

**ANALISIS PERBANDINGAN PERFORMA PERANGKAT LUNAK
ANTIVIRUS FREEWARE**

Skripsi

Untuk memenuhi sebagian persyaratan

mencapai derajat Sarjana S-1



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David Steindl Rast



DAFTAR ISI

HALAMAN JUDUL.....	i
HALAMAN PENGESAHAN.....	ii
SURAT PERSETUJUAN SKRIPSI.....	iii
PERNYATAAN KEASLIAN SKRIPSI.....	iv
KATA PENGANTAR.....	v
HALAMAN PERSEMBAHAN.....	vii
HALAMAN MOTTO.....	viii
DAFTAR ISI.....	ix
DAFTAR TABEL.....	xii
DAFTAR GAMBAR.....	xiii
DAFTAR LAMPIRAN.....	xiv
INTISARI.....	xvi
ABSTRACT.....	xvii
BAB I PENDAHULUAN.....	1
1.1. Latar Belakang.....	1
1.2. Rumusan Masalah	4
1.3. Batasan Masalah.....	4
1.4. Tujuan Penelitian.....	5
1.5. Manfaat Penelitian.....	5
1.6. Keaslian Penelitian.....	5
1.7. Sistematika Penulisan.....	5

BAB II TINJAUAN PUSTAKA DAN LANDASAN TEORI.....	7
2.1. Tinjauan Pustaka	7
2.2. Landasan Teori.....	8
2.2.1. Analisis.....	8
2.2.2. Virus.....	9
2.2.3. Antivirus.....	13
2.2.4. Metode Pengumpulan Data.....	14
2.2.5. Metode Observasi.....	15
2.2.6. Pengukuran Performa.....	17
BAB III METODE PENELITIAN.....	19
3.1. Desain Penelitian.....	19
3.2. Pengumpulan Data.....	19
3.3. Persiapan Pengujian.....	20
3.4. Langkah-langkah Pengujian.....	22
3.5. Analisis Data.....	26
BAB IV HASIL DAN PEMBAHASAN.....	27
4.1. Hasil Pengujian.....	27
4.1.1. Waktu Boot.....	27
4.1.2. Waktu Restart.....	28
4.1.3. Memory saat Idle.....	29
4.1.4. Memory saat Full Scan.....	31
4.1.5. Waktu Full Scan.....	32
4.1.6. Waktu Copy Paste.....	33
4.1.7. Pemberian skala nilai.....	34
4.2. Uji T-Test.....	36

BAB V KESIMPULAN DAN SARAN.....	40
5.1. Kesimpulan.....	40
5.2. Saran.....	41
DAFTAR PUSTAKA	
LAMPIRAN	



DAFTAR TABEL

Tabel 4.1. Rata-rata performa waktu <i>boot</i>	27
Tabel 4.2. Rata-rata performa waktu <i>restart</i>	28
Tabel 4.3. Rata-rata performa memori saat <i>idle</i>	29
Tabel 4.4. Rata-rata performa memori <i>full scan</i>	31
Tabel 4.5. Rata-rata performa waktu <i>full scan</i>	32
Tabel 4.6. Rata-rata performa waktu <i>copy paste</i>	33
Tabel 4.7. Pemberian skala nilai.....	35

DAFTAR GAMBAR

Gambar 4.1. Grafik performa waktu <i>boot</i>	28
Gambar 4.2. Grafik performa waktu <i>restart</i>	29
Gambar 4.3. Grafik performa memori saat <i>idle</i>	30
Gambar 4.4. Grafik performa memori selama <i>full scan</i>	32
Gambar 4.5. Grafik performa waktu <i>full scan</i>	33
Gambar 4.6. Grafik performa waktu <i>copy paste</i>	34
Gambar 4.7. Uji T-Test <i>boot</i>	36
Gambar 4.8. Uji T-Test <i>restart</i>	37
Gambar 4.9. Uji T-Test memori saat <i>idle</i>	37
Gambar 4.10. Uji T-Test memori selama <i>full scan</i>	38
Gambar 4.11. Uji T-Test <i>full scan</i>	38
Gambar 4.12. Uji T-Test <i>copy paste</i>	39

