Praegus

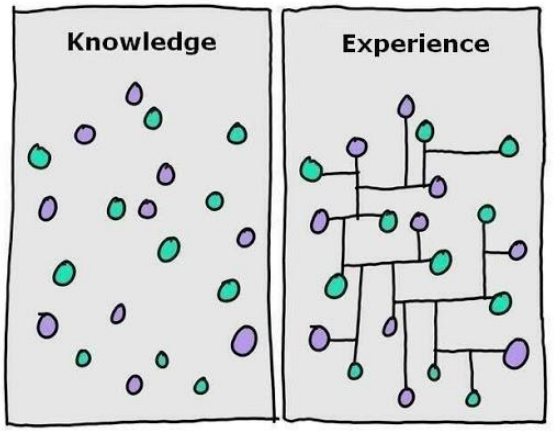
Intelligent Compassionate Testing

Performance testen

Gekalibreerd performance testen met
Jmeter e.a. tools

Agenda

- Wie zijn wij
- Performance testen?
  - » Acceptatie criteria
  - » Soort performance test
- Tooling
  - » Chrome addon Speedtracer
  - » Firefox addon Firebug
- USB Sticks & Vmware
- Jmeter introductie
  - » Scripts opnemen
- Bonus ronde 1: Wireshark
- Bonus ronde 2: Plugins & Rapporteren



Wie zijn wij

Roland Leusden

Senior Test Consultant at Praegus

Almere Stad Area, Netherlands | Computer Software

Current Praegus

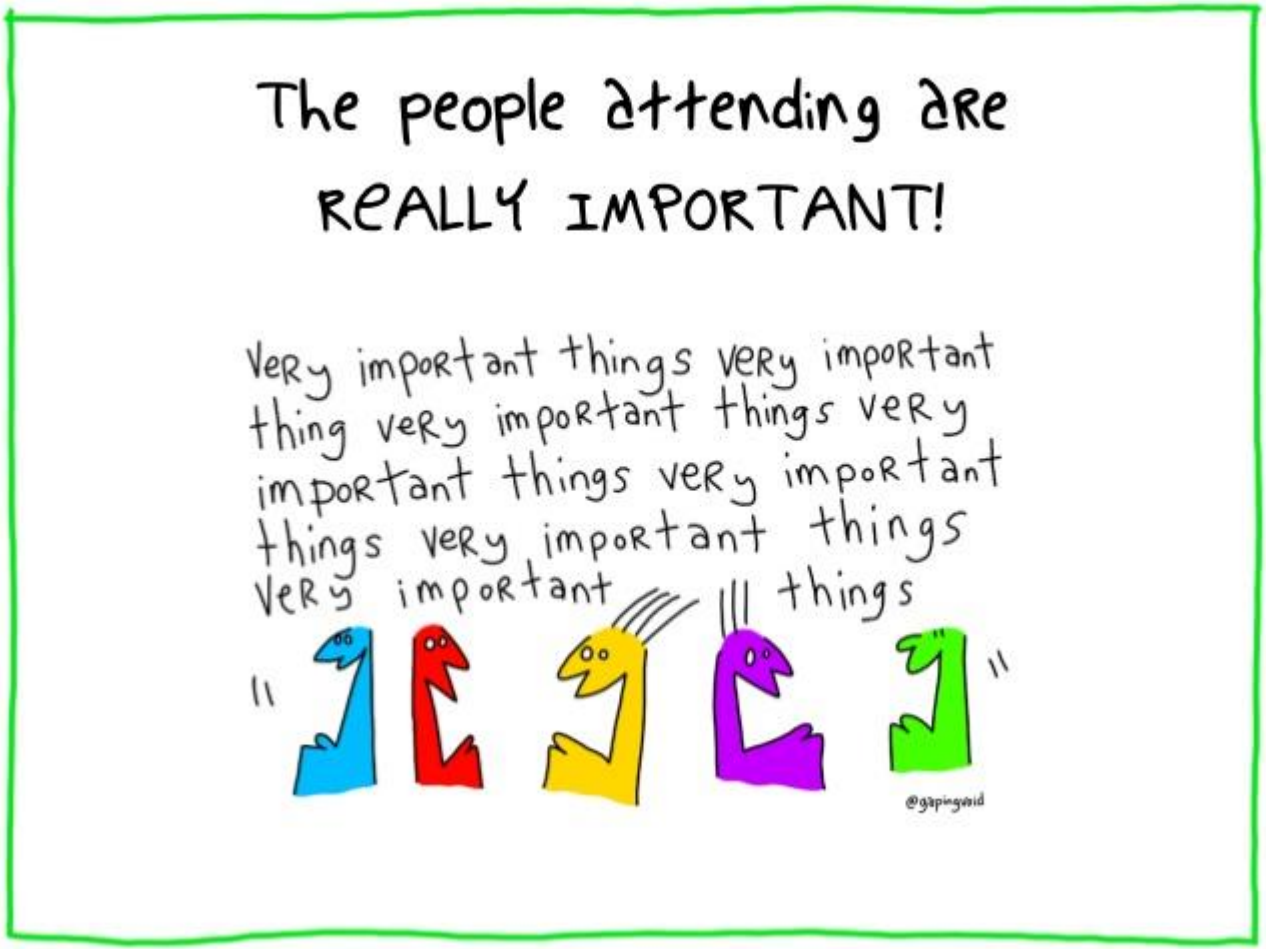
Bas Vegter

Test Consultant at Praegus

Tilburg Area, Netherlands | Information Technology and Services

Current Praegus

Wie, wat en waarom zijn jullie



Performance testen?

- Release ‘readiness’
- Ondervangen van Risico’s:
  - » Continuïteit
  - » Reputatie
- Omgevingsstabiliteit
  - » Servers
  - » Infrastructuur
  - » Toekomstvastheid
- Software kwaliteit
  - » Efficiëntie
  - » Vergelijking

- Performance by design
  - » Architectonische beslissing
  - » Requirements
  - » Code reviews

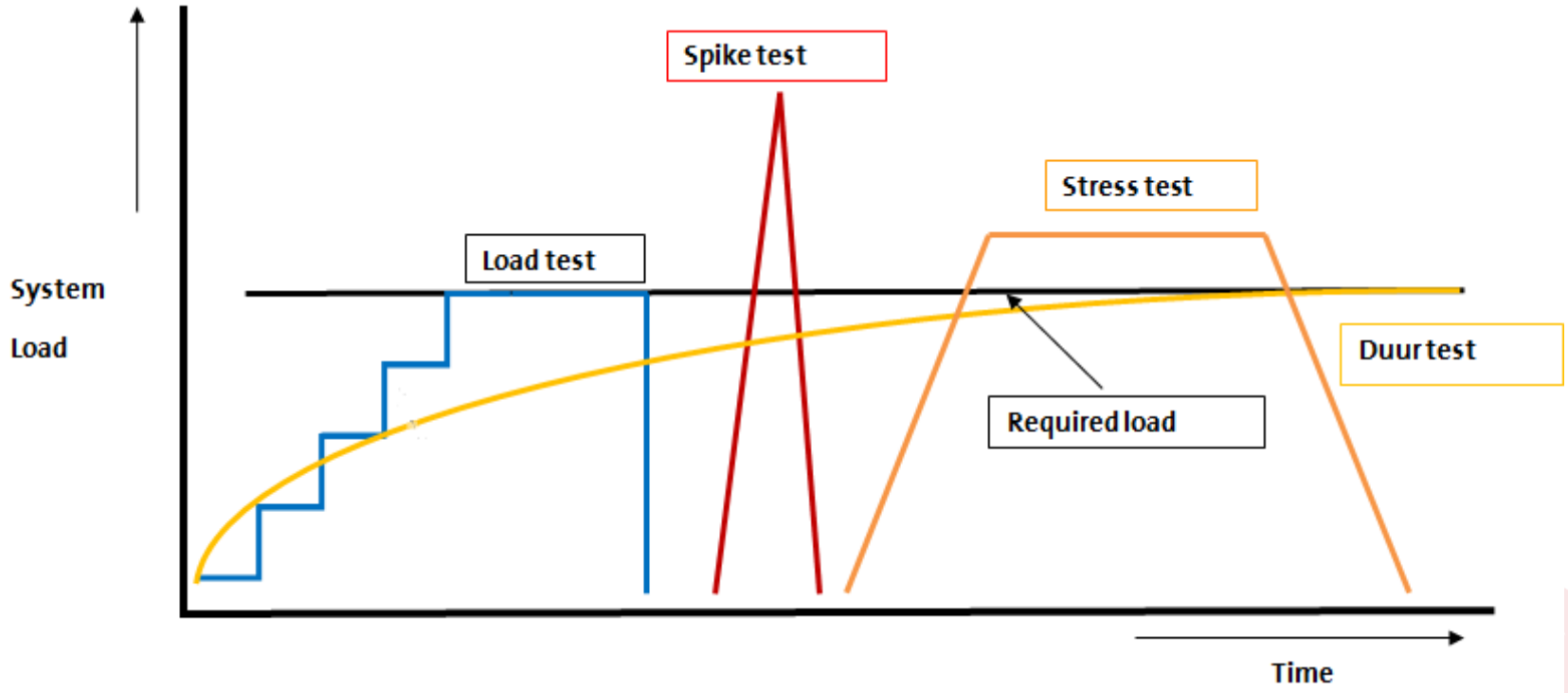
The new application is so slow, we have lot's of time for a nap....

