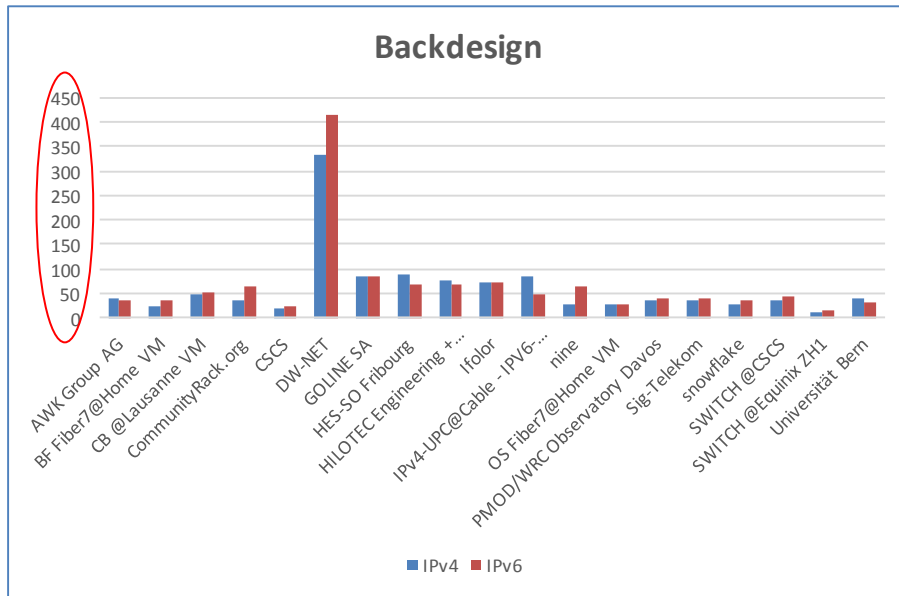
Hop	ASN	Host	IP Address	Probe #1	Probe #2	Probe #3
1	AS13030	2a02:168:7809:1337::1	2a02:168:7809:1337::1	0.562ms	0.382ms	0.941ms
2	AS13030	2a02:168:2000:1c::1	2a02:168:2000:1c::1	1.394ms	1.325ms	1.238ms
3	AS13030	790hon1.fiber7.init7.net	2001:1620:2::1ad	1.3ms	1.957ms	1.87ms
4	AS13030	790lim1.fiber7.init7.net	2001:1620:2::196	1.787ms	1.689ms	1.591ms
5	AS13030	r1zrh1.core.init7.net	2001:1620:2::159	8.672ms	8.815ms	8.722ms
6	AS13030	r1zrh2.core.init7.net	2001:1620:2::2	8.845ms	9.321ms	8.968ms
7	AS13030	r1brn1.core.init7.net	2001:1620:2::9e	10.417ms	3.75ms	3.416ms
8	AS13030	r1qls1.core.init7.net	2001:1620:2::3e	8.294ms	3.065ms	2.955ms
9	AS13030	r1gva3.core.init7.net	2001:1620:2::11a	3.596ms	10.57ms	10.366ms

Warm Up – Facebook vs. LinkedIn

Summary

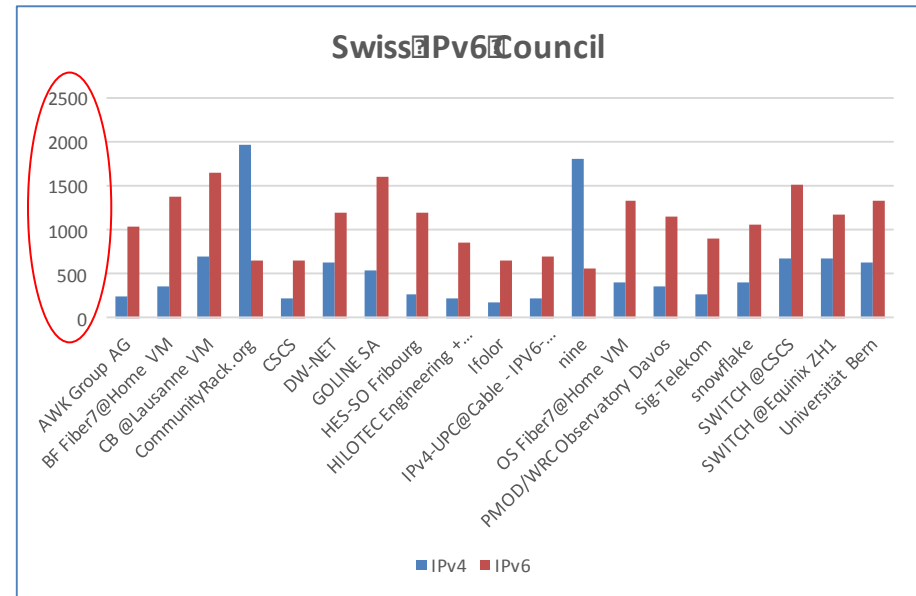
- Longer load time of Facebook related to page size
- Be aware, IPv6 effectiveness is calculated based on the page load time of IPv4 for the web site under observation