DAFTAR LAMPIRAN

Lampiran 1 : <i>File Copy Paste</i>	45
Lampiran 2 : Tabel hasil pengujian Avast keenam parameter.....	46
Lampiran 3 : Tabel hasil pengujian AVG keenam parameter.....	48
Lampiran 4 : Tabel hasil pengujian Avira keenam parameter.....	50
Lampiran 5 : Tabel hasil pengujian Ad-Aware keenam parameter.....	52
Lampiran 6 : Rebooter log Avast.....	54
Lampiran 7 :Rebooter log AVG.....	58
Lampiran 8 : Rebooter log Avira.....	62
Lampiran 9 : Rebooter log Ad-Aware.....	66
Lampiran 10 : Sampel tes <i>boot</i> Avast ke 1, 10, 20, 30, 40.....	70
Lampiran 11 : Sampel tes <i>boot</i> AVG ke 1, 10, 20, 30, 40.....	70
Lampiran 12 : Sampel tes <i>boot</i> Avira ke 1, 10, 20, 30, 40.....	71
Lampiran 13 : Sampel tes <i>boot</i> Ad-Aware ke 1, 10, 20, 30, 40.....	72
Lampiran 14 : Sampel tes memori <i>idle</i> Avast ke 1, 10, 20, 30, 40.....	72
Lampiran 15 : Sampel tes memori <i>idle</i> AVG ke 1, 10, 20, 30, 40.....	73
Lampiran 16 : Sampel tes memori <i>idle</i> Avira ke 1, 10, 20, 30, 40.....	74
Lampiran 17 : Sampel tes memori <i>idle</i> Ad-Aware ke 1, 10, 20, 30, 40.....	74
Lampiran 18 : Sampel tes memori <i>full scan</i> Avast ke 1, 10, 20, 30, 40.....	74
Lampiran 19 : Sampel tes memori <i>full scan</i> AVG ke 1, 10, 20, 30, 40.....	75
Lampiran 20 : Sampel tes memori <i>full scan</i> Avira ke 1, 10, 20, 30, 40.....	76
Lampiran 21 : Sampel tes memori <i>full scan</i> Ad-Aware ke 1,10,20, 30,40...	76
Lampiran 22 : Sampel tes <i>full scan</i> Avast ke 1, 10, 20, 30, 40.....	77
Lampiran 23 : Sampel tes <i>full scan</i> AVG ke 1, 10, 20, 30, 40.....	78

Lampiran 24 : Sampel tes <i>full scan</i> Avira ke 1, 10, 20, 30, 40.....	79
Lampiran 25 : Sampel tes <i>full scan</i> Ad-Aware ke 1, 10, 20, 30, 40.....	79
Lampiran 26 : Sampel tes <i>copy paste</i> Avast ke 1, 10, 20, 30, 40.....	80
Lampiran 27 : Sampel tes <i>copy paste</i> AVG ke 1, 10, 20, 30, 40.....	81
Lampiran 28 : Sampel tes <i>copy paste</i> Avira ke 1, 10, 20, 30, 40.....	83
Lampiran 29 : Sampel tes <i>copy paste</i> Ad-Aware ke 1, 10, 20, 30, 40.....	84
Lampiran 30 : Selisih performa antara memori <i>full scan</i> dengan memori <i>idle</i> Avast.....	85
Lampiran 31 : Selisih performa antara memori <i>full scan</i> dengan memori <i>idle</i> AVG.....	85
Lampiran 32 : Selisih performa antara memori <i>full scan</i> dengan memori <i>idle</i> Avira.....	85
Lampiran 33 : Selisih performa antara memori <i>full scan</i> dengan memori <i>idle</i> Ad-Aware.....	85