Acceptatie Criteria

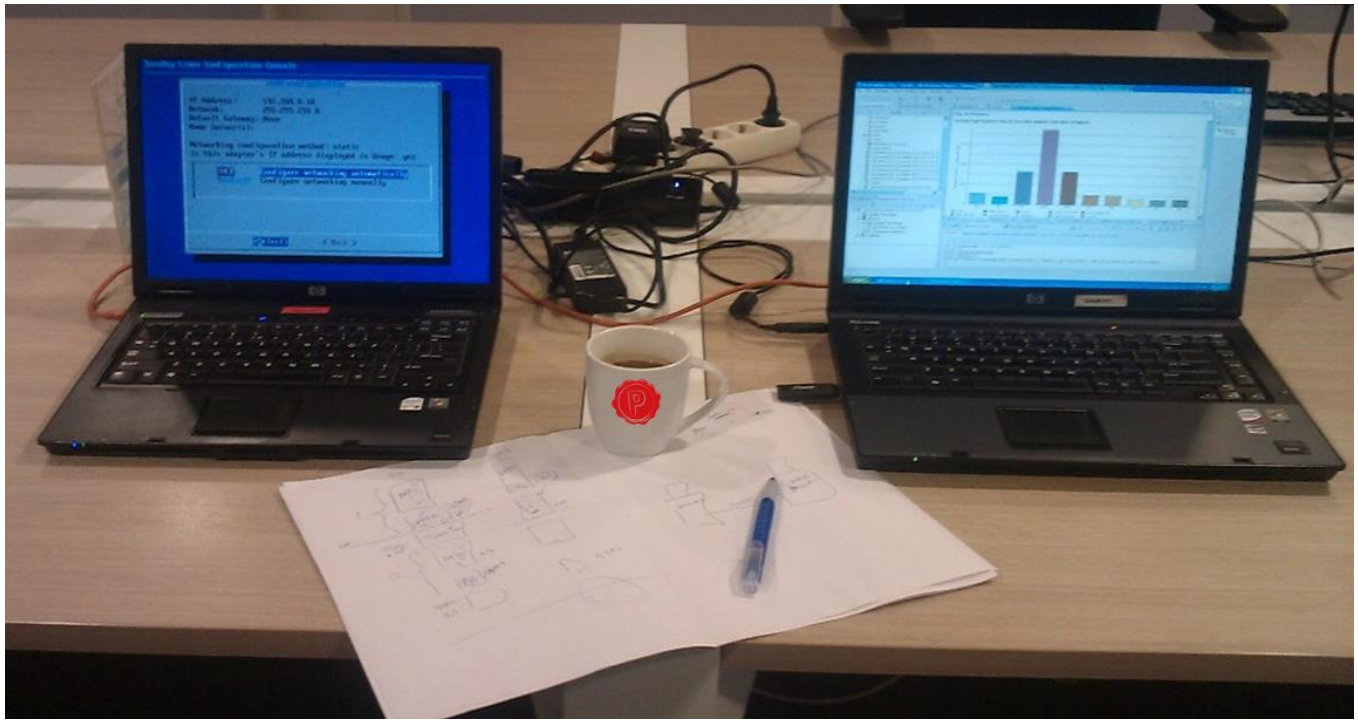
Wanneer is de performance goed?

- Gebruikers:
  - » Gevoelsmatige performance
  - » Responsetijden (subjectief)
  - » Max. aantal gebruikers?
- IT:
  - » Server gebruik / belasting
  - » Infrastructuur gebruik / belasting
- Bouw
  - » Hoe efficiënt is mijn code?
  - » Waar zitten de problemen?
- Architecten
  - » Hoe stabiel en betrouwbaar is de applicatie
  - » Hoe betrouwbaar zijn de resultaten?

Soort performance test



Kalibratie



VMWare XP images:

- Tool A
- Tool B
- Tool C
- Tool D
- Schoon image

- Server: Bootable Linux CD
- Turnkey Linux & OsCommerce

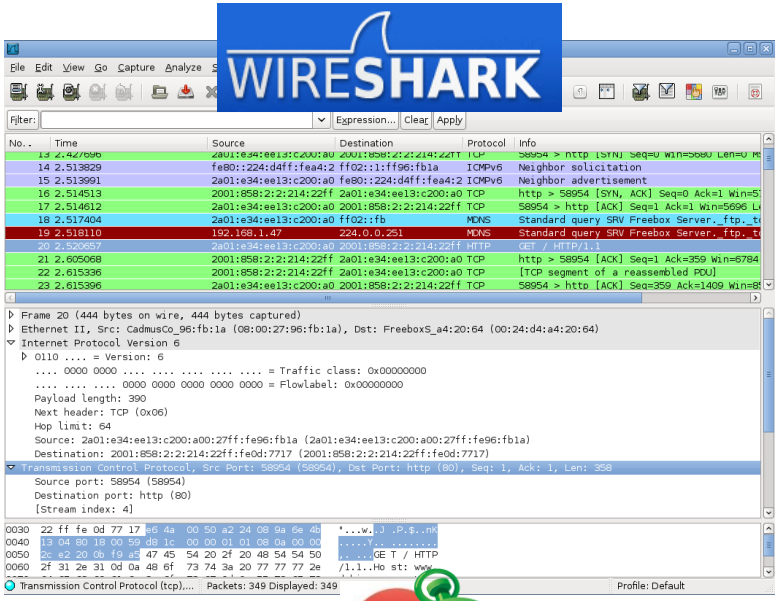
www.turnkeylinux.org/oscommerce

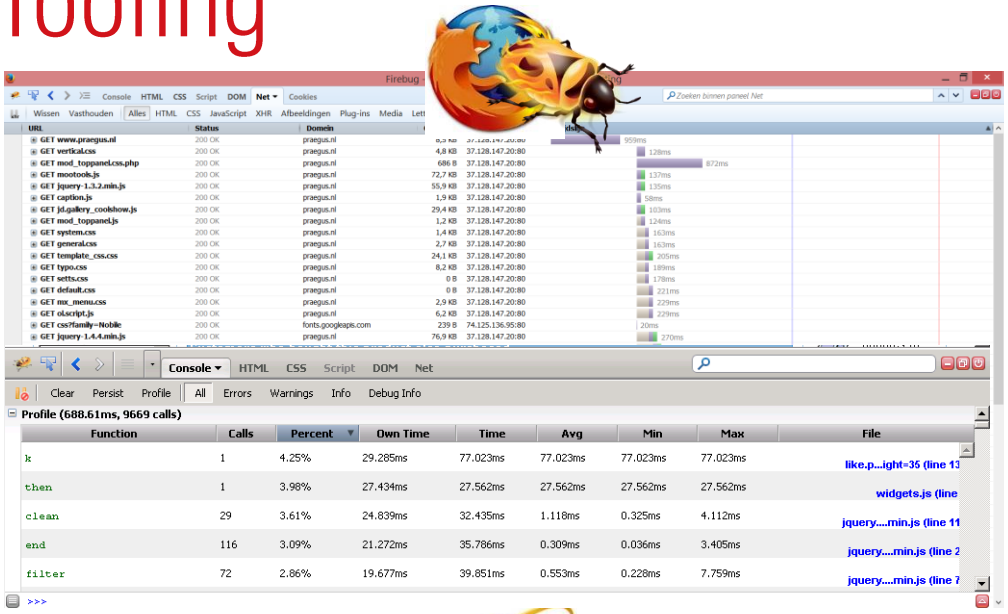
Resultaten

	Handmatig	Tool A	Tool B	Tool C	Tool D
Startpagina	0,815	1,715	0,669	0,912	0,875
Selecteer DVD Speed	0,942	0,99	0,473	0,946	0,313
Voeg toe aan cart		0,197	2,071	3,21	0,14
Zoek "Mary"	5,98		4,689	1,22	5,984
Voeg toe aan cart	1,367	6,92	2,092	3,538	0,094
Check Out	0,421	1,715	0,25	0,897	0,078
Nieuwe klant	0,408		0,637	0,896	
Account gemaakt	0,389	0,795	0,6	0,798	1,297
Ga door	0,498				0,156
Verzenden	0,374	0,13	0,417	0,883	0,312
Betaalwijze	0,431		0,358	0,787	0,141
Bevestig bestelling	0,488	1,92	0,64	0,909	0,266
Startpagina	0,418		0,383	0,808	0,188
Uitloggen	0,542	0,72	0,444	0,829	3,547
	13,073	**15,102**	**13,723**	**16,633**	**13,391**

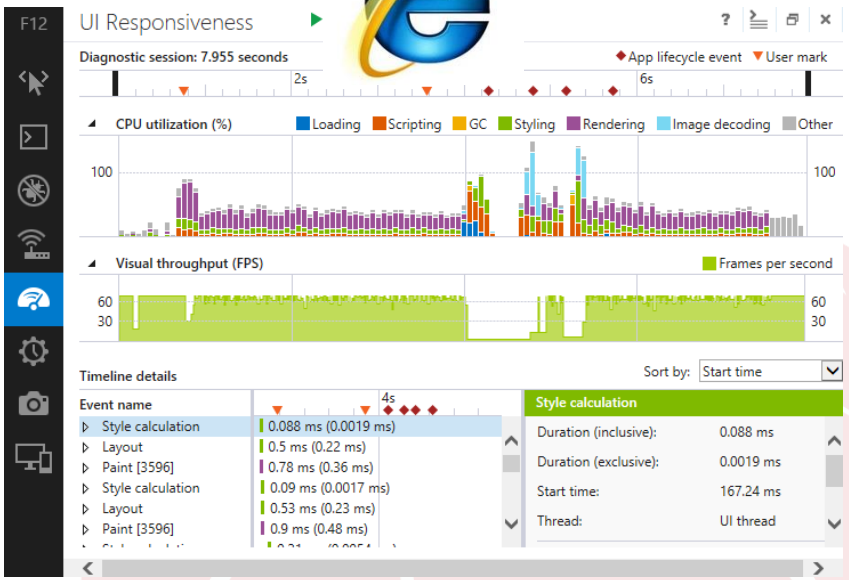
Resultaten zijn een gemiddelde van 10 runs.