Backdesign vs. Swiss IPv6 Council



Average Page Load IPv4: 46 msec

Average Page Load IPv6: 48 msec

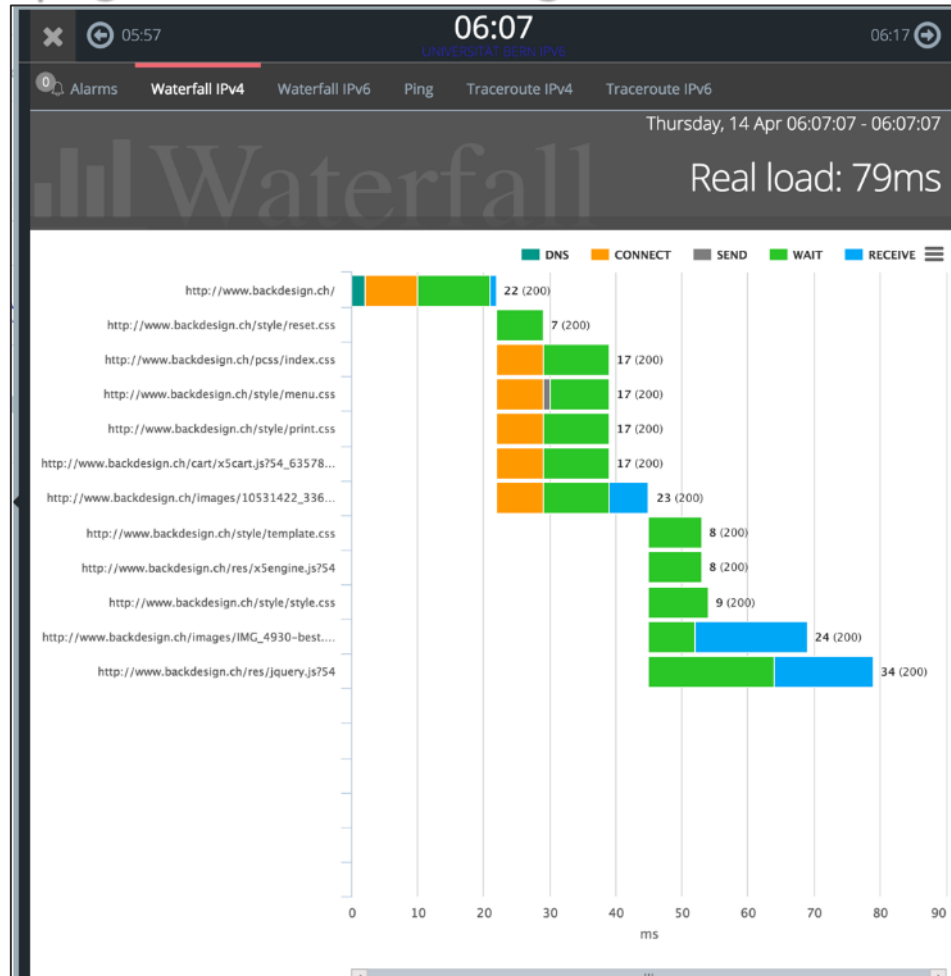


Average Page Load IPv4: 566 msec

Average Page Load IPv6: 1082 msec

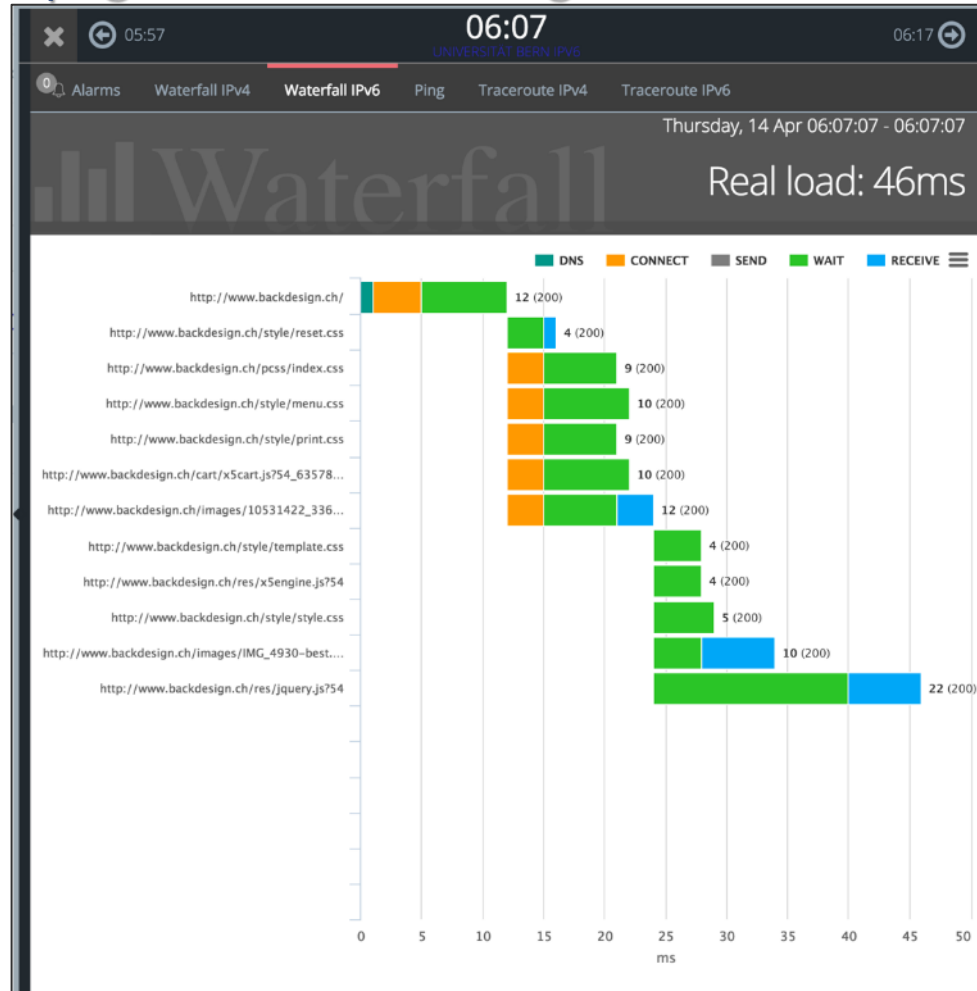
Backdesign vs. Swiss IPv6 Council

Extrem fast page load of Backdesign.ch



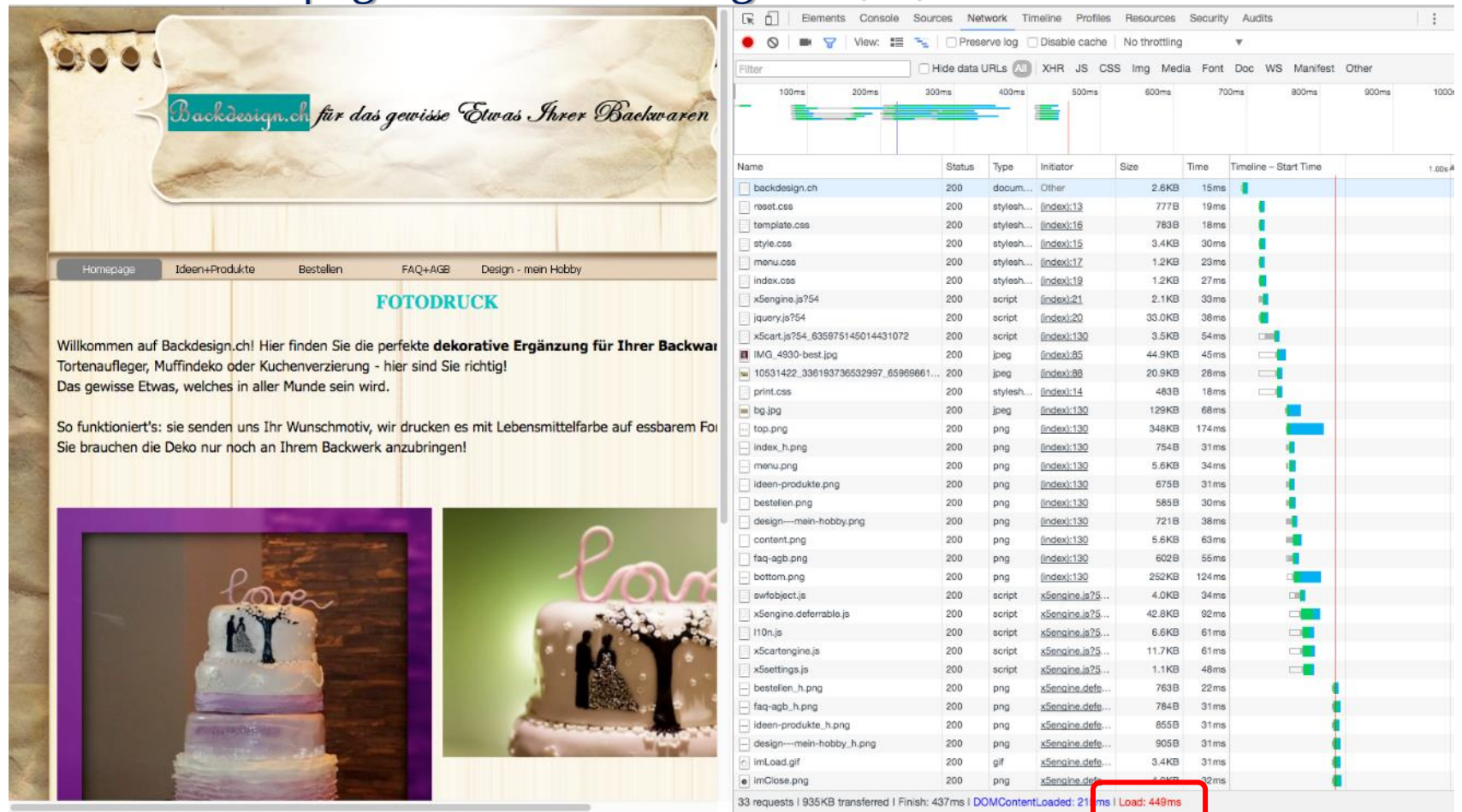
Backdesign vs. Swiss IPv6 Council

Extrem fast page load of Backdesign.ch



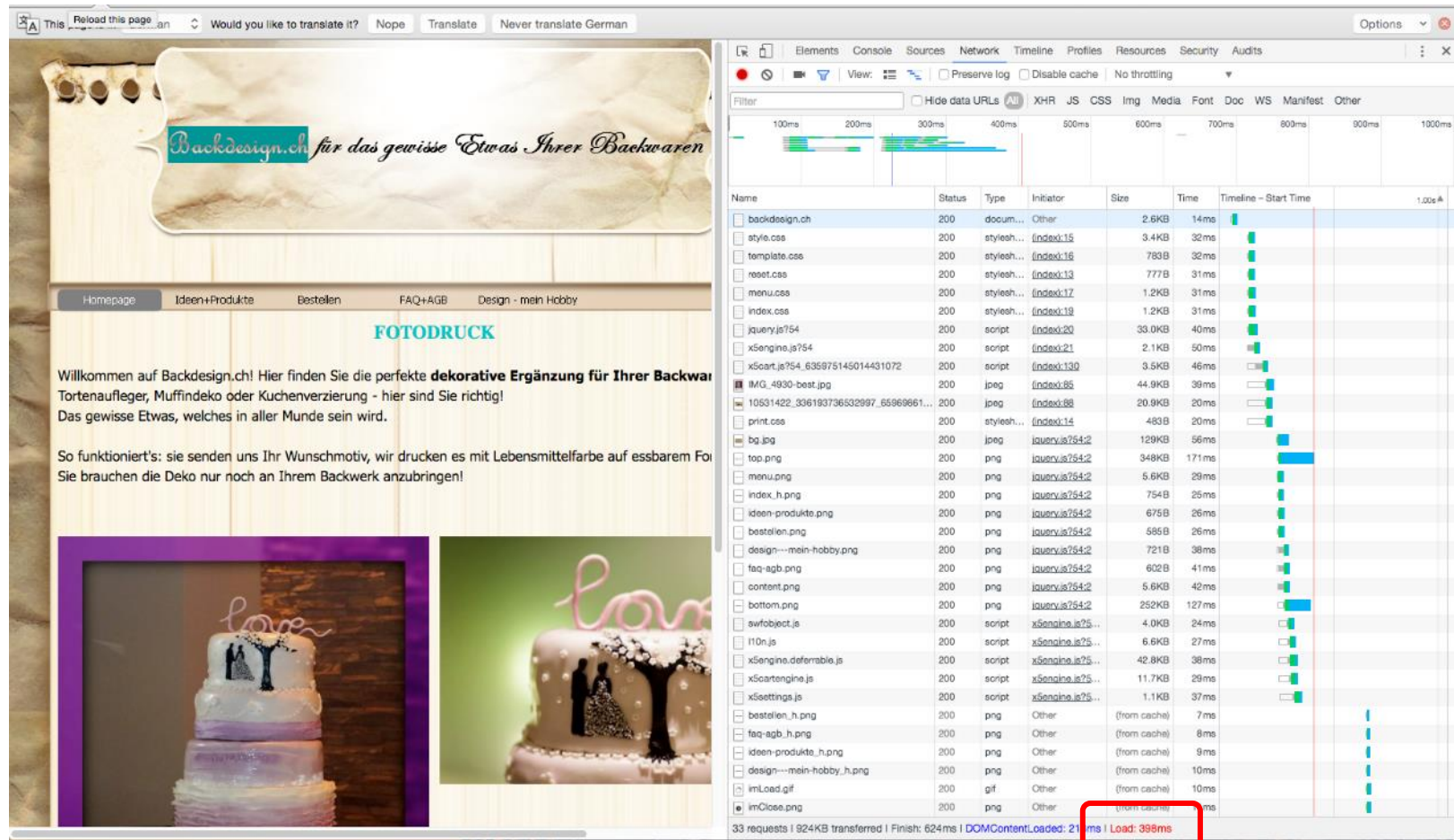
Backdesign vs. Swiss IPv6 Council

Extrem fast page load of Backdesign.ch (v4) – at least some times



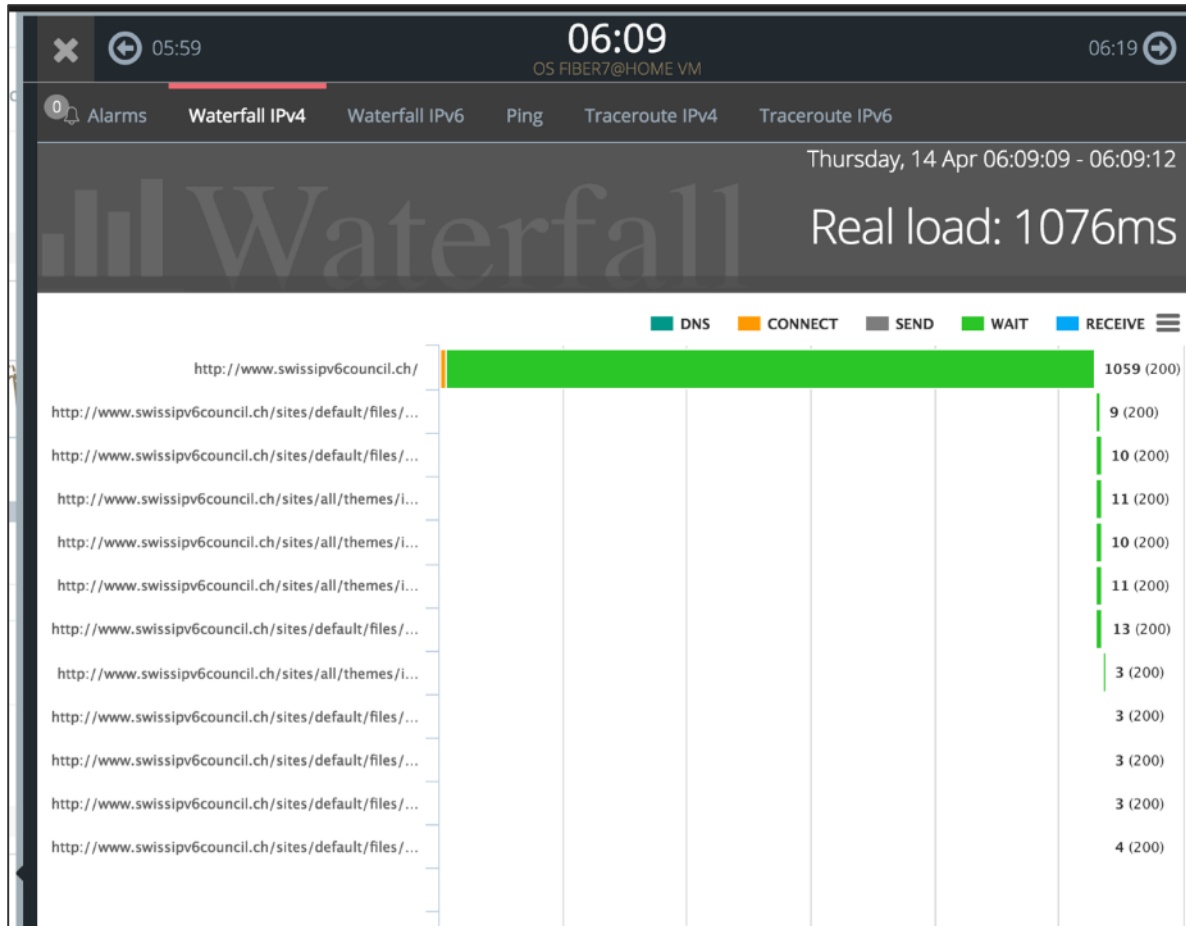
Backdesign vs. Swiss IPv6 Council

Extrem fast page load of Backdesign.ch – at least some times



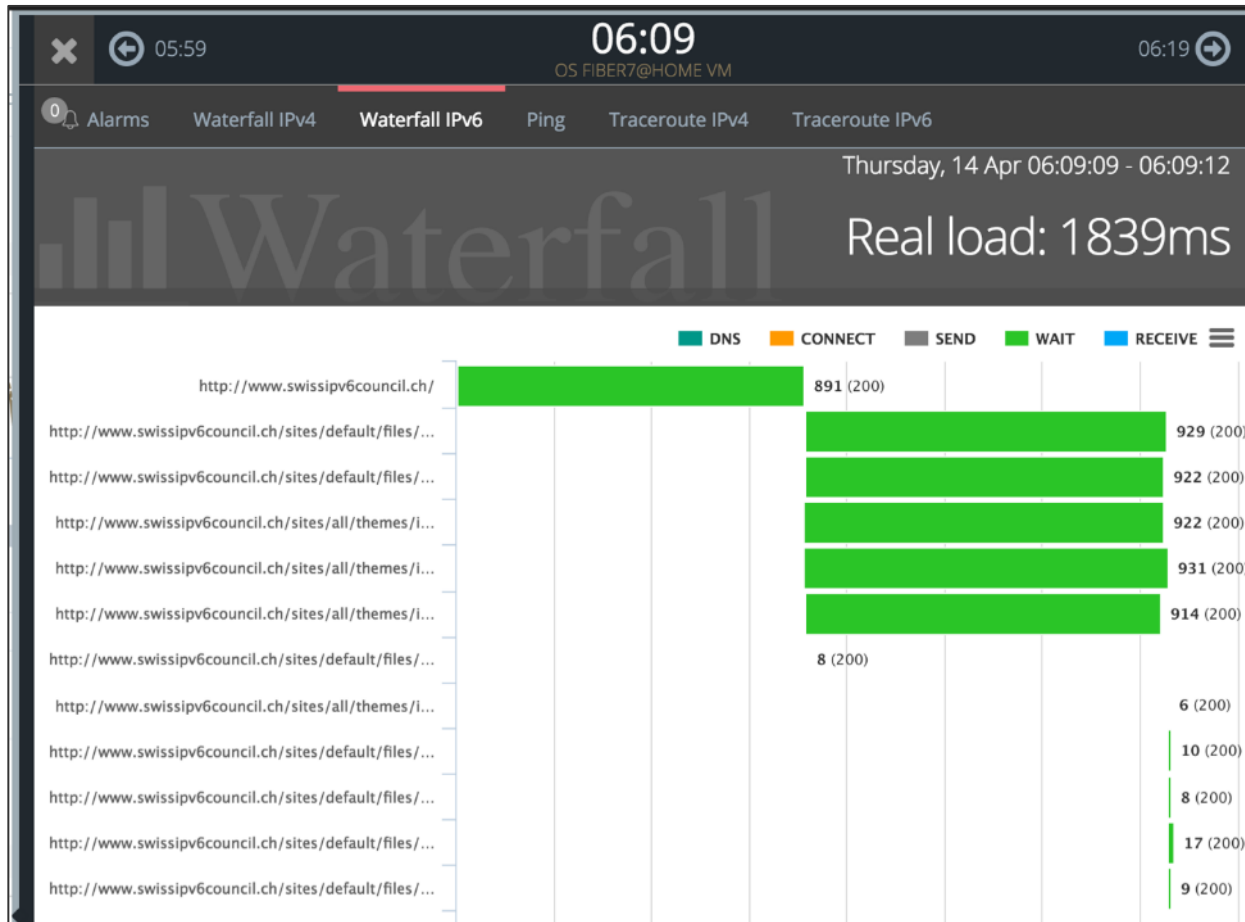
Backdesign vs. Swiss IPv6 Council

- Partially, also very poor performance over IPv4 for Council site



Backdesign vs. Swiss IPv6 Council

✚ Poor performance over IPv6 for Council site



Backdesign vs. Swiss IPv6 Council

Similar behavior observed with Chrome (v4) – at least some times

The screenshot shows the Swiss IPv6 Council website in the background and the Chrome DevTools Network tab in the foreground. The website has a header with navigation links (Startseite, Über uns, Events, Links, Mitglieder, Marktplatz, Kontakt) and a main content area with a welcome message and news. The DevTools Network tab displays a list of network requests, including documents, stylesheets, scripts, and images. A red box highlights the 'Load' time of 521ms for the last request.

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time
de	200	document	Other	5.2 KB	126ms	
css_xE-rW-Jf-fncB6ztZId2huxgXu4WO...	200	stylesheet	de:15	2.5 KB	18ms	
css_RJzktbKM924mzNYyBIDt6bvdsd...	200	stylesheet	de:16	2.4 KB	39ms	
css_e9i1o2m_GsLXCsl3pJwpeNkUJT...	200	stylesheet	de:17	810B	38ms	
js_OU22wWwGmNYuUR3DR76rNgzN6...	200	script	de:30	2.7 KB	38ms	
css_s8J7Rrk7oJkPSu90xMTVUFhmA...	200	stylesheet	de:18	4.5 KB	39ms	
js_xAPiQqk9eoowy_IS9NkCWXLUVaat94...	200	script	de:29	32.4 KB	39ms	
facebook-icon.png	200	png	de:115	1.3 KB	30ms	
logo_ipv6forum.gif	200	gif	de:178	7.4 KB	22ms	
de.png	200	png	de:197	874B	31ms	
en.png	200	png	de:196	938B	23ms	
fr.png	200	png	de:198	874B	30ms	
css_hincxFFWSDqj@Lzssayt6OUQy_k...	200	stylesheet	de:19	770B	33ms	
ga.js	307	script	de:43	0B	81ms	
bg_body.png	200	png	de:251	2.1 KB	17ms	
bg_header2.jpg	200	jpeg	de:251	57.7 KB	34ms	
logo4.png	200	png	de:251	2.4 KB	24ms	
SA1.php?id=1572	200	script	de:253	1.5 KB	47ms	
ga.js	200	script	http://www.go...	15.7 KB	24ms	
small_logo_background_left.png	200	png	SA1.php?id=1...	5.0 KB	39ms	
small_logo_background_right.png	200	png	js_xAPiQqk9e...	735B	36ms	
small_logo_background_main.png	200	png	js_xAPiQqk9e...	572B	54ms	
utm.gif?utmrrv=5.6.7&utm=6&utm=...	307	Other	Other	0B	28ms	
utm.gif?utmrrv=5.6.7&utm=6&utm=...	200	gif	http://www.go...	64B	37ms	

24 requests | 148KB transferred | Finish: 520ms | DOMContentLoaded: 417ms | Load: 521ms