ANALISIS PERBANDINGAN PERFORMA PERANGKAT LUNAK ANTIVIRUS FREEWARE

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INTISARI

Penelitian ini bertujuan untuk mengobservasi performa pada perangkat lunak antivirus freeware. Antivirus freeware yang diteliti adalah Avast Free Antivirus, AVG Free Antivirus, Avira Free Antivirus, dan Ad-Aware Free. Antivirus freeware tersebut menggunakan bantuan tools seperti Xperf, Xbootmgr, Rebooter, RAMMap, dan Teracopy. Penelitian perbandingan antivirus yang dipilih berdasarkan pada enam parameter yaitu *boot*, *restart*, memori saat *idle*, memori selama *full scan*, *full scan*, dan *copy paste file*. Uji statistik menggunakan uji Anova untuk menunjukkan ada tidaknya perbedaan dari keempat antivirus. Hasil dari penelitian ini adalah masing-masing antivirus memiliki kelebihan dan kekurangan dalam masing-masing parameter. Akan tetapi jika di kalkulasikan secara keseluruhan dari ketujuh parameter tersebut, Avast menjadi antivirus yang paling baik performanya, disusul Avira, AVG, dan yang terakhir Ad-Aware.

Kata kunci : *Analisis, Antivirus, Freeware, Performa, Virus*

COMPARATIVE ANALYSIS OF PERFORMANCE FREEWARE ANTIVIRUS SOFTWARE

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ABSTRACT

This research was aimed to observe the performance in the freeware antivirus software. The Freeware Antivirus that was studied were Avast Free Antivirus, AVG Free Antivirus, Avira Free Antivirus, and Ad -Aware Free Antivirus. Those Freeware Antivirus needed the other tools such as Xperf, Xbootmgr, Rebooter, RAMMap, and Teracopy. The comparative analysis of antivirus was selected based on six parameters: boot, restart, the memory when idle, the memory during a full scan, full scan, and copy and paste the file. The Statistical experiment used ANOVA to indicate whether there were the differences of four antiviruses or not. The result from this research was each antivirus had advantages and disadvantages in each parameter. However if they were calculated overall from the seven parameters, Avast was the best antivirus performance, then Avira , after that AVG , and the last was Ad –Aware.

Keywords : *Analysis , Antivirus , Freeware , Performance, Virus*

BAB I

PENDAHULUAN

1.1. Latar Belakang

Komputer digunakan setiap orang untuk bekerja, hiburan, bisnis, dan belajar. Akan tetapi terkadang disaat menjalankan komputer muncul permasalahan-permasalahan yang mengganggu diantaranya aplikasi menutup sendiri, komputer merestart sendiri, komputer menjadi lambat, muncul *shortcut* atau aplikasi yang tidak diinginkan. Salah satu penyebab munculnya permasalahan tersebut adalah karena komputer telah disusupi virus.

Antivirus adalah perangkat lunak yang berfungsi untuk mendeteksi, menghapus, dan mengkarantina virus-virus dari sistem komputer. Antivirus sekarang tidak hanya dapat mendeteksi virus saja akan tetapi juga dapat mendeteksi malware lain seperti worm, trojan, spyware, dan lain sebagainya. Umumnya, perangkat lunak ini berjalan di latar belakang (*background*) dan melakukan pemindaian terhadap semua berkas yang diakses (dibuka, dimodifikasi, atau ketika disimpan).

Freeware adalah suatu software atau aplikasi yang dapat digunakan oleh semua orang tanpa membayar. Singkat kata, freeware adalah aplikasi gratis. Namun meskipun gratis, pada dasarnya pembuatnya memiliki kebijakan tertentu yang umumnya disertakan ketika anda mengunduh freeware tersebut atau tertera di situs tempat anda mengunduh freeware tersebut. Tentu saja kebebasan ini bukan berarti kita tidak membayar dan bebas lisensi, namun anda harus mengikuti

apa yang dimau oleh sang pembuat software, diantaranya tidak menggunakannya untuk kepentingan komersial dan tidak boleh dimodifikasi dalam bentuk apapun.