Tooling

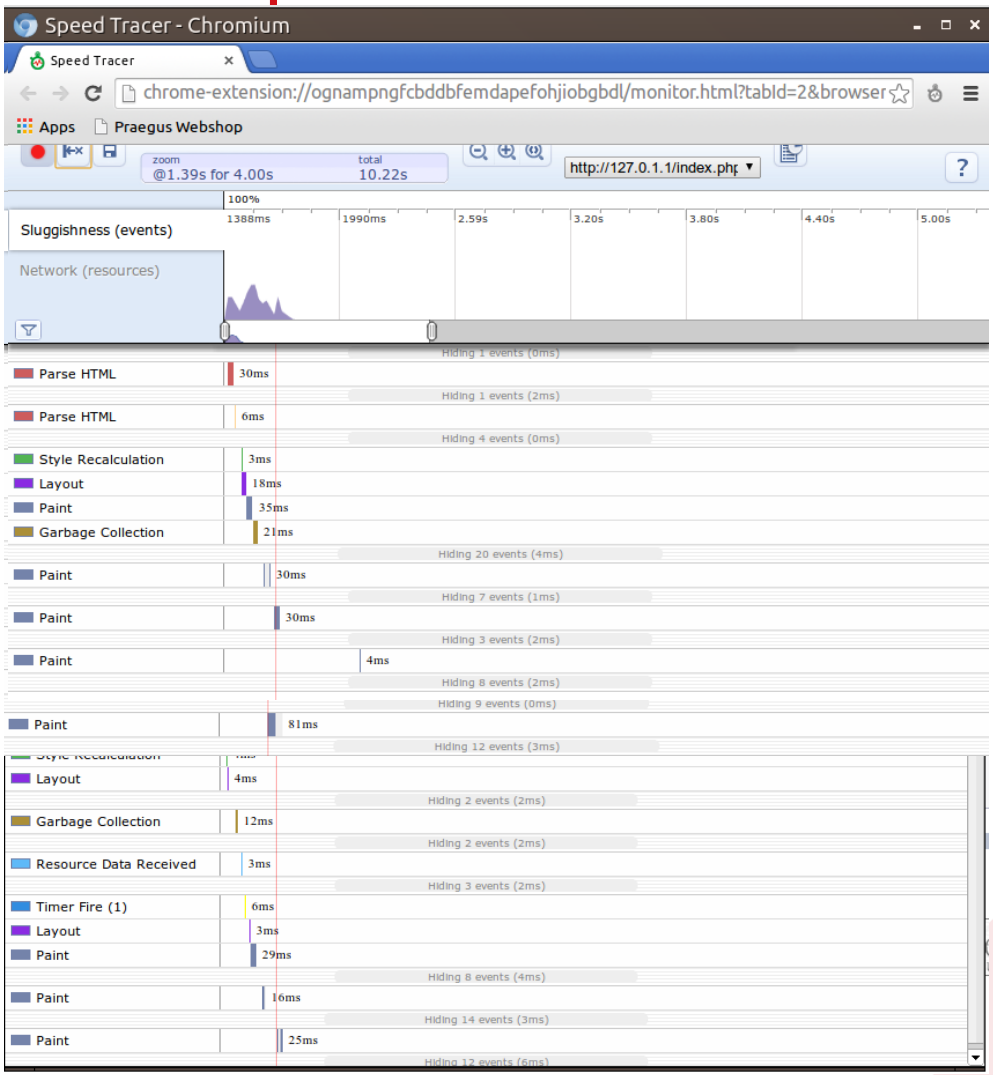

WIRESHARK
File Edit View Go Capture Analyze
Filter:
Expression... Clear Apply
No.. Time Source Destination Protocol Info
14 2.513829 fe80::224:d4ff:fea4:2 ff02::1:ff96:fb1a ICMPv6 Neighbor solicitation
15 2.513991 2a01:e34:ee13:c200:a0 fe80::224:d4ff:fea4:2 ICMPv6 Neighbor advertisement
16 2.514513 2001:858:2:2:214:22ff 2a01:e34:ee13:c200:a0 TCP http > 58954 [SYN, ACK] Seq=0 Ack=1 Win=5
17 2.514612 2a01:e34:ee13:c200:a0 2001:858:2:2:214:22ff TCP 58954 > http [ACK] Seq=1 Ack=1 Win=5696
18 2.517404 2a01:e34:ee13:c200:a0 ff02::fb MDNS Standard query SRV Freebox Server._ftp._t
19 2.518110 192.168.1.47 224.0.0.251 MDNS Standard query SRV Freebox Server._ftp._t
20 2.520657 2a01:e34:ee13:c200:a0 2001:858:2:2:214:22ff HTTP GET / HTTP/1.1
21 2.605068 2001:858:2:2:214:22ff 2a01:e34:ee13:c200:a0 TCP http > 58954 [ACK] Seq=1 Ack=359 Win=6784
22 2.615336 2001:858:2:2:214:22ff 2a01:e34:ee13:c200:a0 TCP [TCP segment of a reassembled PDU]
23 2.615396 2a01:e34:ee13:c200:a0 2001:858:2:2:214:22ff TCP 58954 > http [ACK] Seq=359 Ack=1409 Win=8
Frame 20 (444 bytes on wire, 444 bytes captured)
Ethernet II, Src: CadmusCo_96:fb:1a (08:00:27:96:fb:1a), Dst: FreeboxS_a4:20:64 (00:24:d4:a4:20:64)
Internet Protocol Version 6
0110 .... = Version: 6
.... 0000 0000 .... = Traffic class: 0x00000000
.... 0000 0000 0000 0000 0000 = Flowlabel: 0x00000000
Payload length: 390
Next header: TCP (0x06)
Hop limit: 64
Source: 2a01:e34:ee13:c200:a00:27ff:fe96:fb1a (2a01:e34:ee13:c200:a00:27ff:fe96:fb1a)
Destination: 2001:858:2:2:214:22ff:fe0d:7717 (2001:858:2:2:214:22ff:fe0d:7717)
Transmission Control Protocol, Src Port: 58954 (58954), Dst Port: http (80), Seq: 1, Ack: 1, Len: 358
Source port: 58954 (58954)
Destination port: http (80)
[Stream index: 4]
0030 22 ff fe 0d 77 17 e6 4a 00 50 a2 24 08 9a 6e 4b
0040 13 04 80 18 00 59 d8 1c 00 00 01 01 08 0a 00 00
0050 2c e2 20 0b f9 ac 47 45 54 20 2f 20 48 54 54 50
0060 2f 31 2e 31 0d 0a 48 6f 73 74 3a 20 77 77 77 2e
Transmission Control Protocol (tcp)....
Packets: 349 Displayed: 349
Profile: Default

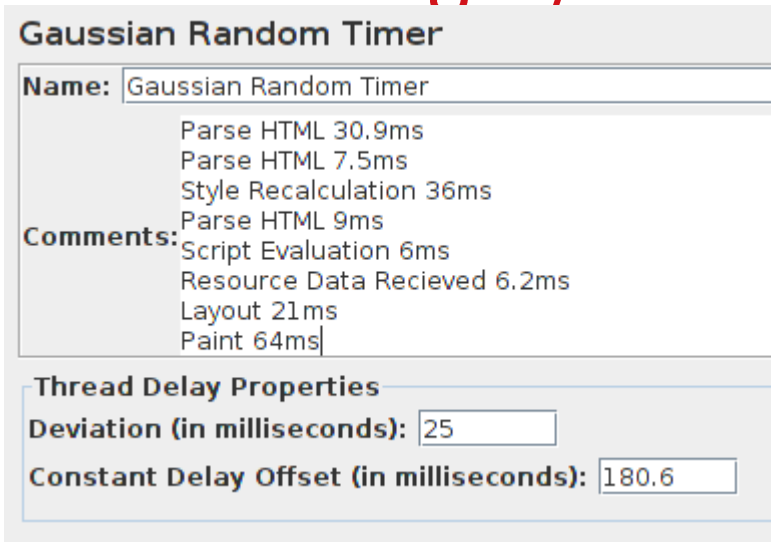

Console HTML CSS Script DOM Net
Clear Persist Profile All Errors Warnings Info Debug Info
Profile (688.61ms, 9669 calls)
Function Calls Percent Own Time Time Avg Min Max File
k 1 4.25% 29.285ms 77.023ms 77.023ms 77.023ms 77.023ms
then 1 3.98% 27.434ms 27.562ms 27.562ms 27.562ms 27.562ms
clean 29 3.61% 24.839ms 32.435ms 1.118ms 0.325ms 4.112ms
end 116 3.09% 21.272ms 35.786ms 0.309ms 0.036ms 3.405ms
filter 72 2.86% 19.677ms 39.851ms 0.553ms 0.228ms 7.759ms


Speed Tracer
Sluggishness (events)
Started Duration Type Breakdown by Time
Event Trace
Details for Timer Fire (17)


F12
UI Responsiveness
Diagnostic session: 7.955 seconds
App lifecycle event
User mark
CPU utilization (%)
Loading Scripting GC Styling Rendering Image decoding Other
Visual throughput (FPS)
Frames per second
Timeline details
Sort by: Start time
Event name
Style calculation 0.088 ms (0.0019 ms)
Layout 0.5 ms (0.22 ms)
Paint [3596] 0.78 ms (0.36 ms)
Style calculation 0.09 ms (0.0017 ms)
Layout 0.53 ms (0.23 ms)
Paint [3596] 0.9 ms (0.48 ms)
Style calculation
Duration (inclusive): 0.088 ms
Duration (exclusive): 0.0019 ms
Start time: 167.24 ms
Thread: UI thread

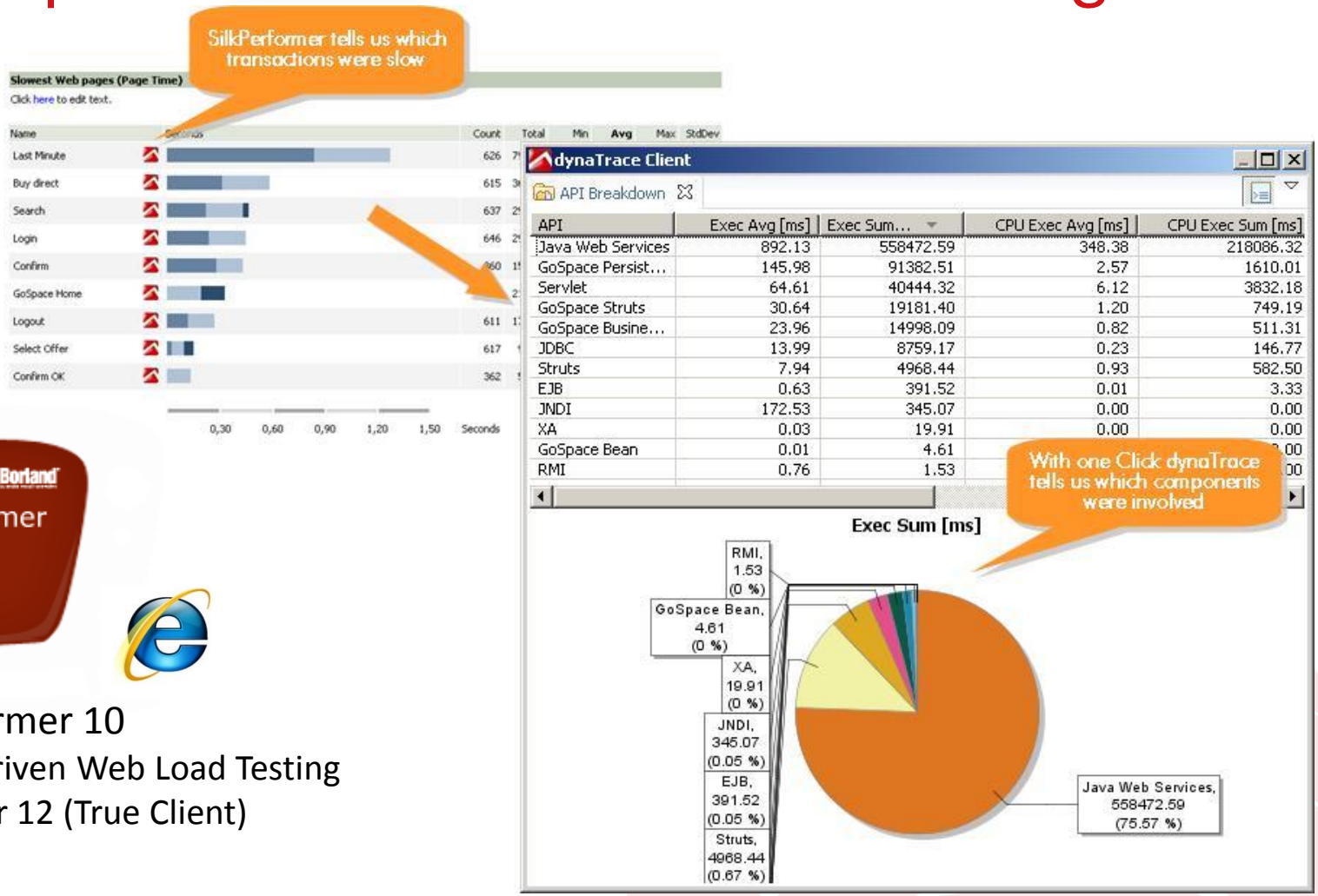
Compensatie browser verwerking 1/2





Probleem: Tools doen geen verwerking zoals een browser
Oplossing: Voeg in de tool een wachttijd toe om te compenseren voor de interne verwerking van de browser