Backdesign vs. Swiss IPv6 Council

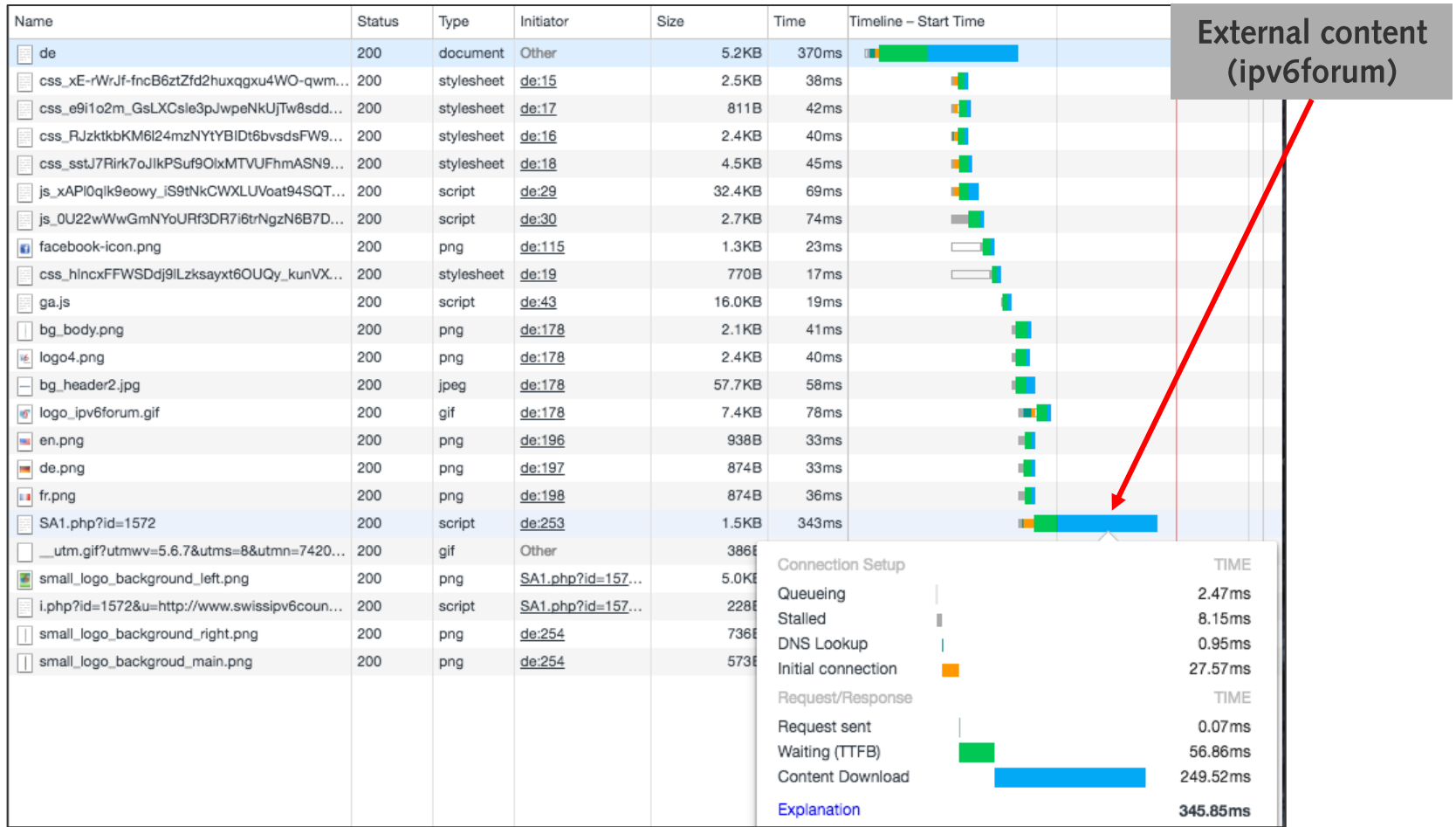
Similar behavior observed with Chrome (v6) – at least some times

The image shows a side-by-side comparison of the Swiss IPv6 Council website and its network traffic in Chrome DevTools. The website on the left has a blue header with the 'SWISS IPv6 COUNCIL' logo and navigation links. The main content area includes a 'Willkommen' (Welcome) section with text about IPv6 support, a 'News' section with dates, and an 'Events' section. A sidebar on the right contains a 'Swiss IPv6 Council Dashboard' and a status box indicating 'Status: IPv6 Enabled' and 'Last: 2016-06-01'. The Chrome DevTools Network tab on the right shows a list of 25 requests. A red box highlights the 'Load' time of 521ms for the last request. The status bar at the bottom of DevTools shows '25 requests | 148KB transferred | Finish: 510ms | DOMContentLoaded: 521ms | Load: 521ms'.

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time
de	200	document	Other	5.2KB	142ms	
css_RUzktbKM8i24m2NYyBIDt6bvads...	200	stylesheet	de:16	2.4KB	39ms	
css_xE-rWJf-fncB6ztZid2huxagx4WO...	200	stylesheet	de:15	2.5KB	27ms	
js_xAPiQk9eowwy_IS9NkCWXLUVoat94...	200	script	de:29	32.4KB	55ms	
js_0U22wWwGmNYOUR3DR76trNgzN6...	200	script	de:30	2.7KB	48ms	
css_sstJ7Rrk7oJkPSu90lxMTVUFhmA...	200	stylesheet	de:18	4.5KB	47ms	
css_e9i1o2m_GsLXCie3pJwpeNKUJTw...	200	stylesheet	de:17	811B	46ms	
facebook-icon.png	200	png	de:115	1.3KB	16ms	
logo_ipv6forum.gif	200	gif	de:178	7.4KB	35ms	
en.png	200	png	de:196	938B	23ms	
de.png	200	png	de:197	874B	15ms	
fr.png	200	png	de:198	874B	15ms	
css_hinccFFWSDd9JLzksayx16OUQy_k...	200	stylesheet	de:19	770B	20ms	
ga.js	307		de:43	0B	36ms	
bg_body.png	200	png	de:251	2.1KB	22ms	
bg_header2.jpg	200	jpeg	de:251	57.7KB	41ms	
logo4.png	200	png	de:251	2.4KB	22ms	
SA1.php?id=1572	200	script	de:253	1.5KB	76ms	
ga.js	200	script	http://www.go...	15.7KB	24ms	
_utm.gif?utmwv=5.6.7&utms=3&utm...	307		Other	0B	31ms	
small_logo_background_left.png	200	png	SA1.php?id=1...	5.0KB	44ms	
l.php?id=1572&u=http://www.swissip6...	200	script	SA1.php?id=1...	228B	78ms	
small_logo_background_right.png	200	png	de:254	735B	74ms	
small_logo_backgroud_main.png	200	png	de:254	573B	68ms	
_utm.gif?utmwv=5.6.7&utms=3&utm...	200	gif	http://www.go...	64B	37ms	

Backdesign vs. Swiss IPv6 Council

✚ We saw different before (v6)

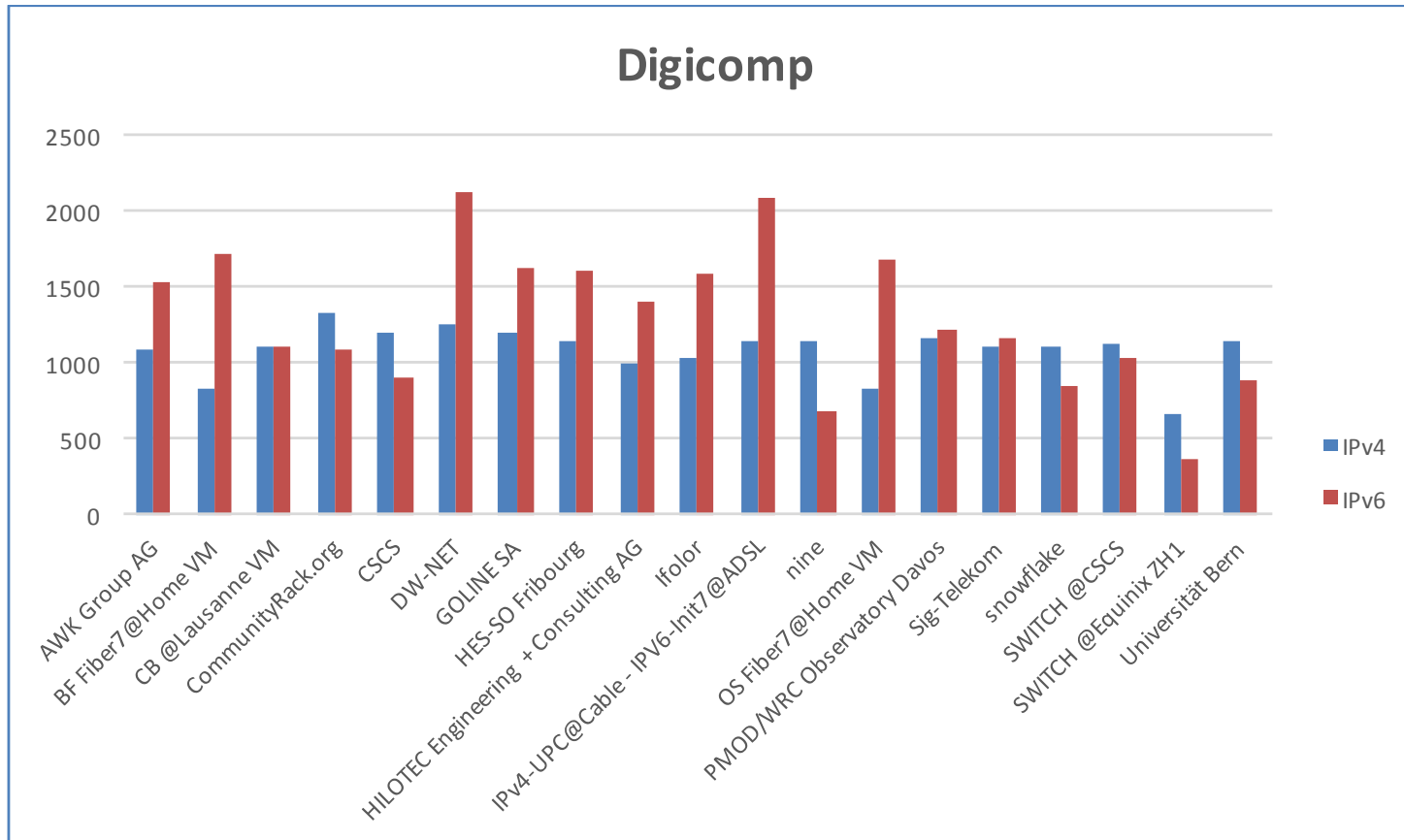


Backdesign vs. Swiss IPv6 Council

Summary

- Backdesign.ch could be seen as Swiss reference page
- Since both pages are hosted at same provider, one would suspect old / overloaded web servers -> not true
- In addition, Council web site embeds content from the IPv6 forum (to display source IP) – partially this was slow
- Council web site loads more content / requests when connection is established over IPv6
- Experience of iWay: \$SERVER_['REMOTE_ADDR'] into DB and allocated space is 32bit

Digicomp



Average Page Load IPv4: 1086 msec

Average Page Load IPv6: 1301 msec

Digicomp

BTW – A matter of perspective (once more)

— IPv4
- - - IPv6

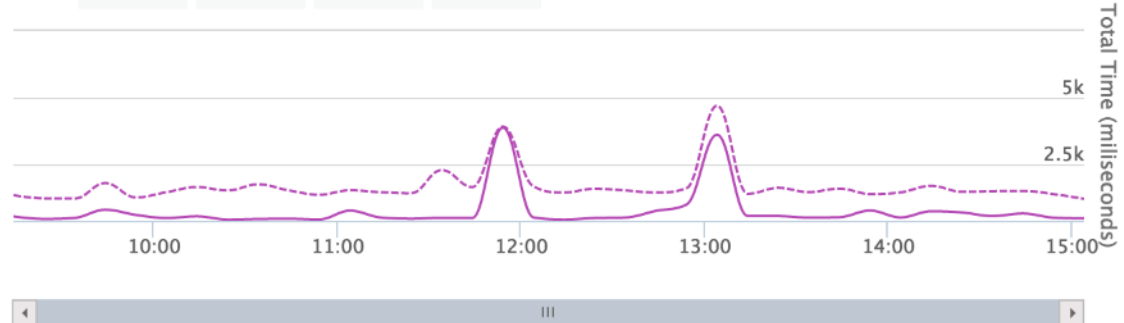
HTTP HISTORY http total loading time of a service

- AWK Group AG -CHZ...
- CB @Lausanne VM
- CommunityRack.org
- DW-NET
- Haute école spécialisé...
- IPv4-UPC@Cable -IPV...
- Ifolor
- OS Fiber7@Home RPI v2
- **OS Fiber7@Home VM**
- PMOD/WRC Observat...
- SWITCH @CSCS
- Sig-Telekom
- Universität Bern
- snowflake

Http History - Digicomp

Filters: **SHOW ALL** IPv4 Only IPv6 Only

Zoom **Minute** Hour Week All

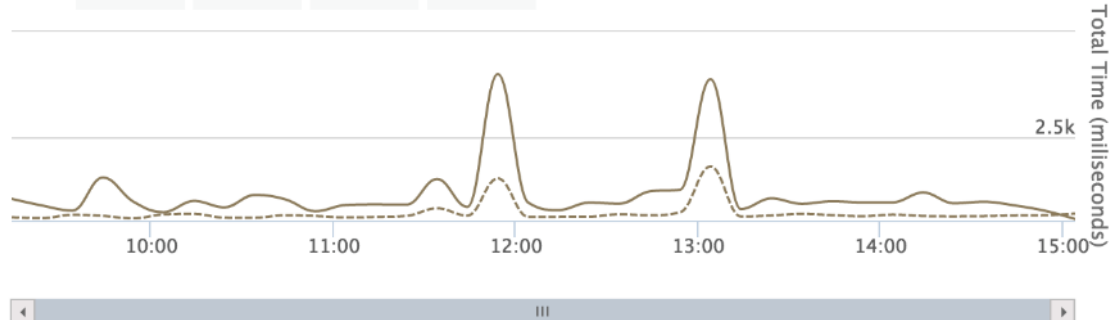


- AWK Group AG -CHZ...
- CB @Lausanne VM
- CommunityRack.org
- DW-NET
- Haute école spécialisé...
- IPv4-UPC@Cable -IPV...
- Ifolor
- OS Fiber7@Home RPI v2
- OS Fiber7@Home VM
- PMOD/WRC Observat...
- SWITCH @CSCS
- Sig-Telekom
- **Universität Bern**
- snowflake