Perangkat lunak antivirus merupakan suatu keharusan untuk keamanan komputer. Akan tetapi dengan adanya antivirus seharusnya tidak mengakibatkan performa komputer menjadi lambat. Performa komputer perlu menjadi perhatian, karena performa komputer yang lambat akan mengganggu aktivitas dalam menjalankan komputer terutama jika aktivitas tersebut berhubungan dengan pekerjaan, belajar atau bisnis. Begitu pula sebaliknya jika performanya baik, maka tentunya akan memperlancar aktivitas maupun produktivitas setiap orang dalam mengerjakan hal yang berhubungan dengan komputer. Terkadang ada beberapa orang asal-asalan dalam memilih antivirus. Tidak ditinjau kembali apakah antivirus tersebut cocok dengan kebutuhannya atau spesifikasi komputernya.

Beberapa vendor antivirus menawarkan bermacam-macam produknya. Ada yang komersil, trial, maupun freeware. Biasanya yang membedakan antara komersil dengan freeware adalah versi komersil perlindungan proteksinya lebih lengkap mulai dari perlindungan,web, mobile, child mode, dan lain-lain. Pengguna komputer sendiri lebih memilih versi freeware dikarenakan walaupun gratis, kemampuan antivirus versi freeware dirasa sudah cukup aman dari virus-virus standar, walaupun belum sepenuhnya aman. Antivirus freeware sendiri menurut penulis sekarang standarnya sudah cukup aman dengan cara pengguna sering mengupdate database virus-virusnya.

Cara mengukur performa sebuah antivirus tidak ada standar yang pasti. Bhaskar Patil, Milind Joshi, dan Hanmant Renush (2010) menggunakan

“Metodologi Pengukuran Performance” melakukan penelitian mengenai studi Perbandingan Pengukuran Performance Alat Keamanan Terpilih (A Comparative Study for Performance Measurement of Selected Security Tools) menyoroti kinerja perangkat lunak antivirus, dengan menggunakan beberapa parameter seperti waktu instalasi, ukuran instalasi, memori yang digunakan, waktu boot, peluncuran antarmuka pengguna, dan waktu full system scan. Menggunakan metodologi performa yang sama Lai dan Wren (2012) dari Passmark menggunakan parameter yang berbeda mengukur performa perangkat lunak dengan ukuran instalasi, waktu boot, waktu restart, copy/cut, hapus file, memori yang digunakan saat idle, waktu full system scan, memori yang digunakan saat full system scan, waktu on acces scan, memori yang digunakan selama on acces scan.

Berdasarkan situs Cnet yang diakses pada tanggal 19 Agustus 2015 pukul 19.49 WIB. Berdasarkan total banyaknya antivirus yang didownload dan kategori antivirus freeware, empat besar antivirus peringkat tertinggi adalah AVG Antivirus Free 2015 dengan 553 juta download, Ad-aware Free Antivirus + dengan 390 juta download, Avast Free Antivirus 2015 dengan 368 juta download, Avira Free Antivirus dengan 146 juta download. Berdasarkan hal tersebut maka penulis memilih keempat antivirus tersebut sebagai antivirus yang akan diuji.

1.2. Rumusan Masalah

Berdasarkan latar belakang diatas, maka dapat dirumuskan masalah :

1. Bagaimanakah cara mengukur performa dari sebuah perangkat lunak antivirus?
2. Adakah perbedaan performa pada antivirus freeware AVG, Ad-aware, Avast dan Avira?
3. Apakah performa antivirus mempengaruhi jumlah download untuk pengguna?

1.3. Batasan Masalah

Berdasarkan permasalahan diatas, maka batasan masalah penelitian ini adalah sebagai berikut :

1. Antivirus yang akan diuji performanya adalah AVG Antivirus Free 2015, Ad-aware Free Antivirus +, Avast Free Antiviru 2015, dan Avira Free Antivirus.
2. Performa antivirus yang diuji mencakup waktu *boot*, waktu *restart*, kinerja *copy/paste*, memori komputer saat *idle*, memori saat *full scan*, dan *full system scan*.
3. Tidak membahas mengenai keamanan dan algoritma yang ada dalam empat antivirus tersebut.
4. Tidak membahas mengenai kehandalan antivirus dalam mendeteksi berbagai malware.