Compensatie browser verwerking 2/2



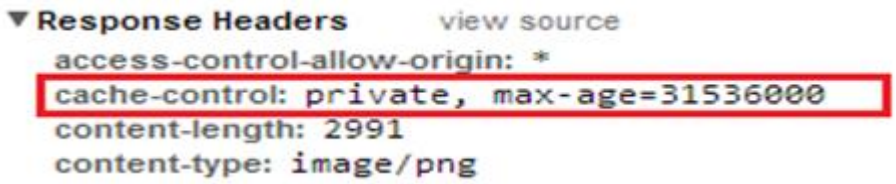
Borland Silk Performer

Silk Performer 10

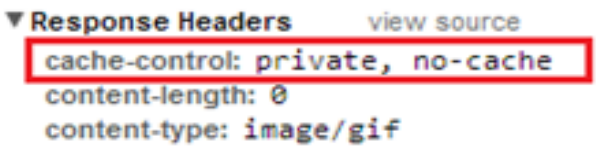
Browser-Driven Web Load Testing

Loadrunner 12 (True Client)

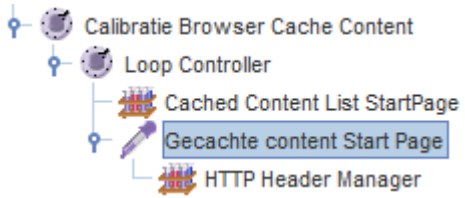
Caching
(Post en Get Requests)



Met Browser caching



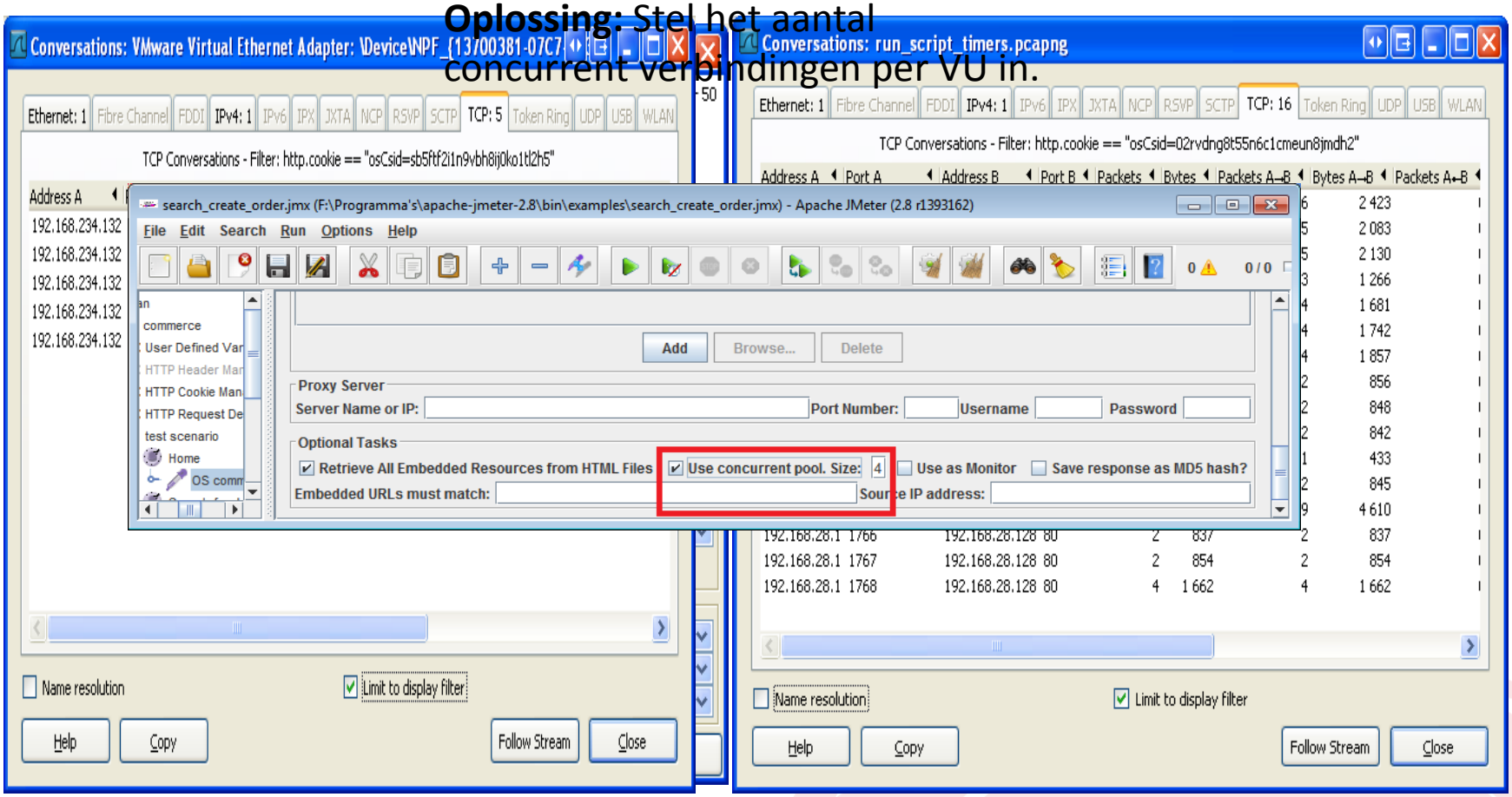
Zonder browser caching



Compensatie voor cache content met een “Only once Loop Controller”.

Netwerk gedrag

Oplossing: Stel het aantal concurrent verbindingen per VU in.



Referentie

Tool

Resultaten na kalibratie

Voor kalibratie

Referentie	Tool A	Tool B	Tool C	Tool D
13,073	15,102	13,723	16,633	13,391

Na kalibratie

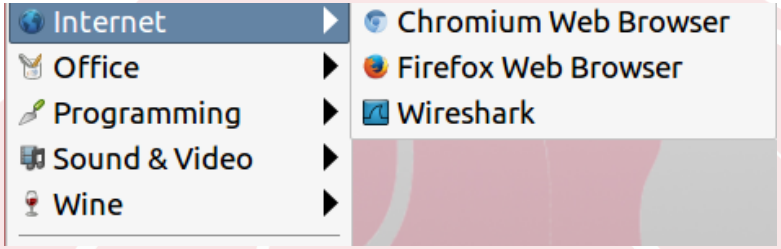
13,073	13,658	13,252	14,276	13,221

USB Sticks (Vmware)

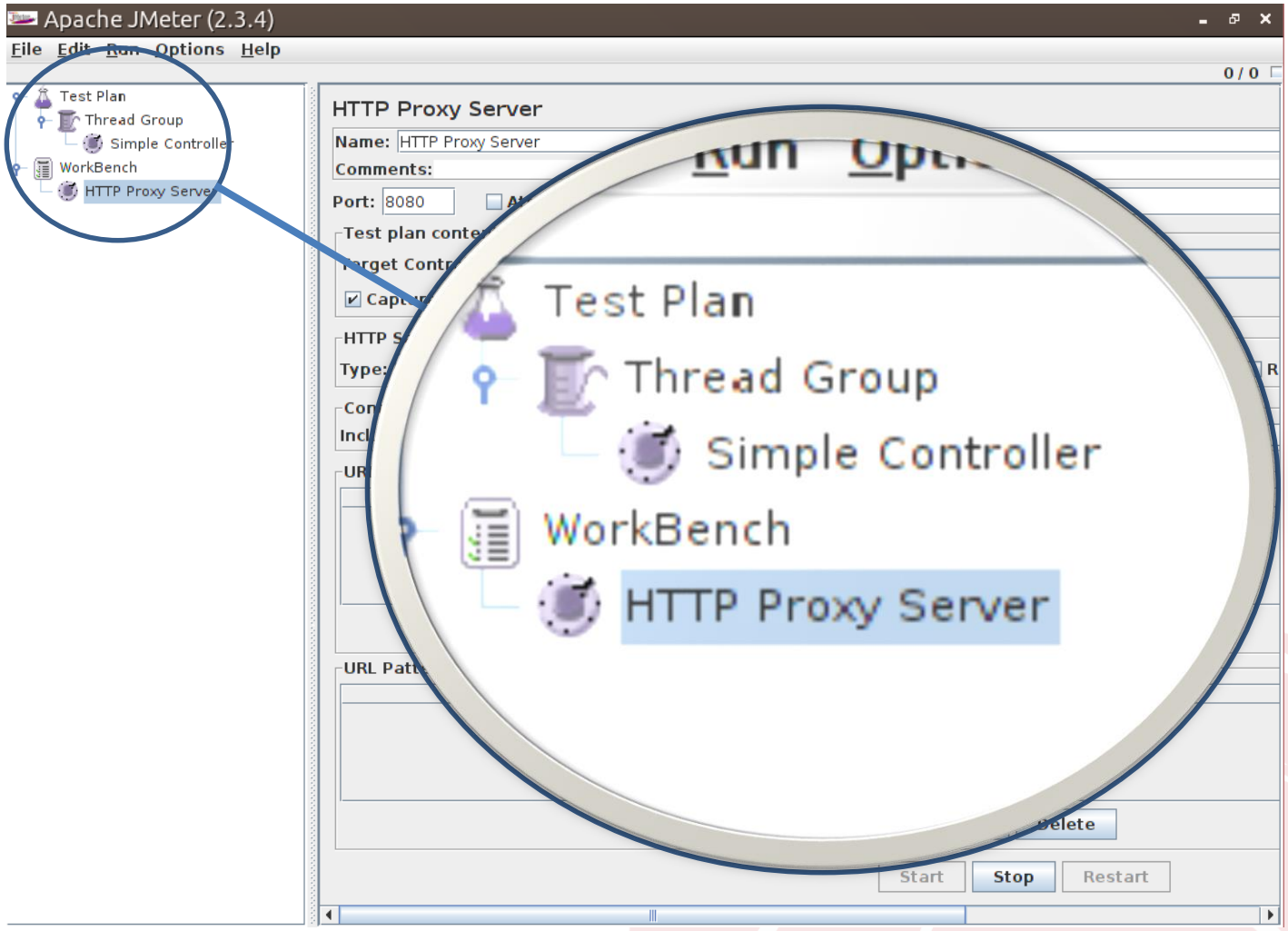
- Pak de image uit naar je pc, dit kan even duren.
- Start de image op door de Praegus Summerschool 2014.vmx te openen
- Wacht op verdere instructies ☺