Http History - Digicomp

Filters: **SHOW ALL** IPv4 Only IPv6 Only

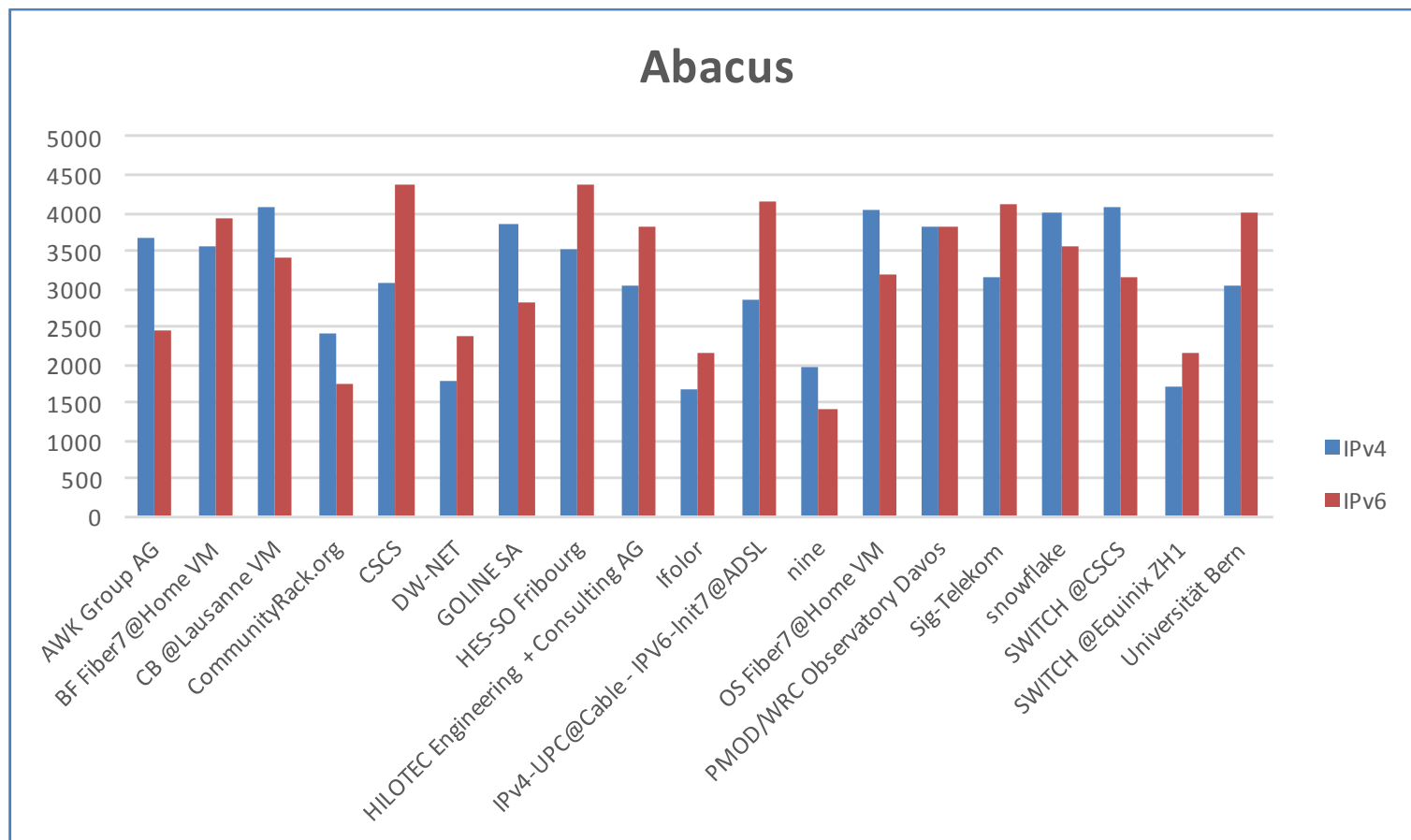
Zoom **Minute** Hour Week All



Summary

- Once more be reminded that we talk about average values
- As we saw, IPv6 performance of Digicomp page is not poor per se but only when looking from certain sources
- Support statement that IPv6 performance is lost in the access networks (towards clients) and / or related to poor peerings. As observed by Facebook as well.

Abacus



Average Page Load IPv4: 3122 msec

Average Page Load IPv6: 3210 msec

Abacus



Google Chrome – long delivery for index.html (v4)

This page is in German Would you like to translate it? [Nope](#) [Translate](#) [Never translate German](#)

Suchen

ABACUS
business software

PRODUKTE PARTNER SERVICE & SUPPORT

ABACUS BUSINESS SOFTWARE - SCHWEIZER MARKTFÜHRER FÜR ERP-SOFTWARE

Aktuelles **Presse** **Produkte**

Egerkingen.

- ERP-Software-Präsentation für die Industrie mit Beispielen aus der Praxis am Mittwoch, 8. Juni 2016
- ERP-Software-Präsentation für Planer und Ingenieure mit Beispielen aus der Praxis am Mittwoch, 29. Juni 2016 in Zürich
- E-Rechnung einsetzen und attraktive Preise gewinnen
- ABACUS Präsentationen von Vertriebspartnern

Mehr

Smartphone Apps
zur Organisation von Informationen und zum Tracking Ihres Standortes
Mehr

- ABACUS iPad-App AbaSmart
- AbaPay
- AbaImmo

Mobile Lösungen: AbaPay, AbaCliK und AbaSmart

Neubau ABACUS, Wittenbach-St. Gallen

Online Buchhaltung Employee Self-Service Der Servicetechniker

ABACUS_Software IST AUF TWITTER.

Elements Console Sources Network Timeline Profiles Resources Security Audits

View: ☐ Preserve log ☐ Disable cache No throttling

Filter ☐ Hide data URLs **All** XHR JS CSS Img Media Font Doc WS Manifest Other

Timeline - Start Time

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time
www.abacus.ch	200	docum...	Other	8.6KB	67ms	
stylesheet_fd026774dd.css?1308322904	200	stylish...	(index):27	1.9KB	50ms	
jquery-1.5.1-1.8.11-1.2.5.js?1308312767	200	script	(index):30	46.0KB	57ms	
abacus.css?1444828073	200	stylish...	(index):36	13.7KB	72ms	
jquery.carouFredSel-3.0.3-packed.js	200	script	(index):39	14.6KB	71ms	
jquery.nap-1.0.0.js	200	script	(index):41	1.1KB	76ms	
jquery.tools.min.js	200	script	(index):38	4.1KB	70ms	
javascript_93077bb238.js?1308322904	200	script	(index):31	661B	61ms	
jquery.easing.1.3.js	200	script	(index):40	2.4KB	74ms	
jquery.fancybox-1.3.1.pack.js	200	script	(index):60	5.5KB	88ms	
abacus.js	200	script	(index):42	1.5KB	83ms	
jquery.fancybox.css	200	stylish...	(index):61	1.9KB	67ms	
jquery.dropdown.js	200	script	(index):43	663B	88ms	
urchin.js	200	script	(index):247	6.9KB	119ms	
conversion.js	200	script	(index):239	5.0KB	52ms	
abacus_logo.gif	200	gif	(index):87	3.6KB	22ms	
submit_lupe.gif	200	gif	(index):96	1.1KB	20ms	
home.png	200	png	(index):97	1.1KB	24ms	
958c3b621b.jpg	200	jpeg	(index):157	1.4KB	28ms	
166292d725.jpg	200	jpeg	(index):205	6.0KB	80ms	
video_servicetechniker_222.jpg	200	jpeg	(index):209	8.6KB	96ms	
eea9f2d637.jpg	200	jpeg	(index):207	8.5KB	95ms	
0b89dd9025.jpg	200	jpeg	(index):211	5.9KB	96ms	
banner_twitter.png	200	png	(index):222	6.8KB	96ms	
abacus_print.css	200	stylish...	(index):37	9.1KB	84ms	
widgets.js	200	script	(index):223	30.5KB	89ms	
__utm.gif?utmwv=1.4&utmn=101592508...	307	Other		0B	208ms	
?random=1463835830508&cv=8&fst=14...	302	text/html	conversion.js:25	230B	212ms	
social_button_inact.png	200	png	VM304:1	1014B	29ms	
lang_world.gif	200	gif	VM304:1	1.4KB	28ms	
lang_container_bg.png	200	png	VM304:1	572B	28ms	
lang.gif	200	gif	VM304:1	1.8KB	44ms	

Abacus

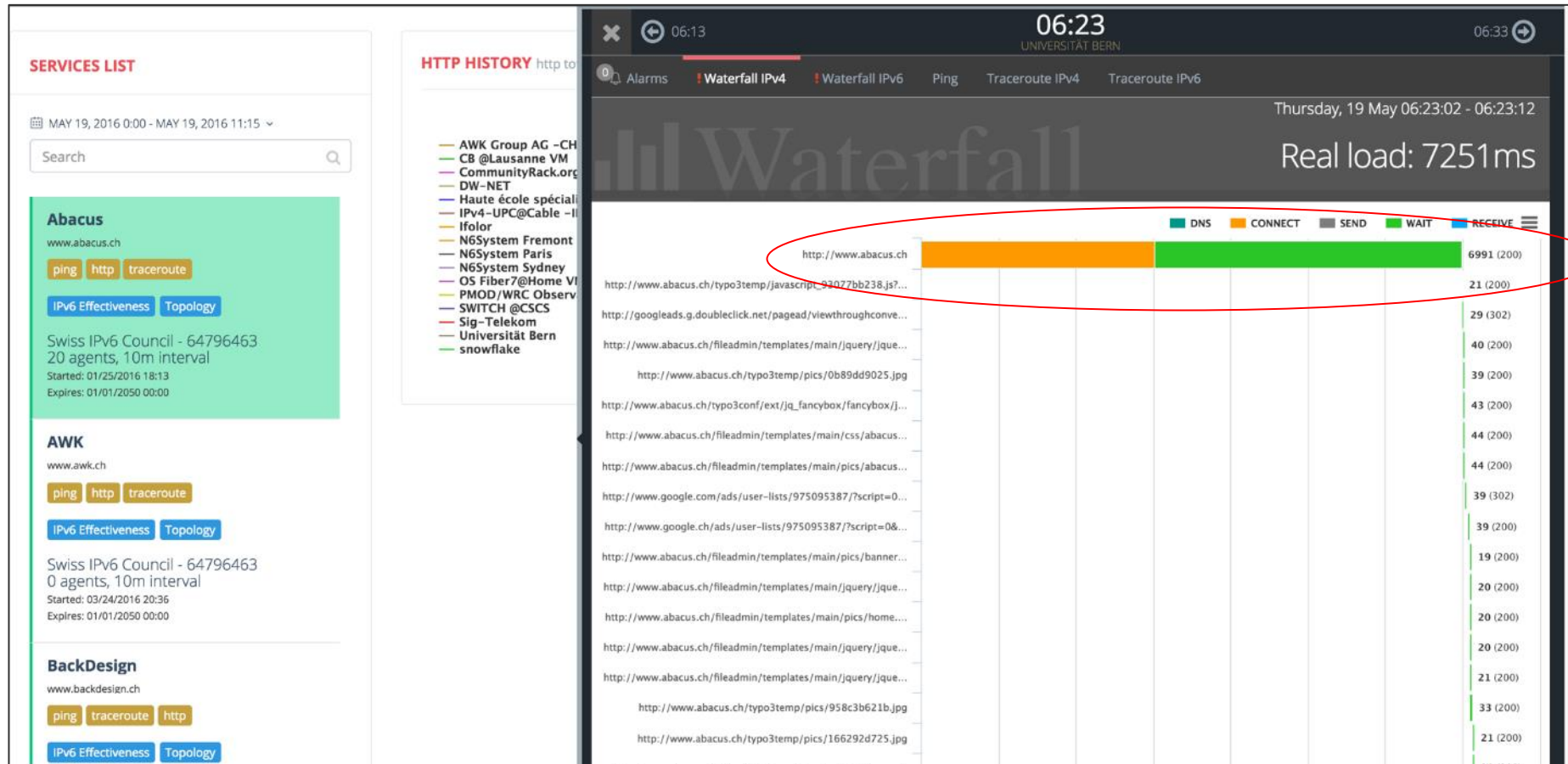


Google Chrome – long delivery for index.html (v6)

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time	1.50s
www.abacus.ch	200	docum...	Other	8.0KB	750ms		
stylesheet_fd026774dd.css?1308322904	200	stylesh...	(index):27	1.7KB	41ms		
jquery.nap-1.0.0.js	200	script	(index):41	1.1KB	87ms		
abacus.js	200	script	(index):42	1.4KB	87ms		
jquery.easing.1.3.js	200	script	(index):40	2.4KB	83ms		
jquery.carouselFredSel-3.0.3-packed.js	200	script	(index):39	14.6KB	84ms		
jquery.dropdown.js	200	script	(index):43	663B	100ms		
jquery.tools.min.js	200	script	(index):38	4.1KB	82ms		
jquery.fancybox-1.3.1.pack.js	200	script	(index):60	5.5KB	100ms		
javascript_93077bb238.js?1308322904	200	script	(index):31	661B	66ms		
urchin.js	200	script	(index):247	6.9KB	90ms		
jquery-1.5.1-1.8.11-1.2.5.js?1306312767	200	script	(index):30	46.0KB	68ms		
abacus.css?1444828073	200	stylesh...	(index):36	13.7KB	64ms		
jquery.fancybox.css	200	stylesh...	(index):61	1.8KB	62ms		
conversion.js	200	script	(index):239	5.0KB	67ms		
abacus_logo.gif	200	gif	(index):87	3.6KB	27ms		
submit_lupe.gif	200	gif	(index):96	1.1KB	28ms		
958c3b621b.jpg	200	jpeg	(index):157	1.4KB	56ms		
home.png	200	png	(index):97	1.1KB	57ms		
0b89dd9025.jpg	200	jpeg	(index):211	5.9KB	104ms		
eea9f2d637.jpg	200	jpeg	(index):207	8.5KB	104ms		
166292d725.jpg	200	jpeg	(index):205	6.0KB	74ms		
video_servicetechniker_222.jpg	200	jpeg	(index):209	8.6KB	103ms		
banner_twitter.png	200	png	(index):222	6.8KB	98ms		
social_button_inact.png	200	png	(index):148	1014B	83ms		
mainnavi_i1_trenner.png	200	png	(index):148	523B	95ms		
search_bg.png	200	png	(index):148	720B	119ms		
mainnavi_bg.png	200	png	(index):148	806B	124ms		
mainnavi_i2_icon.png	200	png	(index):148	453B	136ms		
mainnavi_i2_ul_mid_left.png	200	png	(index):148	5.0KB	98ms		
mainnavi_i2_ul_mid.png	200	png	(index):148	7.7KB	142ms		
startpagecontent_left_bg.png	200	png	(index):148	961B	106ms		
11 slogan_bg.png	200	png	(index):148	521B	102ms		