1.4. Tujuan Penelitian

Tujuan penelitian ini adalah untuk menguji performa dari empat antivirus freeware yaitu AVG Free, Ad-aware Free, Avast Free, dan Avira Free.

1.5. Manfaat Penelitian

Manfaat penelitian ini adalah untuk mengetahui performa dari empat antivirus freeware yaitu AVG Free, Ad-aware Free, Avast Free, dan Avira Free sehingga dapat dibandingkan mana yang paling baik performanya.

1.6. Keaslian Penelitian

Penelitian yang berkaitan dengan analisis perbandingan performa perangkat lunak antivirus freeware, sejauh pengetahuan penulis, penelitian tersebut belum pernah dilakukan di lingkungan UIN Sunan Kalijaga.

1.7. Sistematika Penulisan

Dalam penelitian ini, perlunya penyusunan sistematika penelitian untuk mengetahui isi penjelasan dari masing-masing bab :

BAB I : PENDAHULUAN

Berisi tentang latar belakang masalah, perumusan masalah, tujuan, manfaat penelitian, keaslian penelitian serta sistematika penulisan.

BAB II : TINJAUAN PUSTAKA DAN LANDASAN TEORI

Berisi tentang tinjauan pustaka dan landasan teori.

BAB III : METODE PENELITIAN

Berisi tentang definisi variabel penelitian dan definisi operasional, metode pengumpulan data, serta metode analisis data.

BAB IV : HASIL DAN PEMBAHASAN

Berisi tentang hasil penelitian secara sistematis kemudian dianalisis dengan menggunakan metode penelitian yang telah ditetapkan untuk selanjutnya diadakan pembahasan.

BAB V : PENUTUP

Berisi tentang kesimpulan, keterbatasan penelitian dan saran dari hasil penelitian.

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

A. Berdasarkan pengujian yang dilakukan dalam beberapa parameter yaitu :

1. Dari segi waktu booting, antivirus yang unggul adalah Avira Free Antivirus dengan rata-rata waktu 80,4 detik.
2. Dari segi waktu restart : antivirus yang unggul adalah Avast Free Antivirus dengan rata-rata waktu 65,8 detik.
3. Dari segi pengukuran memori saat idle : antivirus yang unggul adalah Avast Free Antivirus dengan rata-rata memori 33482 K.
4. Dari segi pengukuran memori saat full scan system : antivirus yang unggul adalah Avast Free Antivirus dengan rata-rata memori 55881 K.
5. Dari segi waktu full scan : antivirus yang unggul adalah AVG Free Antivirus dengan rata-rata waktu 84,03 detik.
6. Dari segi waktu copy paste : antivirus yang unggul adalah Avira Free Antivirus dengan rata-rata 105.99 detik.
7. Dari pengukuran performa secara keseluruhan dari keenam parameter tersebut Antivirus yang paling unggul adalah Avast, diikuti AVG, Avira, dan Ad-Aware

- B. Berdasarkan uji statistik dengan T-Test maka dapat disimpulkan : dari keenam parameter tersebut dalam keempat antivirus berbeda atau tidak sama.
- C. Performa antivirus tidak terpengaruh dengan total download pengguna. Dikarenakan performa antivirus yang paling baik menurut penelitian ini yaitu Avast tidak menjadi antivirus yang paling banyak diunduh pada situs Cnet.
- D. Performa memori yang digunakan pada saat full scan lebih banyak memakan memori dibandingkan dengan memori yang digunakan saat *idle*.