Image introductie

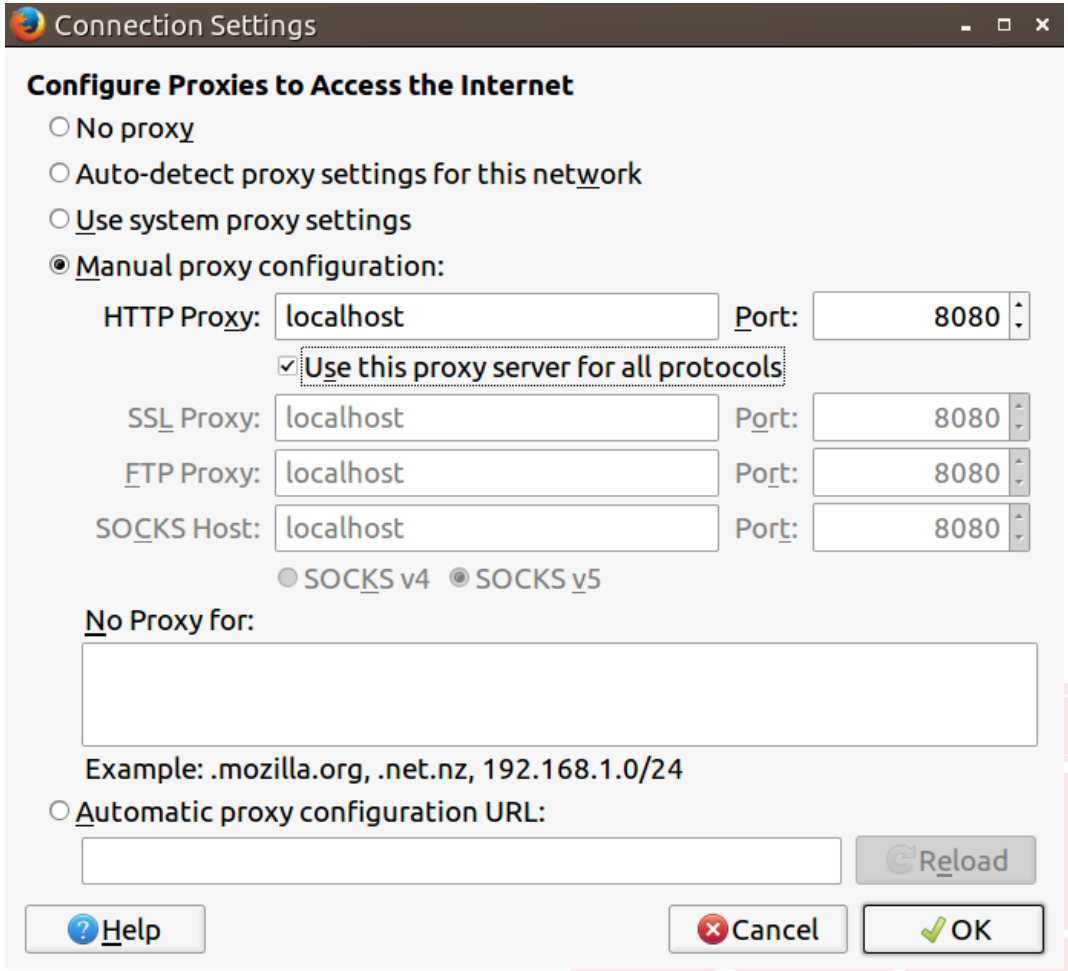
- Wat staat er op de image
  - » Webshop
  - » Jmeter
  - » Chromium (incl. speedtracer)
  - » Firefox (incl. firebug)
  - » Wireshark



Jmeter introductie

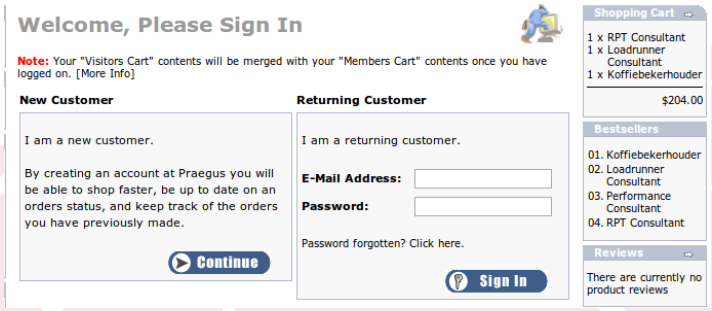


Opnemen
HTTP Proxy Server



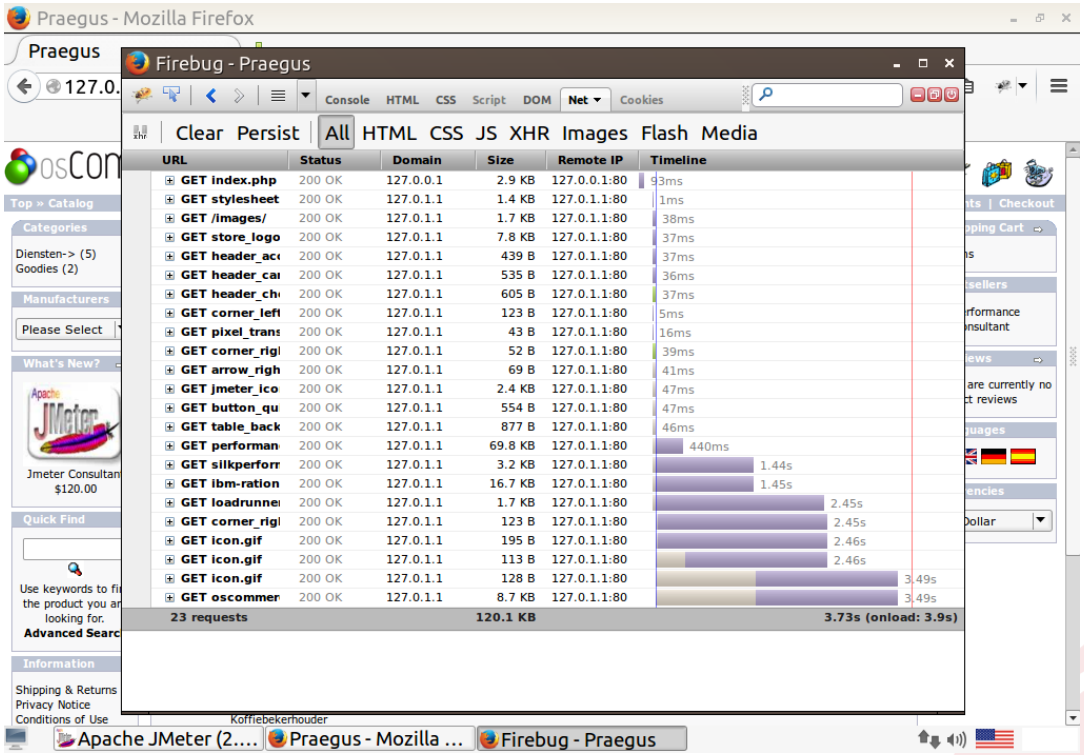
Scripts opnemen

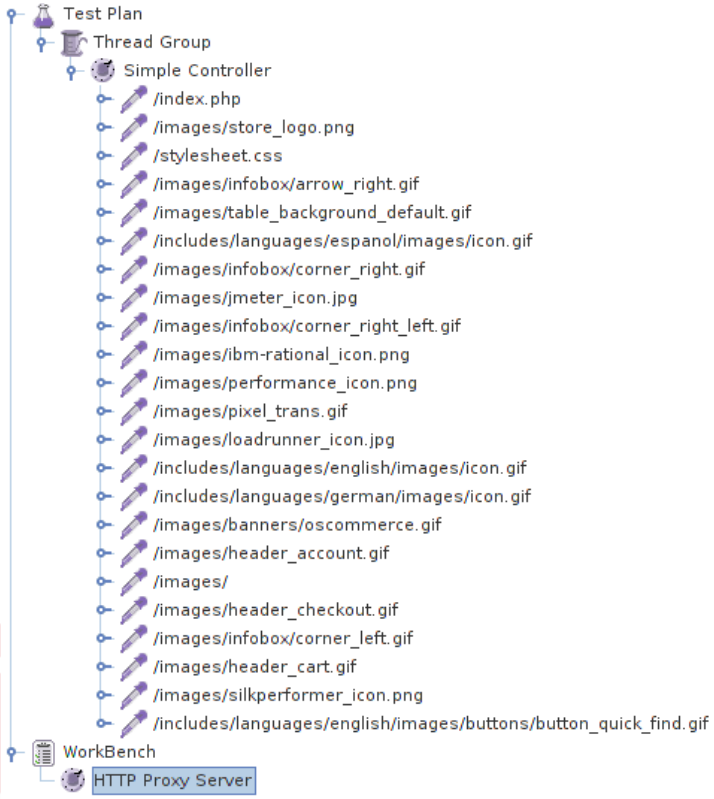
- Zoek naar IBM
- In mandje
- Zoek naar Loadrunner
- In mandje
- Zoek naar Koffiebekerhouder
- In mandje
- Ga naar Goodies
- Winkelwagenmuntje in mandje
- Check out
- Sign In (test@praegus.nl / praegus)
- Continue
- Payment methode