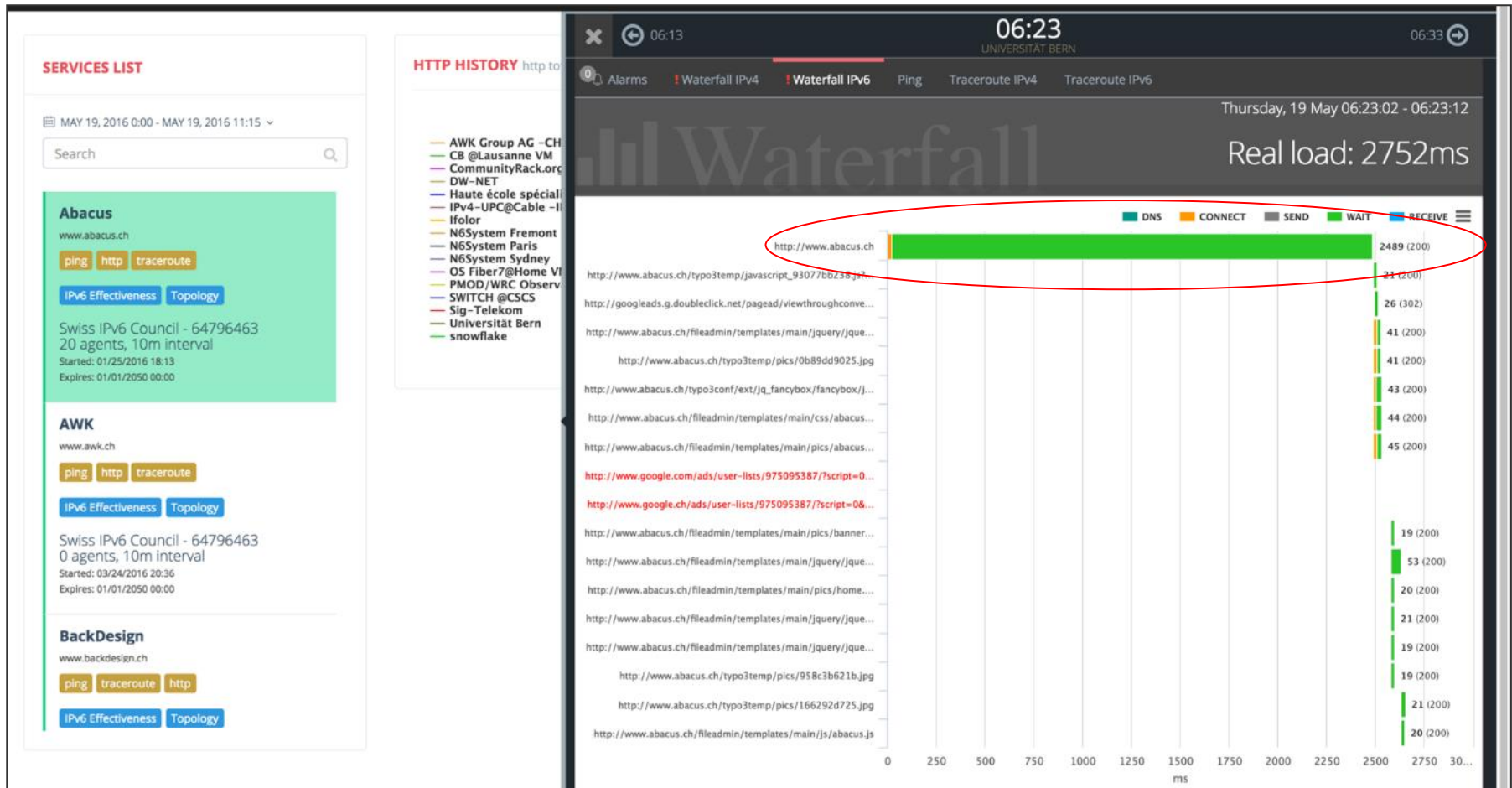
Abacus

V6sonar – long delivery for index.html (v4)



Abacus

V6sonar – long delivery for index.html (v6)

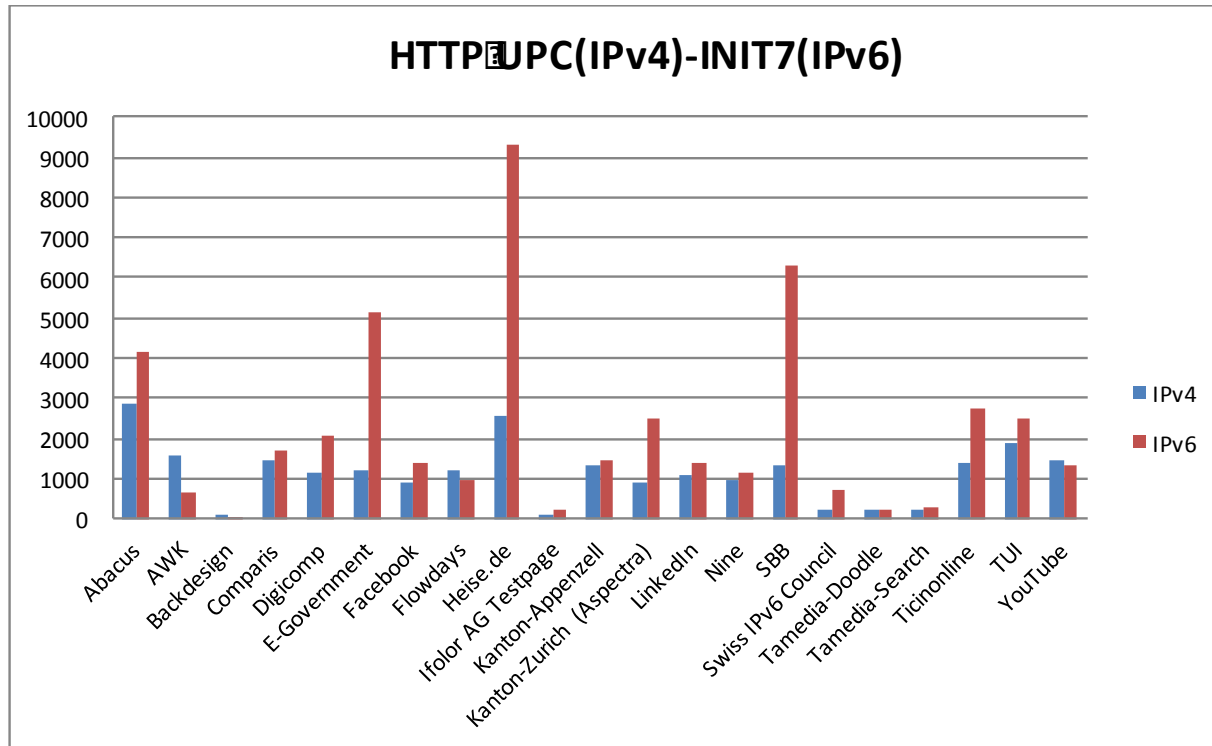


Abacus

Summary

- Very long page load times for index.html for both IPv4 and IPv6
- Seems to be related to a web server issue / and or content generation (see dynamic news content within web site)

Init7 IPv6 over DSL



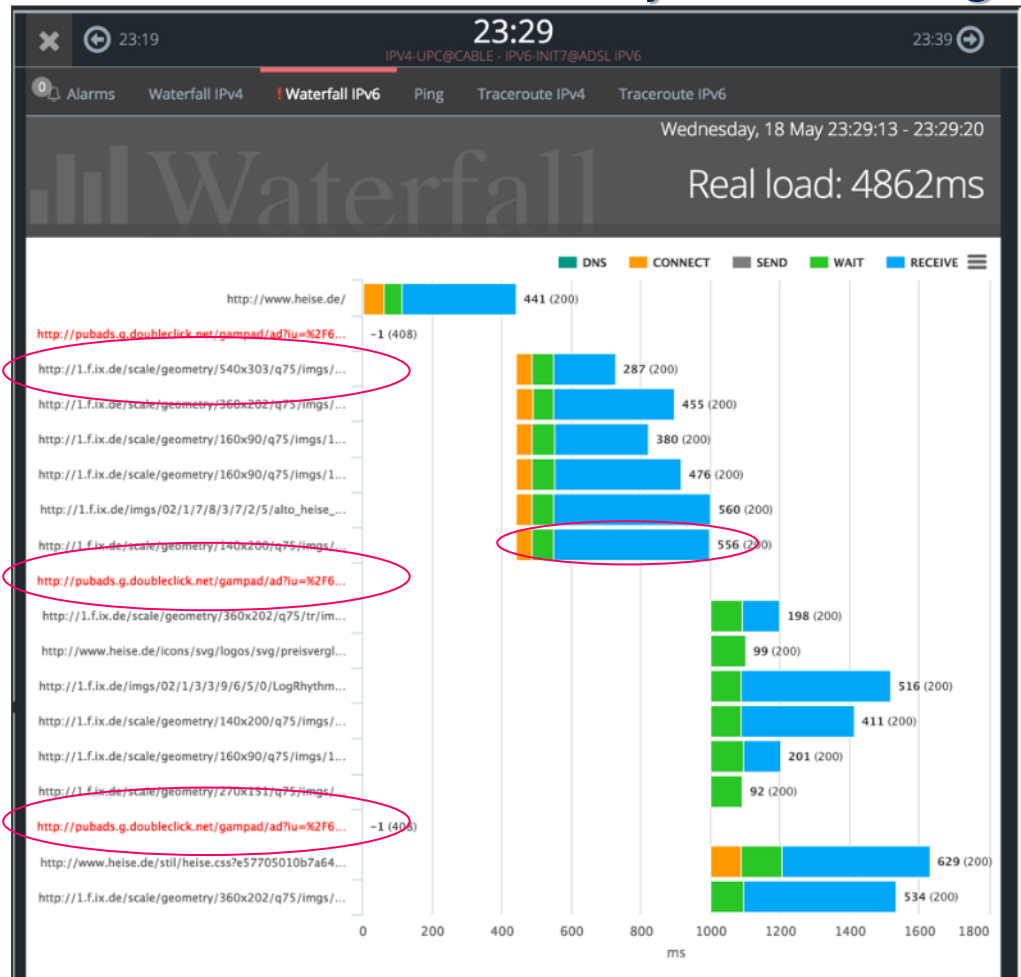
Av. Page Load IPv4: 1143 msec

Av. Page Load IPv6: 2201 msec

- Note, two different access providers (UPC for v4, INIT7 for IPv6)
- Note, this is seen from the agent perspective

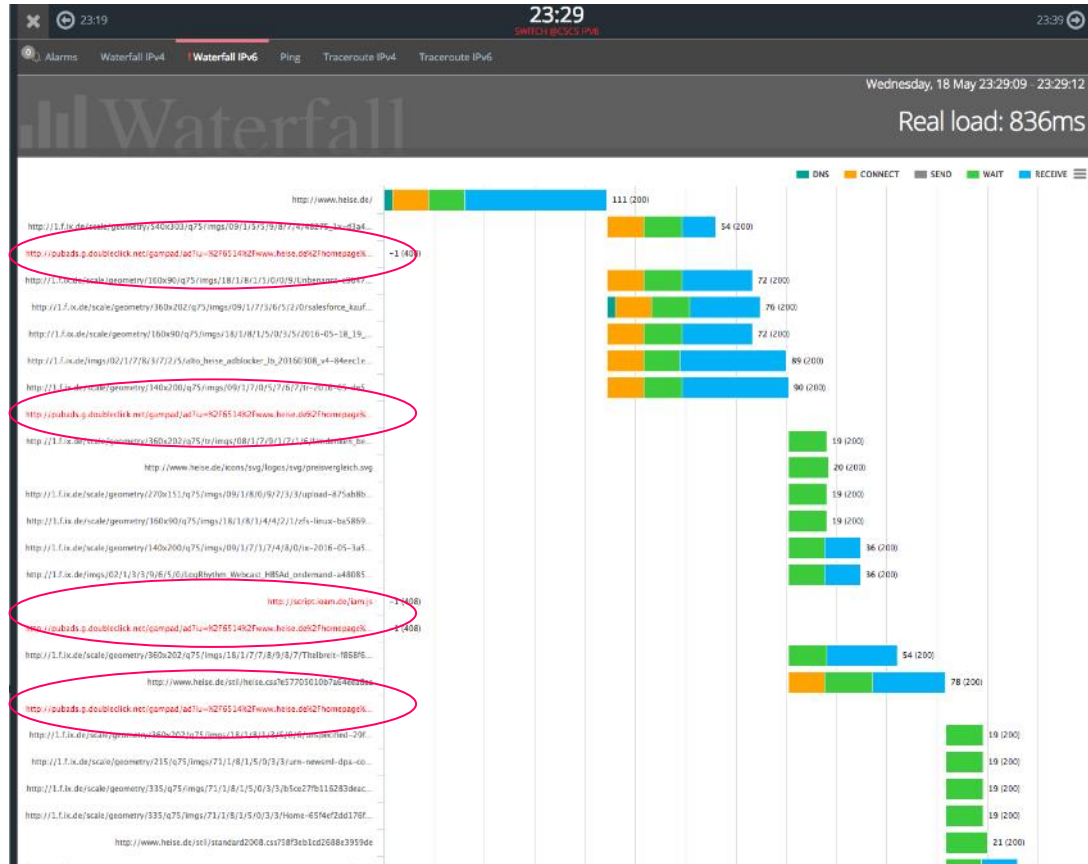
Init7 IPv6 over DSL

Waterfall for IPv6 – Heise.de (seen by INIT7 DSL agent)



Init7 IPv6 over DSL

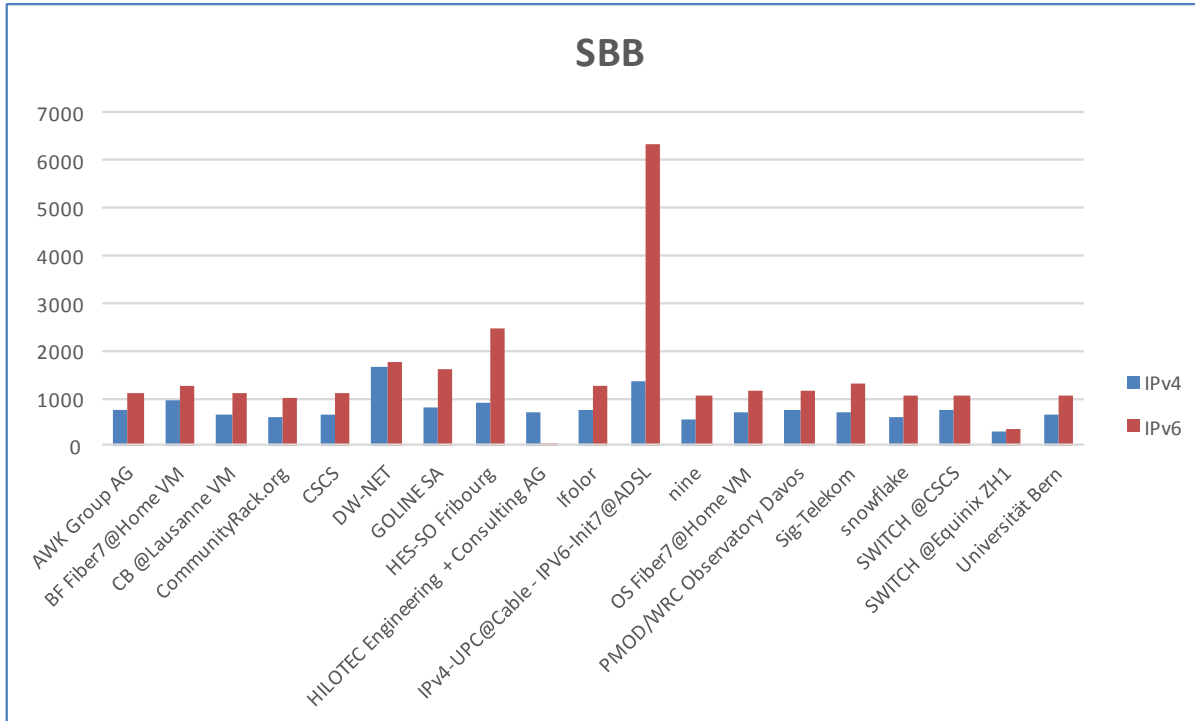
🚩 Waterfall for IPv6 – Heise.de (seen by Switch@CSCS agent)



Init7 IPv6 over DSL

Summary

- Unsuccessful connection / download attempts could be indications for packet loss / timeouts, but seem not related to DSL of INIT7
- Long download times could be very well caused by DSL of INIT7



Av. Page Load IPv4: 781 msec
Av. Page Load IPv6: 1431 msec

📊 Doubled

📊 Even worse, when looking with Chrome

Locally, with google Chrome (v4) - good

The screenshot shows the SBB website interface on the left and the Chrome DevTools Network tab on the right. The website has a top navigation bar with links like Home, SBB Blog, Community, Newsletter, Kontakt, Jobs, Ticket Shop, Suche, and language options (de, fr, it, en). Below this is a main navigation bar with categories: Freizeit & Ferien, Fahrplan, Abos & Billette, Bahnhof & Services, Geschäftsreisen, and Konzern.

The main content area features a 'Fahrplan & Billettkauf' section with a search form for routes (Von: Haltestelle, Ort, Sehenswürdigkeit; Nach: Haltestelle, Ort, Sehenswürdigkeit; Via: Haltestelle, Ort, Sehenswürdigkeit) and a date/time selector (So, 22.05.16, 14:33). A red button 'Verbindung suchen' is prominent. Below the search form is a 'Schnell & einfach' section with links to SBB Ticket Shop, Gewöhnliche Billette, Tageskarte zum Halbtax, Sparbillette Schweiz, Sparbillette International, Abonnemente, and SBB Mobile App.

The right side of the page shows a large image of a family celebrating, with the text '4./5. Juni: Haben Sie Billette für die Eröffnungsfahrt?'. Below this are two smaller images of cyclists on a scenic route, with the text 'Entdecken Sie die Region St. Gotthard.' and '5 ausgewählte Ti Gotthard-Region'.

The Chrome DevTools Network tab is open, showing a list of network requests. The table below represents the data from the 'Name' column of the network log:

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time
megadropdown-shadow-corners_black...	200	png	home.html:3500	7.2 KB	79ms	
megadropdown-shadow-left-right_black...	200	png	home.html:3500	3.9 KB	50ms	
icons_functions.png	200	png	home.html:3500	11.0 KB	36ms	
blank.gif	200	gif	home.html:3500	532B	37ms	
footer-bg-small.png	200	png	home.html:3500	1.0 KB	36ms	
border-radius-5px-280x40-button-grey.png	200	png	home.html:3500	1.5 KB	47ms	
tooltips.png	200	png	home.html:3500	9.1 KB	46ms	
gplus-15x15.gif	200	gif	home.html:3500	2.6 KB	38ms	
tooltips_facebook.gif	200	gif	home.html:3500	1.7 KB	40ms	
tooltips_twitter.gif	200	gif	home.html:3500	1.7 KB	35ms	
print.css	200	stylesheet	home.html:99	2.9 KB	38ms	
satellite-57224d4e64746d5149000535.js	200	script	satellite-lib-9f4...	485B	22ms	
satellite-573ef67164746d4d9007353.js	200	script	satellite-lib-9f4...	499B	21ms	
satellite-534abdc4c7c5bdc900002f.js	200	script	satellite-lib-9f4...	480B	22ms	
satellite-5550b480336137001700000.js	200	script	satellite-lib-9f4...	508B	19ms	
piktogramme_interactions.png	200	png	base.js:166	1.2 KB	40ms	
dny7tpl-suggest&charset=utf-8	200	script	base.js:138	2.4 KB	44ms	
overlay.html?_1463920420391&cookie...	404	xhr	base.js:141	1.6 KB	74ms	
satellite-5730596c64746d2df90015eb.js	200	script	satellite-lib-9f4...	596B	73ms	
satellite-5717a20d64746d3e960007ba.js	200	script	satellite-lib-9f4...	572B	66ms	
satellite-534abc515f8dd5e0a80000369.js	200	script	satellite-lib-9f4...	638B	71ms	
hafas_sbb_suggest.css	200	stylesheet	dny7tpl-sugg...	2.1 KB	77ms	
FSuggest_v1.0.js	200	script	dny7tpl-sugg...	13.6 KB	98ms	
satellite-5550b3e23263300017a10400.h...	200	document	satellite-lib-9f4...	1.1 KB	81ms	
dos.gif?dcslpa=1&dcslpa=1463920420...	200	gif	Other	528B	117ms	
survey.js	200	script	satellite-5717a...	875B	78ms	
px?id=708102&seg=2699912,5096266&...	200	script	satellite-57305...	864B	65ms	
de?r=-d=84983.97547571368&x=2580x...	302	text/html	Other	364B	72ms	
blank.gif	200	gif	http://sbb.wa...	282B	20ms	
conversion.js	200	script	satellite-5550b...	5.0 KB	84ms	
?random=1463920420893&cv=8&fat=14...	302	text/html	conversion.js:25	344B	69ms	
?fnt=1&num=1&cv=8&fnt=2&url=http%...	302	text/html	https://google...	822B	35ms	
?fnt=1&num=1&cv=8&fnt=2&url=http%...	200	document	https://www.g...	121B	40ms	

At the bottom of the network tab, a summary bar shows: 72 requests | 1.5MB transferred | Finish: 1.59s | DOMContentLoaded: 989ms | Load: 1.69s.

Locally, with google Chrome (v6) – not good

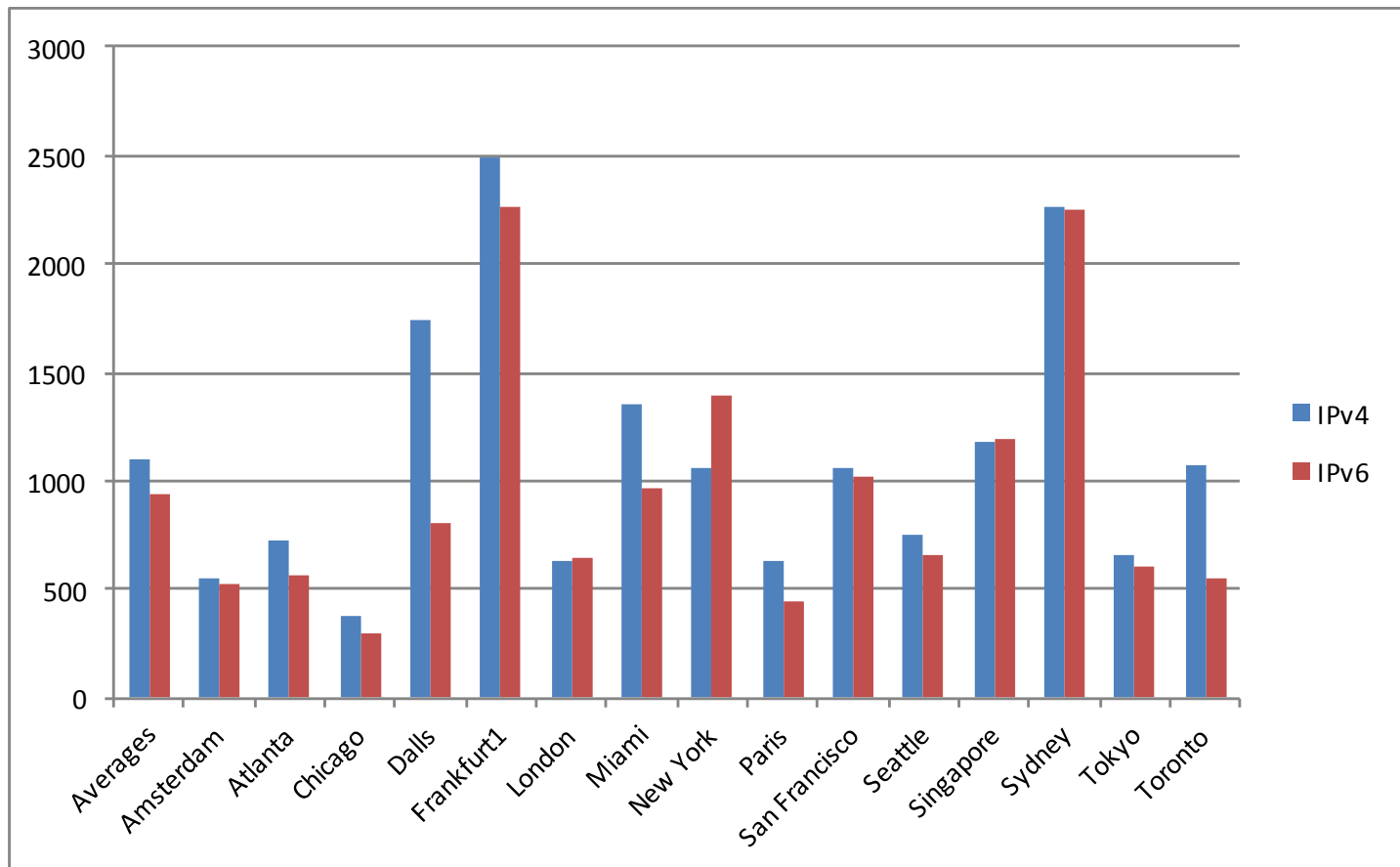
The screenshot shows the SBB website interface with the Network tab open in Google Chrome. The page title is 'Freizeit & Ferien'. The main content area is a search form for 'Fahrplan & Billettkauf'. The search form includes fields for 'Von:', 'Nach:', and 'Via:', a date selector for 'So, 22.05.16', and a time selector for '14:23'. A red button labeled 'Verbindung suchen' is visible. Below the search form is a section for 'Bahnverkehrsinformation'. The Network tab shows a list of requests, with one request circled in red: 'dnv?tip=suggest&charset=utf-8'. This request has a status of 404, a type of 'xhr', and a time of 2.9min. The status bar at the bottom indicates '71 requests | 1.5MB transferred | Finish: 2.9min | DOMContentLoaded: 1.00s'.

Name	Status	Type	Initiator	Size	Time	Timeline - Start Time	2.5min
tooltips.png	200	png	home.html:3500	9.1KB	35ms		
gplus-15x15.gif	200	gif	home.html:3500	2.6KB	27ms		
tooltips_facebook.gif	200	gif	home.html:3500	1.7KB	32ms		
tooltips_twitter.gif	200	gif	home.html:3500	1.7KB	31ms		
print.css	200	stylesheet	home.html:99	3.0KB	32ms		
satellite-57224d4e64746d5149000535.js	200	script	satelliteLib-9f4...	509B	29ms		
satellite-573ef67164746d64d9007353.js	200	script	satelliteLib-9f4...	469B	30ms		
satellite-534abdc0c47c5bd8c900002f.js	200	script	satelliteLib-9f4...	480B	47ms		
satellite-5550b4803361370017000000.js	200	script	satelliteLib-9f4...	484B	38ms		
pklogengine_interactions.png	200	png	base.js:136	1.2KB	29ms		
dnv?tip=suggest&charset=utf-8	404	xhr	base.js:136	0B	2.9min		
overlay.html?...14639198516258.cookie...	404	xhr	base.js:131	1.6KB	62ms		
satellite-53bbcb3454094e439000370.js	200	script	satelliteLib-9f4...	2.7KB	56ms		
satellite-53174610de0b1c677e00021b.js	200	script	satelliteLib-9f4...	1.3KB	56ms		
satellite-531746c0de0b1c0c820001b9.js	200	script	satelliteLib-9f4...	2.3KB	36ms		
satellite-557de0116132330014290000.js	200	script	satelliteLib-9f4...	2.3KB	52ms		
satellite-533b151deabbb33b0300001c.js	200	script	satelliteLib-9f4...	2.2KB	67ms		
satellite-530c655cabd681f8b8000132.js	200	script	satelliteLib-9f4...	8.9KB	89ms		
satellite-5550b3e23263300017a10400.h...	200	document	satelliteLib-9f4...	1.2KB	59ms		
satellite-531daabcf700b74264000168.js	200	script	satelliteLib-9f4...	1.1KB	54ms		
satellite-5717a20d64746d3e960007ba.js	200	script	satelliteLib-9f4...	572B	53ms		
satellite-5730596c64746d2f90015ab.js	200	script	satelliteLib-9f4...	572B	53ms		
satellite-534ab515f8dd5e0a8000089.js	200	script	satelliteLib-9f4...	638B	36ms		
conversion.js	200	script	satellite-5550b...	5.0KB	115ms		
dcs.gif?dcsipa=1&dcsdat=1463919852...	200	gif	Other	551B	88ms		
survey.js	200	script	satellite-5717a...	875B	85ms		
px?id=706102&seg=2699912.50962668...	200	script	satellite-57305...	864B	152ms		
de?n=&d=82035.81327715164&x=2560x...	302	text/html	Other	364B	124ms		
blank.gif	200	gif	http://sbb.w...	282B	44ms		
?random=1463919852327&cv=88fst=14...	302	text/html	conversion.js:25	353B	53ms		
pixel?id=KAE	200	document	conversion.js:25	188B	49ms		
?fnt=1&num=1&cv=88frm=2&url=http%...	302	text/html	https://google...	847B	67ms		
?fnt=1&num=1&cv=88frm=2&url=http%...	200	document	https://www.g...	121B	40ms		