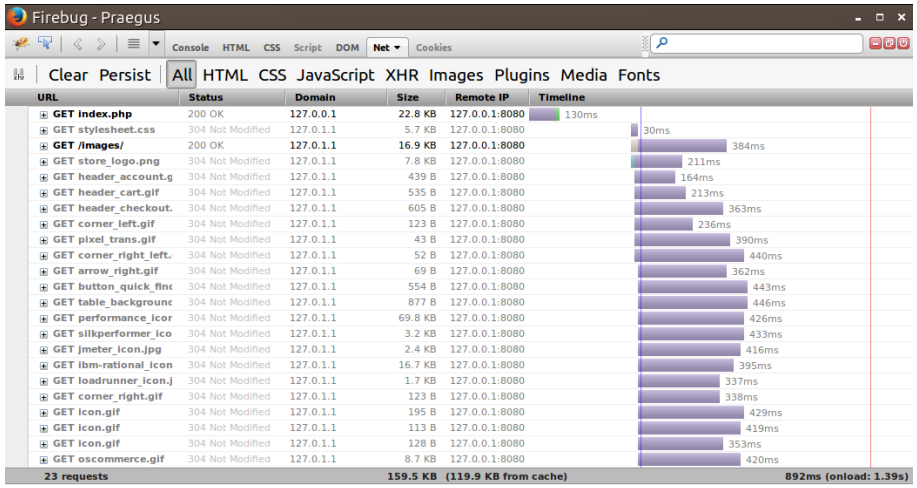
Kalibratie – Firebug 1/2

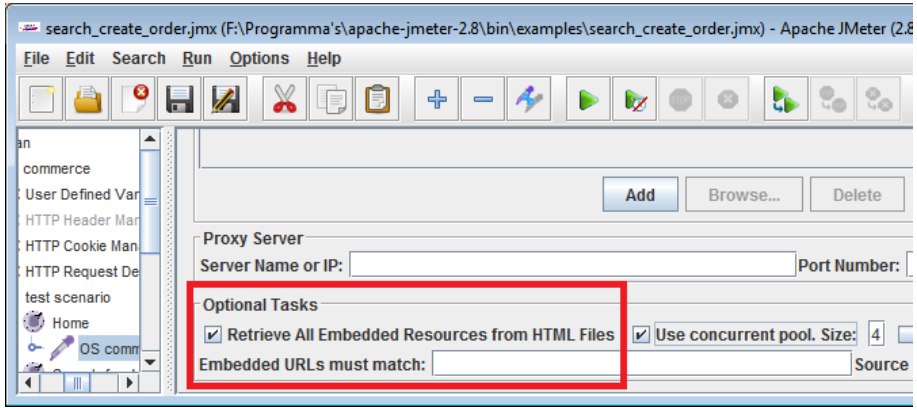
- Vergelijken Jmeter & Handmatig

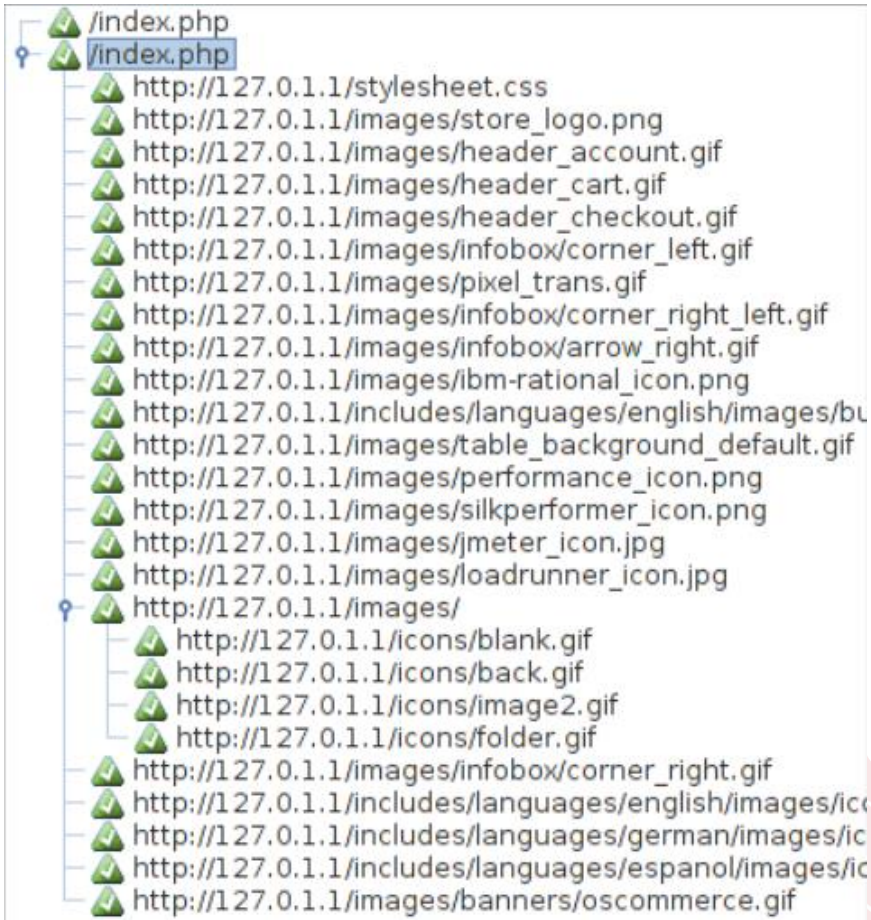




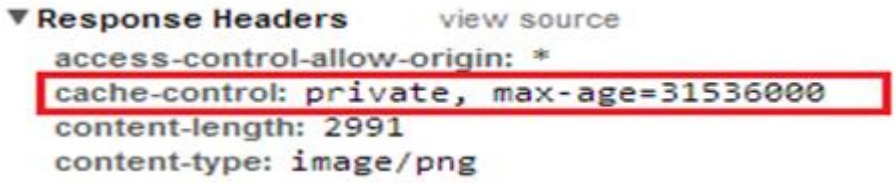
Kalibratie – Firebug 2/2



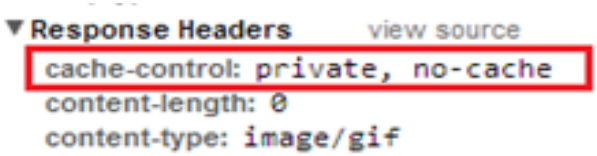




(*Herhaling*)
Caching
(Post en Get Requests)