Summary

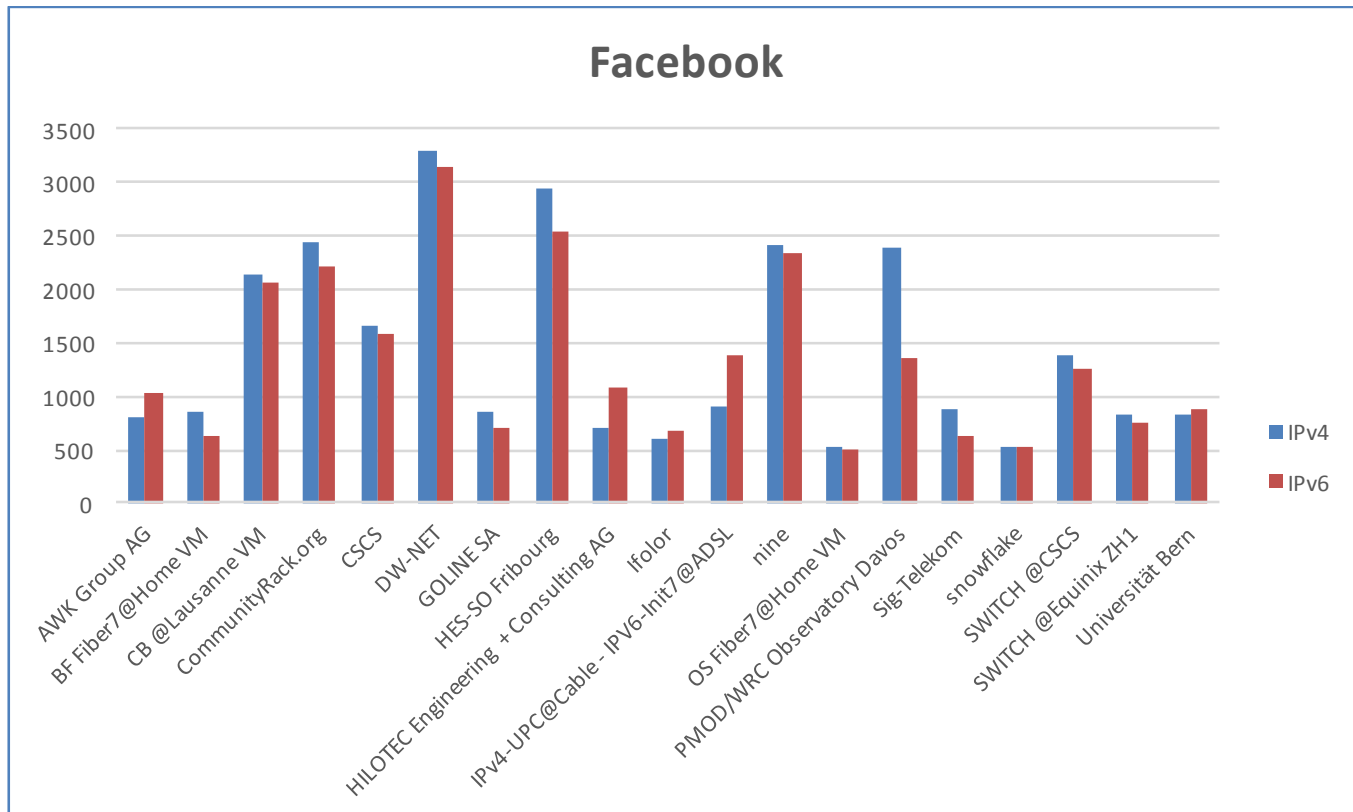
- Problem seems to be an embedded link:
 - <http://fahrplan.sbb.ch/bin/help.exe/dny?tpl=suggest&charset=utf-8>
- SBB has been informed

Facebook – Global View



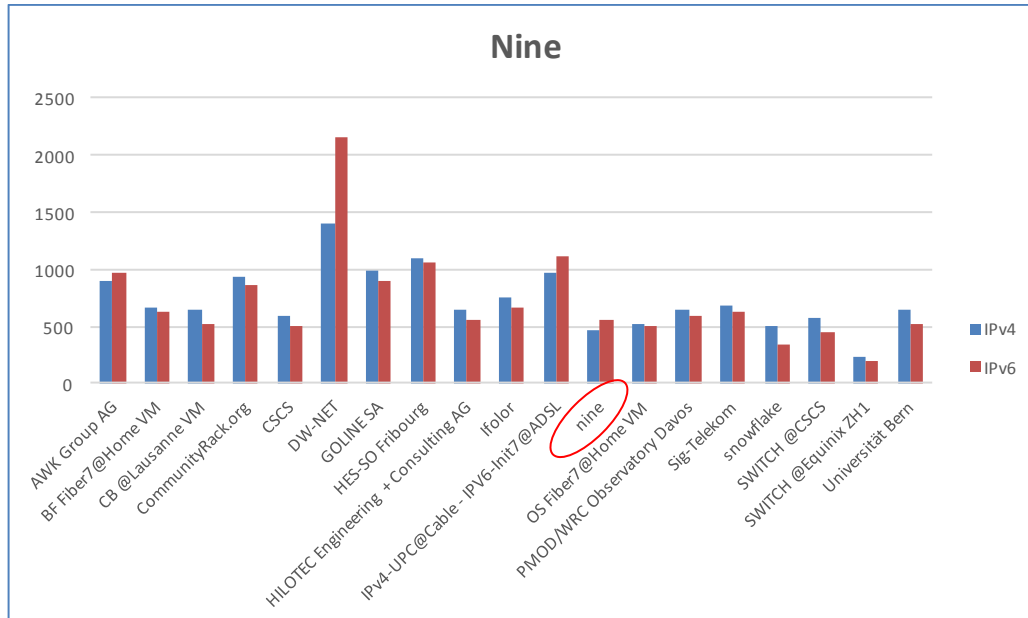
- ✚ Accessing Facebook over IPv6 is around 15% faster than over IPv4
- ✚ Looking at Swiss figures...

Facebook – CH View



- Accessing Facebook over IPv6 is still 6.8% faster than over IPv4
- Loosing performance in the access area towards the customer ?

Nine

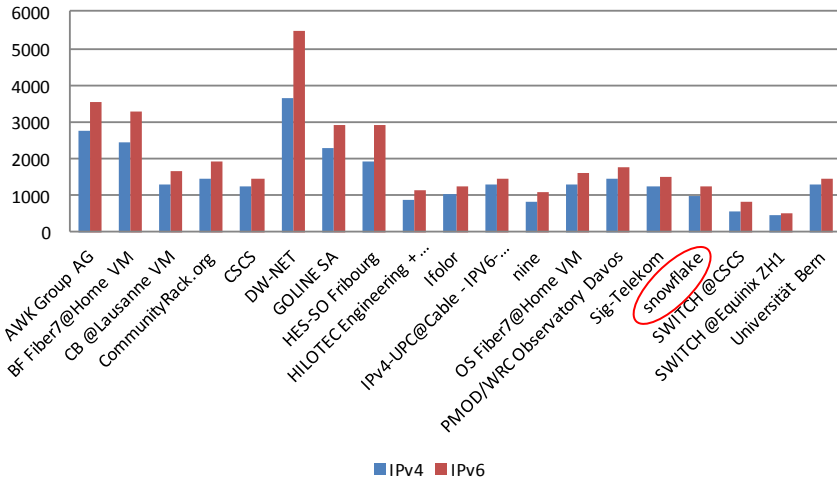


Average Page Load IPv4: 729 msec
Average Page Load IPv6: 723 msec

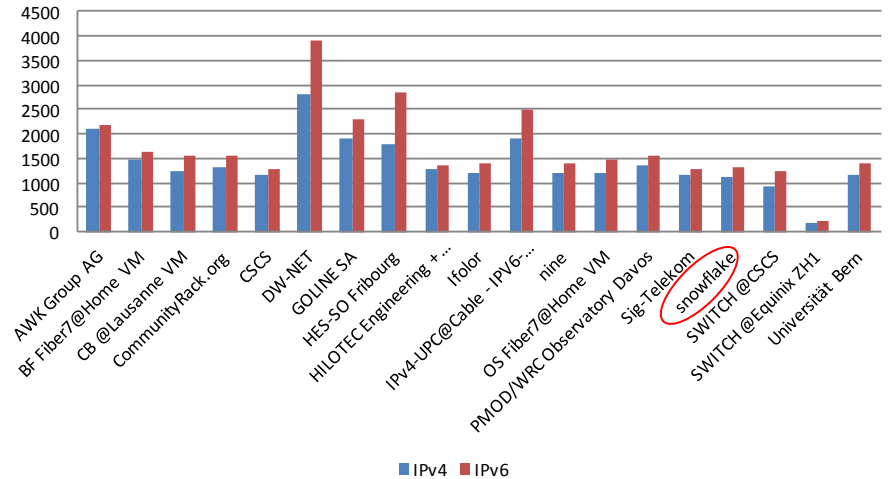
- Locally IPv4 is better than IPv6
- Remotely, IPv6 is slightly better than IPv4
 - Transport of v4 slower than v6 !
 - Higher load of v4 router queues, ... ?

Snowflake

Kanton-Appenzel

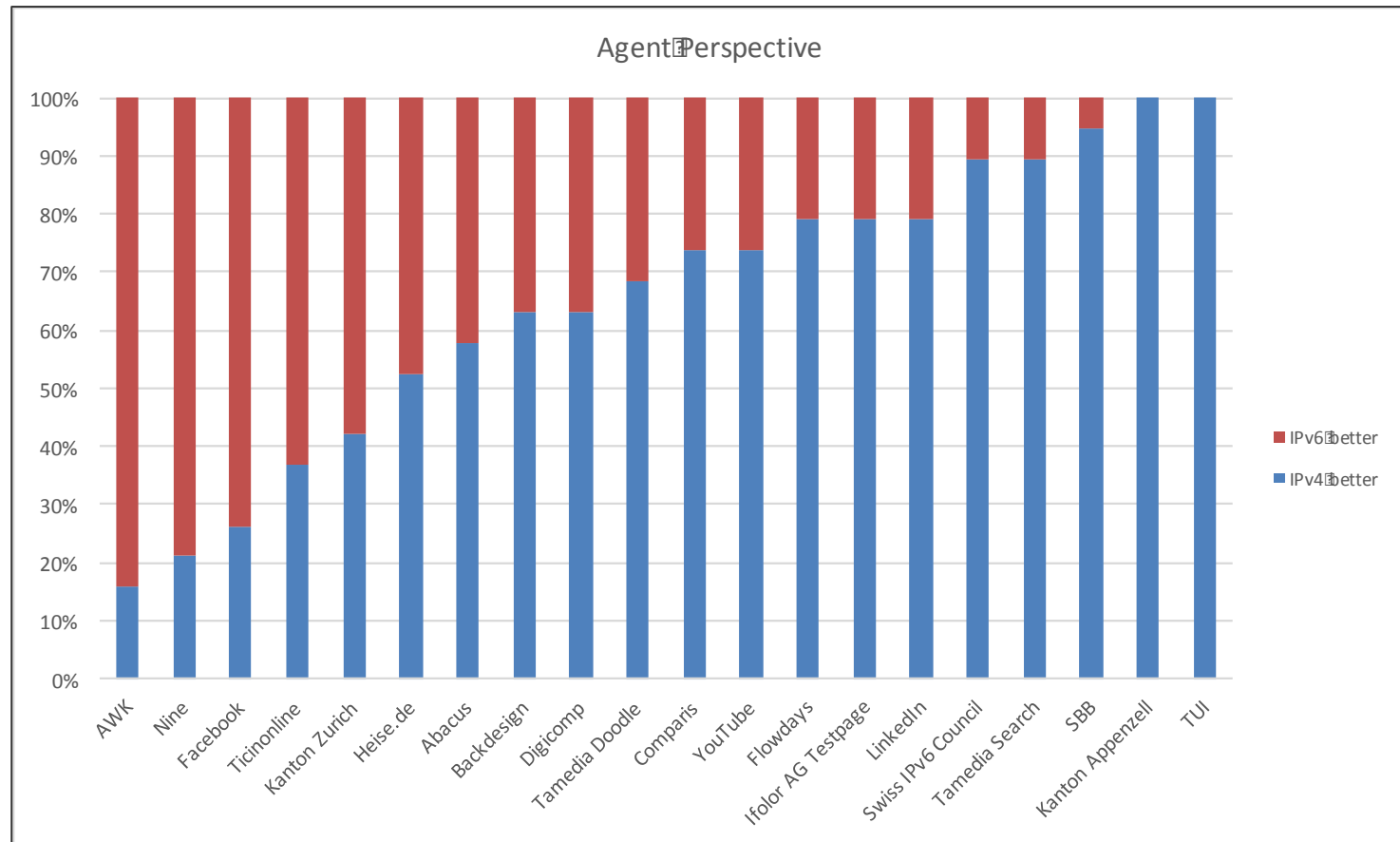


TUI



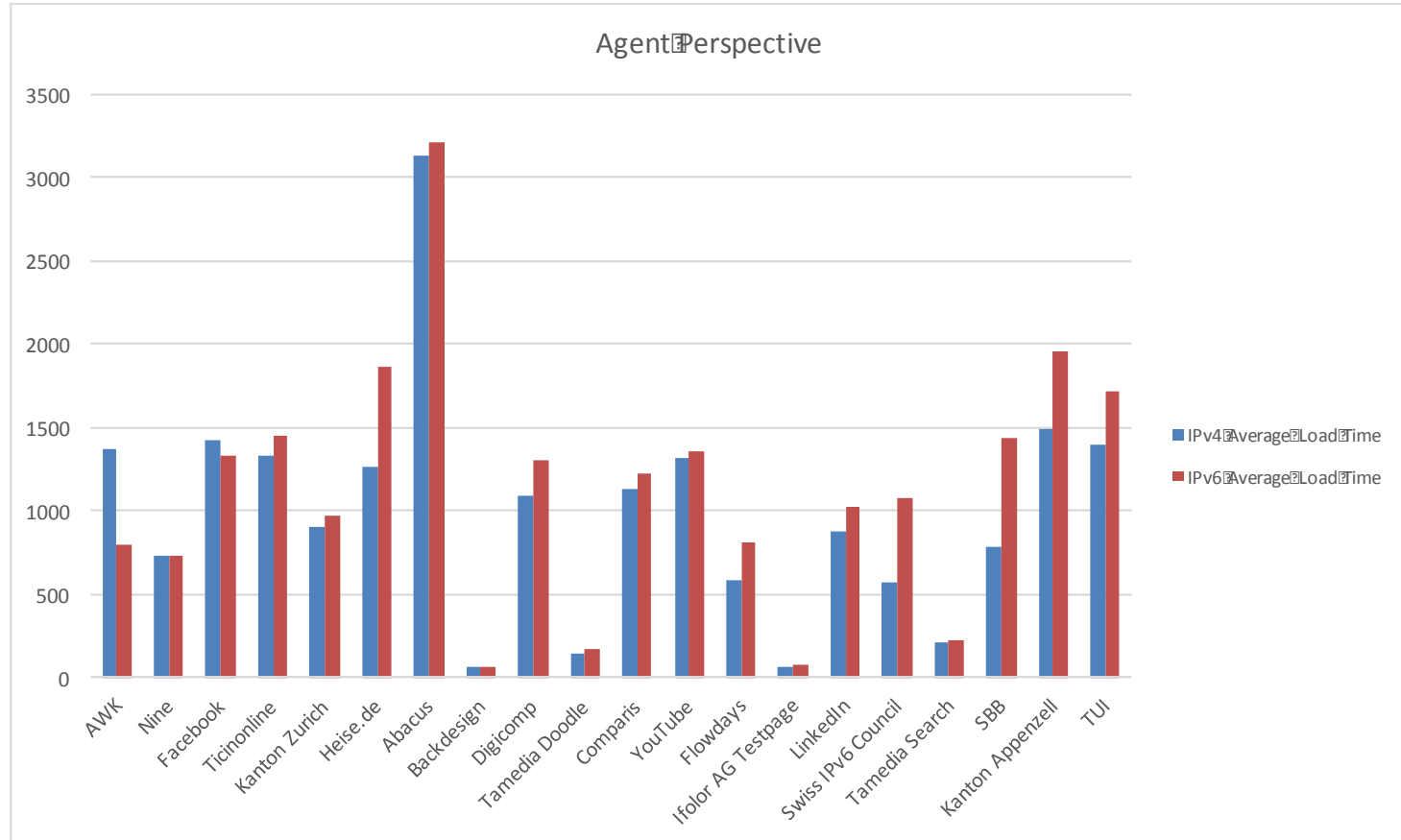
- ✚ Locally IPv4 is better than IPv6
- ✚ Remotely, the same
 - Problematic v6 uplink (compare with Nine) ?

Overall Results



Example Nine: 80% of the probes can access Nine web site faster over IPv6 than over IPv4

Overall Results – Agents Aggregated



Average page load times for all web sites for IPv4 and IPv6

Summary



Conclusions

- It is not black & white, but it depends
 - On the 'source of the source' (web site code)
 - On the source (web server and connection)
 - On the transport
 - On the access
 - On the perspective
- Averages can be dangerous
 - Use other metrics (APDEX, IPv6 Effectiveness)

Summary

- ✚ Motivation for IPv6 Reachability: CGN Case
 - IPv4 poor (due to nature of CGN, implemented at ISPs)
 - Ensure proper IPv6 connection as content provider...

- ✚ In our opinion
 - You should ensure that your web site is at least as fast accessible over IPv6 as over IPv4
 - Depending on your business you should check and monitor this more or less frequently
 - Do not forget the application layer (council web site, Abacus)

Summary

Your Input

- Interesting ?
- Should Council continue ?

Next Events

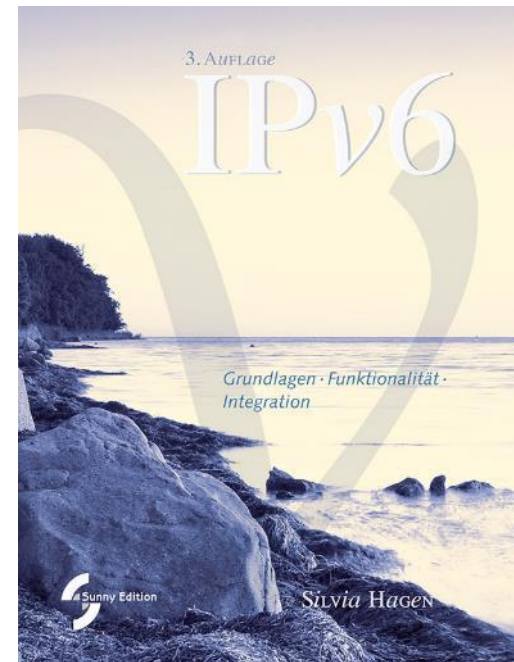
Next Events:

- **IPv6 Business Conference: June 16, 2016**
at Arena, Sihlcity Zurich
- **IPv6 Essentials, Hands-On Kurs, 3 Tage bei Digicomp**
1. – 3. Juni bei Digicomp (**20% Rabatt mit Konferenzticket**)
- **IPv6 101 – IPv6 Refresher, 1-day Crash Course,**
Pre-conference, 14. Juni bei Digicomp
- **Neighbor Discovery Deep Dive, mit Mukom Tamon,**
Preconference, 15. Juni bei Digicomp
- **Hacking IPv6 Networks, mit Fernando Gont,**
Postconference 17. Juni bei Digicomp

3. Auflage IPv6 Grundlagen

- ✚ Vollständig revidierte und aktualisierte Auflage per März 2016
- ✚ Neue Inhalte bezüglich Planung und Best Practices
- ✚ Auch als Ebook erhältlich

- ✚ Print ISBN 978-3-9522942-3-9
- ✚ eBook ISBN 978-3-9522942-8-4



Thank you for your participation



Questions ?



And please join us for a drink
and snacks afterwards

For Your Reference

Google Chrome

 Development Tools

 Entry Page:

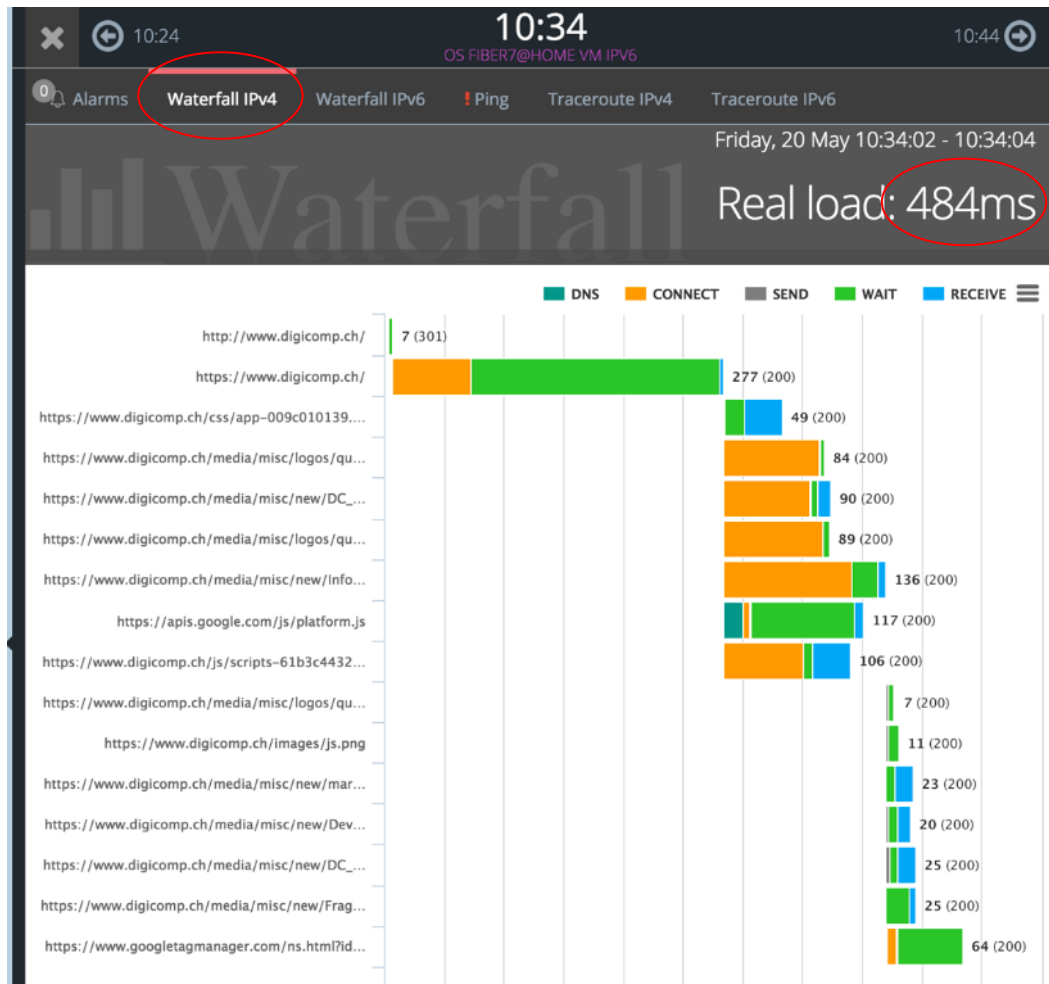
- <https://developers.google.com/web/tools/chrome-devtools/>

 Details about download

- <https://developers.google.com/web/tools/chrome-devtools/profile/network-performance/understanding-resource-timing>

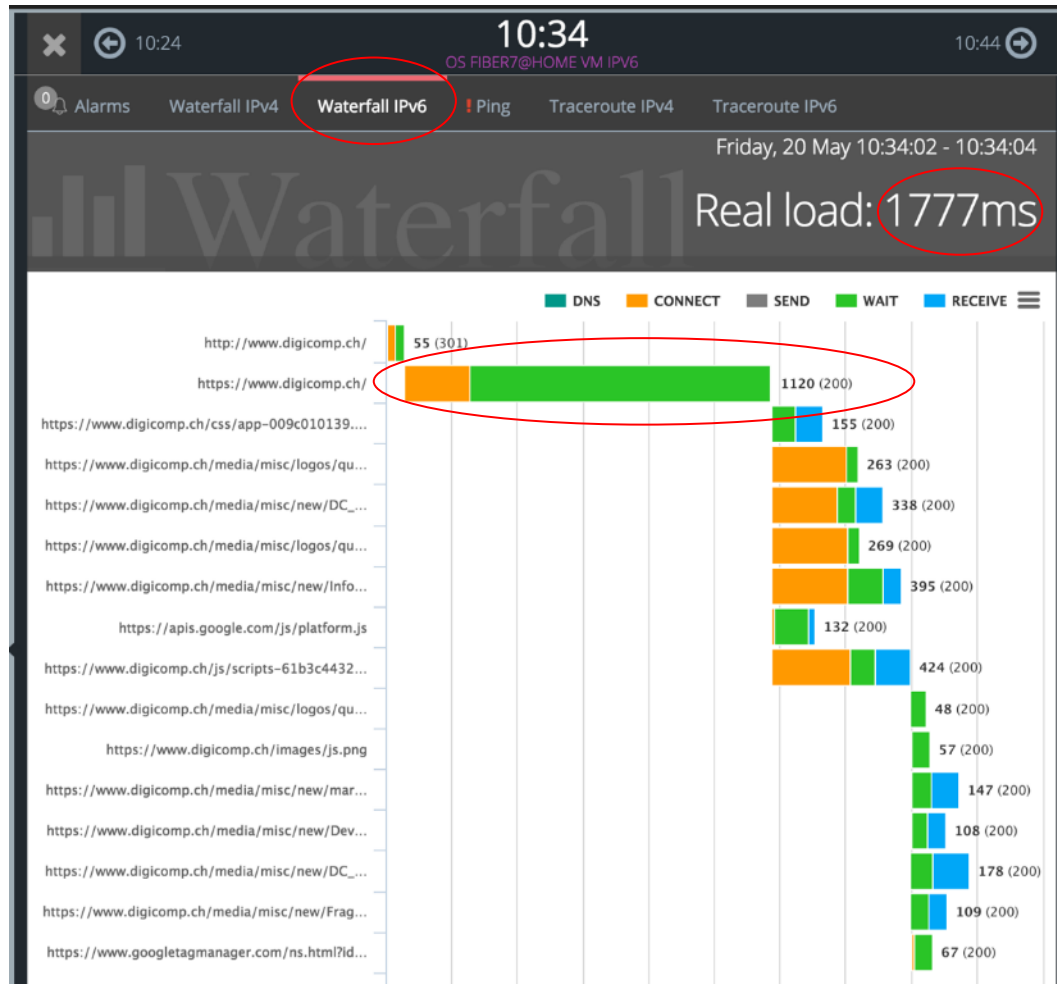
Digicomp

🚧 A bit unsure about the root cause for this



Digicomp

🚩 A bit unsure about the root cause for this



APDEX - APPENDIX

$$\text{APDEX} = (\text{Satisfied Count} + \text{Tolerating Count} / 2) / \text{Total Samples}$$

Satisfied Count:

As long as v6 load time is smaller or equal to v4 load time

Tolerating Count:

As long as v6 load time is less or equal to Satisfied Count x 4

Example:

03:10am : IPv4 load time 300ms - Ipv6 load time 400ms	-> SC = 0 / TC = 1
03:20am : IPv4 load time 350ms - Ipv6 load time 300ms	-> SC = 1 / TC = 0
03:30am : IPv4 load time 300ms - Ipv6 load time 1400ms	-> SC = 0 / TC = 0
03:40am : IPv4 load time 380ms - IPv6 load time 350ms	-> SC = 1 / TC = 0
<hr/>	
	-> SC = 2 / TC = 1

$$\text{APDEX} = (2 + 1/2) / 4 = 0.625 / 62.5\%$$

Statistics

Data collected in February and March 2016

WebSite	AverageLoad TimeIPv4	AverageLoad TimeIPv6	WebServer	Compression
Abacus	3122	3210	nginx(cloudflare)	gzip
AWK	1367	800	Apache	gzip
Backdesign	61	67	Apache2.2	gzip
Comparis	1135	1225	Microsoft-IIS/7.0	gzip
Digicomp	1086	1300	nginx	gzip
Facebook	1422	1331	n/a	n/a
Flowdays	586	807	(squarespace)	none
Heise.de	1260	1859	nginx	gzip
IfolorAGTestpage	67	82	Microsoft-IIS/7.0	n/a
KantonAppenzell	1490	1951	nginx	gzip
KantonZurich	904	964	n/a	n/a
LinkedIn	877	1022	Play	gzip
Nine	729	723	nginx	n/a
SBB	781	1431	Apache	n/a
SwissIPv6Council	566	1082	Apache2.4.20	gzip
TamediaDoodle	144	174	nginx1.4.6	gzip
TamediaSearch	212	223	Apache	gzip
Ticinonline	1326	1451	nginx(cloudflare)	gzip
TUI	1397	1710	nginx	gzip
YouTube	1313	1353	Ytfe_Worker	gzip