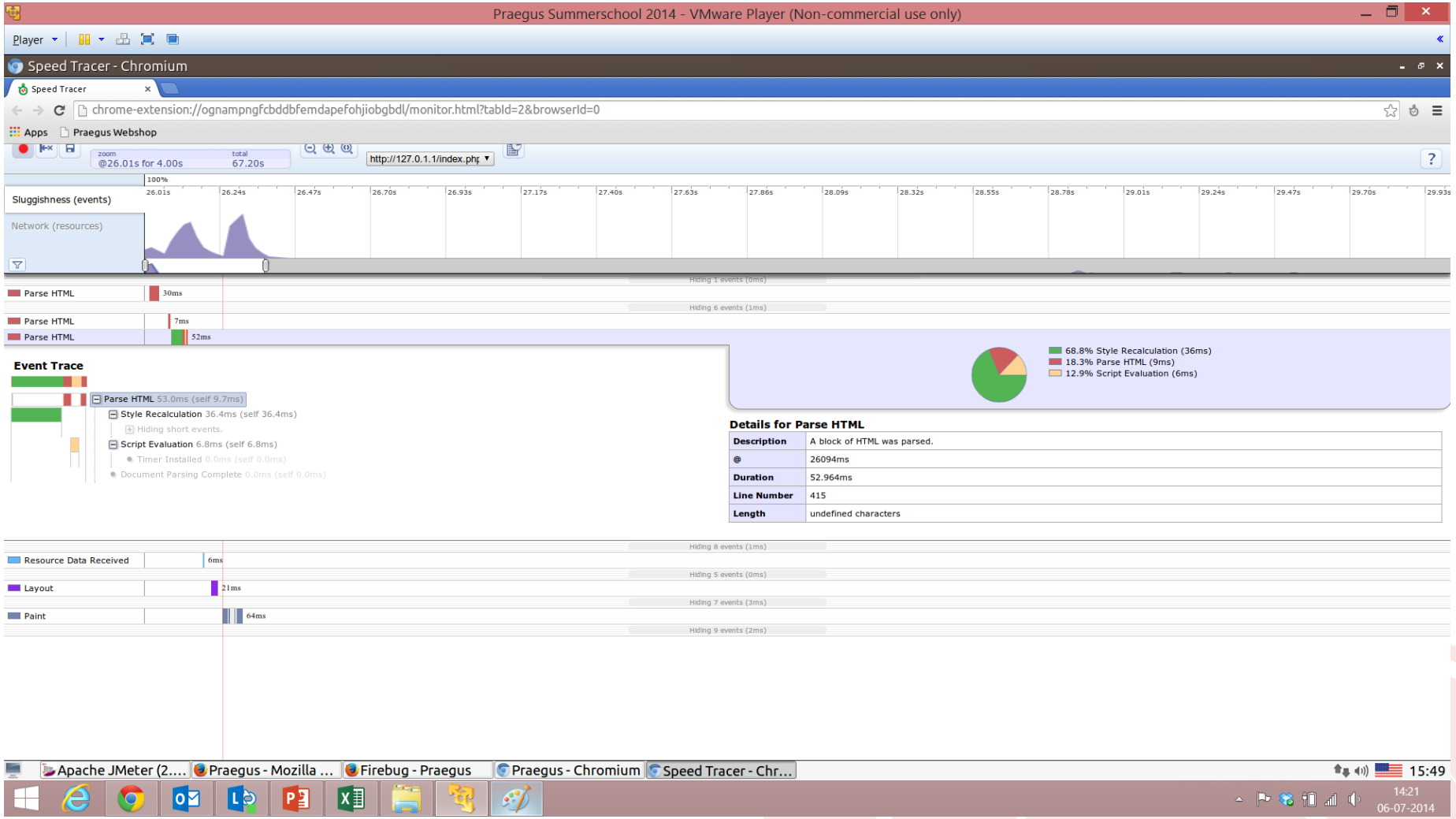
Met Browser caching



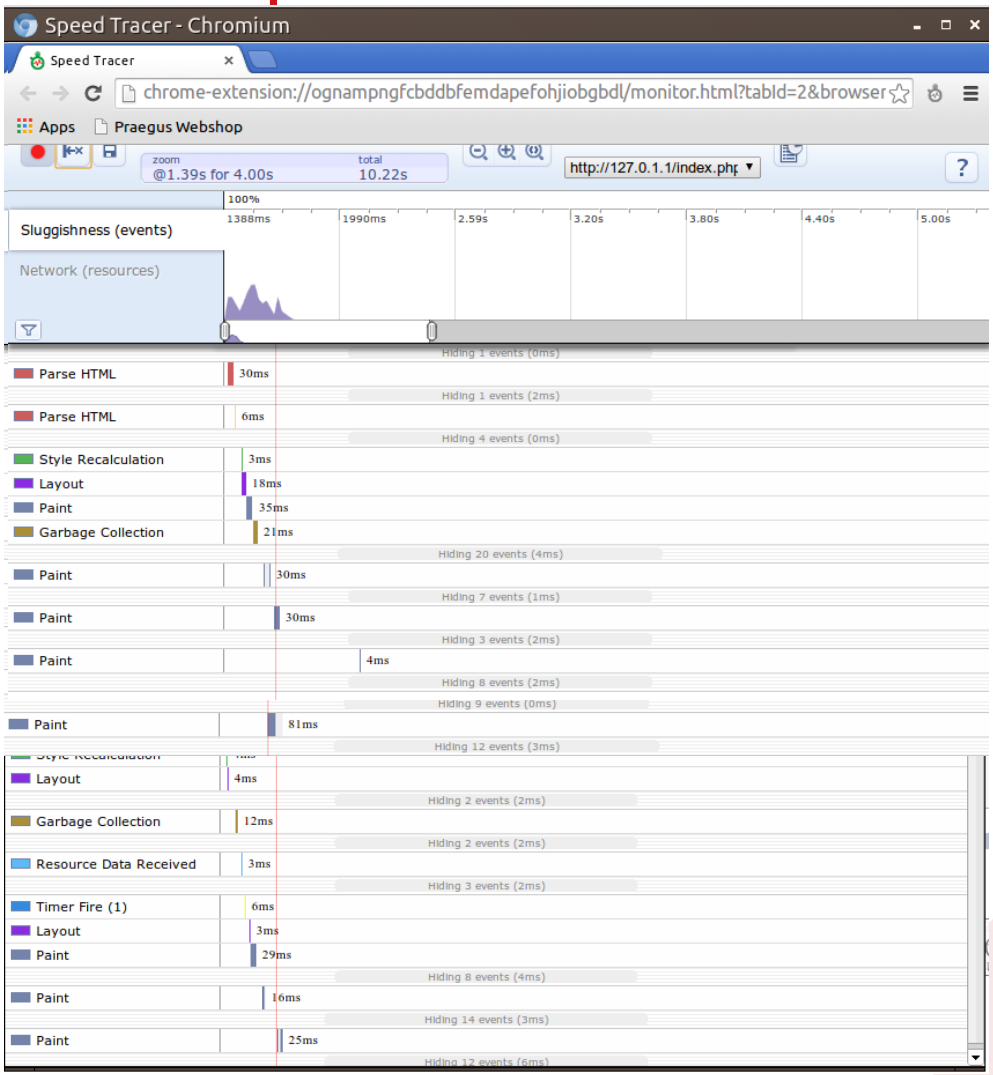
Zonder browser caching

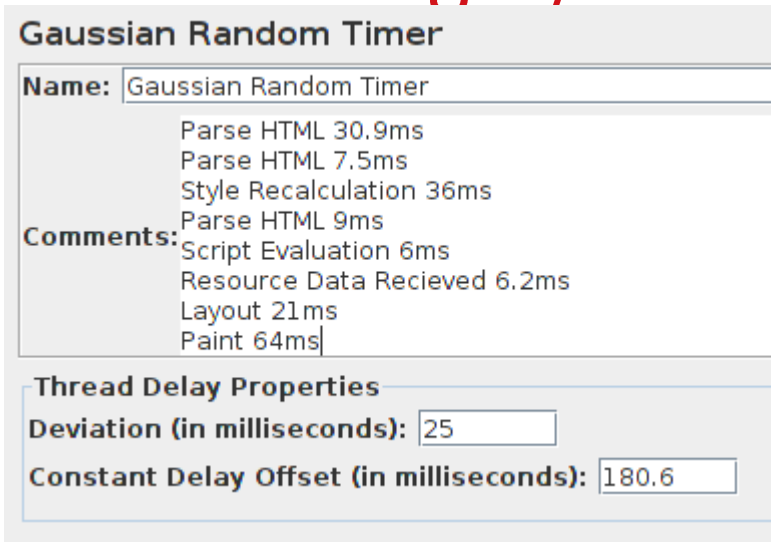
Compensatie voor cache content met een “Only once Loop Controller”.

Kalibratie - Speedtracer



Compensatie browser verwerking 1/2





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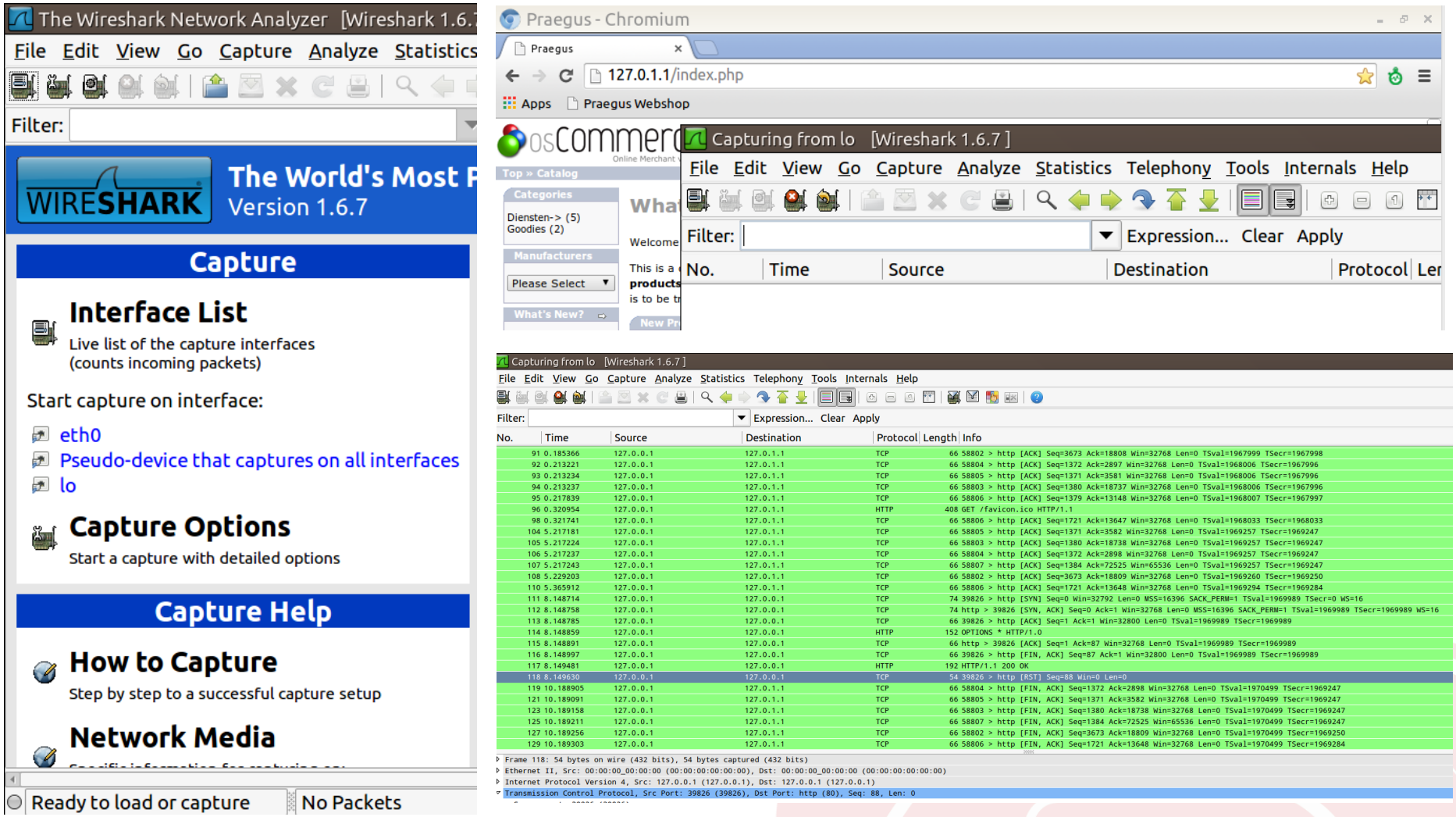
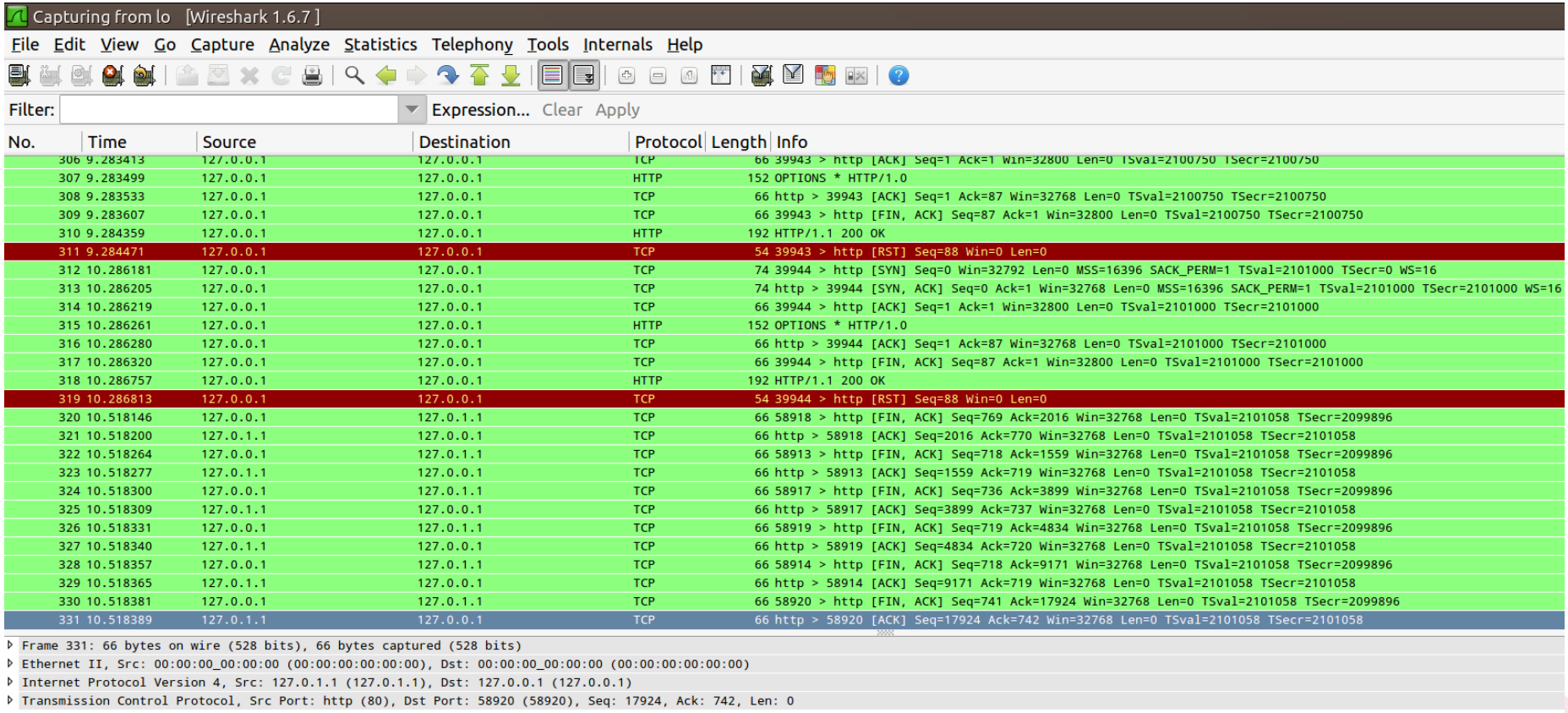
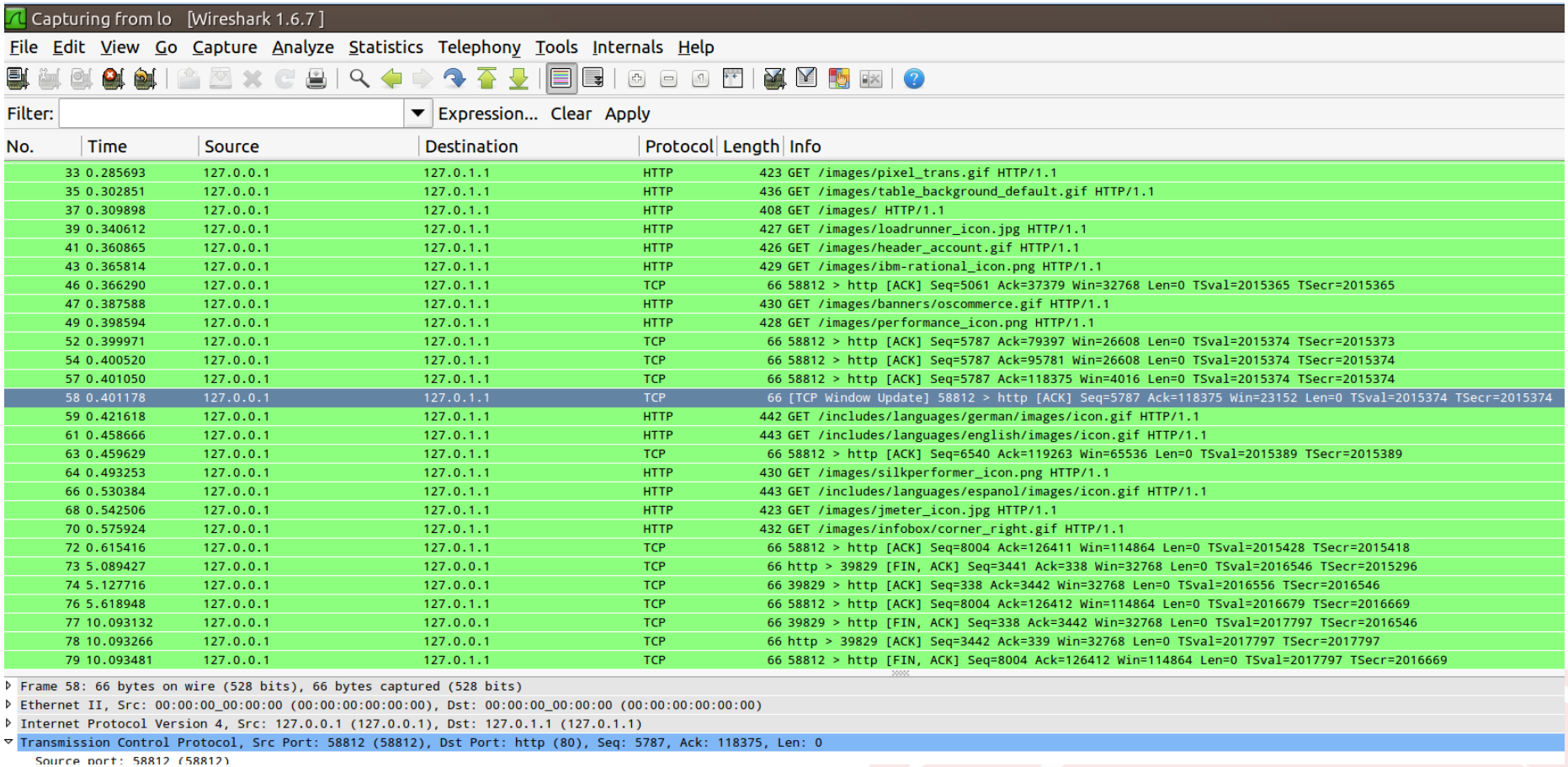
Bonus ronde 1: Wireshark – Handmatig (Chrome)



Bonus ronde 1: Wireshark – Handmatig (Firefox)



Bonus ronde 1: Wireshark - JMeter



Bonus ronde 1: Wireshark - Analyse

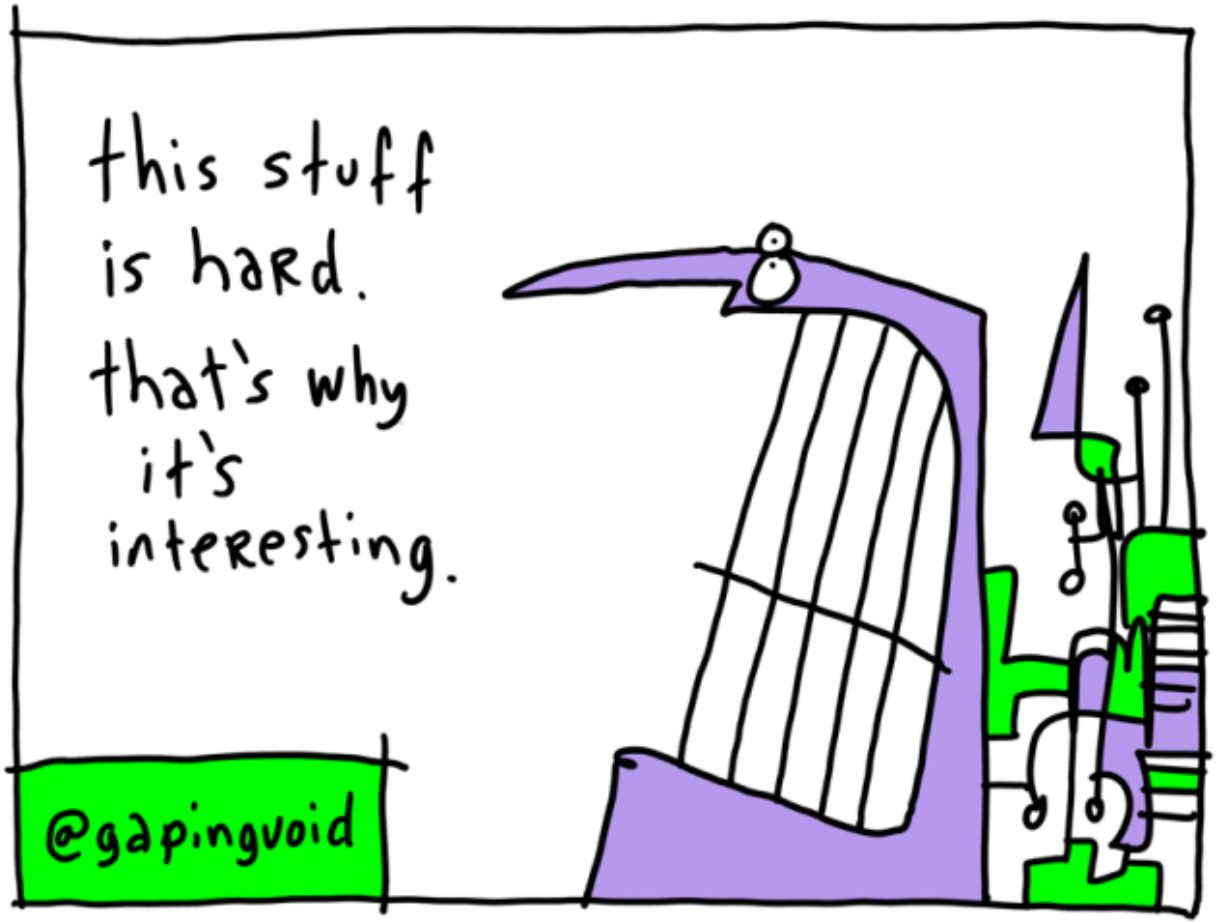
- **Filter:** http.request.method == "GET"
  - » Jmeter: 23 Requests
    - » Analyse: Exact zoals gespecificeerd
  - » Chrome: 24 Requests
    - » Analyse: Inclusief favicon.ico
  - » Firefox: 44 Requests
    - » Analyse: Dubbele requests (Firefox issue)

Info
GET http://127.0.0.1/index.php HTTP/1.1
GET /index.php HTTP/1.1
GET http://127.0.1.1/stylesheet.css HTTP/1.1
GET /stylesheet.css HTTP/1.1

Bonus ronde 1: Wireshark - Analyse

- **Filter:** http.response.code == 200
  - Jmeter: 23 Responses
    - Analyse: Exact zoals verzonden
  - Chrome: 24 Responses
    - Analyse: Exact zoals verzonden
  - Firefox: 44 Responses
    - Analyse: Exact zoals verzonden

Bonus ronde 2: Plugins & Rapporteren




why
how
which
when
what
where

Praegus

Intelligent Compassionate Testing

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