5.2. Saran

Penelitian yang dilakukan tidak terlepas dari kekurangan dan kelemahan. Oleh karena itu, masih perlu pengembangan penelitian agar hasil yang didapatkan menjadi lebih presisi, di antaranya :

1. Parameter untuk performa dapat ditambahkan parameter lainnya seperti network on acces, kinerja dengan program lain, fitur, dan lain sebagainya.
2. Dapat ditambahkan antivirus lain yang belum dicoba baik itu antivirus *freeware* maupun *commercial* seperti Smadav, Artav, Eset, Bitdefender, Norton, Kasperky, McAfee dan lain-lain.
3. Dapat dicoba di sistem operasi Windows yang lebih baru seperti Windows 8 dan Windows 10.
























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LAMPIRAN

Lampiran 1 : *File copy paste*

 AdAwareInstaller_win32_11.0.4555.0.msi	05/11/2013 2:29	Windows Installer ...	16,888 KB
 Antarmuka Avast.PNG	09/10/2015 15:05	PNG image	50 KB
 BPAF-2013-TIF-combine.pdf	24/01/2014 12:56	Adobe Acrobat D...	2,029 KB
 Dok.Seminar Skripsi.zip	19/05/2013 19:36	Compressed (zipp...	705 KB
 DP-BBM-Lucu-35.gif	06/09/2015 22:57	GIF image	206 KB
 Dragon Ball Z Movie - Resurrection F.mp4	12/10/2015 19:51	MP4 Video	414,278 KB
 Form Abstrak excel.xls	22/08/2014 3:32	Microsoft Excel D...	33 KB
 Granrodeo - Punky Funky Love.mp3	08/03/2015 1:40	MP3 Format Sound	10,590 KB
 GRMSDK_EN_DVD.iso	27/05/2015 9:51	ISO File	1,516,122 KB
 hasil kuesioner.xlsx	10/11/2014 22:50	Microsoft Office E...	29 KB
 KELUARGA.ppt	16/04/2015 6:11	Microsoft PowerP...	147 KB
 MiPhone2.11.6.exe	07/09/2015 14:01	Application	19,791 KB
 Pantai Sadranan.JPG	19/03/2015 18:28	JPEG image	4,362 KB
 Pasukan Mesin Raksasa dan Pulau Karak...	15/10/2015 2:31	VLC media file (.m...	439,070 KB
 PRESENTASI_MUNAQOSYAH_2014.pptx	14/10/2014 4:56	Microsoft PowerP...	1,442 KB
 PROPOSAL_SKRIPSI_10650041.docx	27/08/2014 21:19	Microsoft Office ...	103 KB
 punya 10650041.rar	19/08/2015 15:52	RAR File	32,955 KB
 spesifikasi.txt	08/10/2015 17:05	Text Document	1 KB
 Surat Ket. Habis Teori.rtf	07/01/2014 15:04	RTF File	2,198 KB
 Surat pernyataan komitmen.doc	08/03/2015 16:41	Microsoft Word D...	22 KB
 Wildlife.wmv	14/07/2009 11:52	Windows Media A...	25,631 KB

Lampiran 2 : Tabel hasil pengujian Avast keenam parameter

AVAST						
Loop	Boot	Restart	Memory Idle	Full Scan	Memory Full Scan	Copy Paste
1	143	40	29236	746	49396	109.42
2	139	42	29364	729	48884	108.78
3	139	42	29396	749	48708	107.44
4	140	43	29368	716	50320	108.36
5	141	42	29464	740	50232	106.91
6	139	63	31624	729	50160	108.2
7	139	75	34440	744	51880	107.24
8	142	79	48196	698	65100	106.56
9	141	63	32030	716	65836	107.22
10	140	72	32732	719	64760	106.11
11	139	68	32576	740	55092	106.97
12	139	74	33580	771	58796	107.32
13	139	68	33588	754	53904	106.89
14	143	68	33600	713	53868	107.73
15	141	75	33580	747	53760	105.92
16	143	74	33576	720	67880	106.88
17	142	64	34360	734	54484	106.41
18	141	67	33544	712	55184	106.41
19	141	70	34364	724	55868	106.33
20	142	68	33696	696	54784	105.75

21	141	72	33696	728	54722	105.91
22	140	65	33684	732	56268	106.96
23	144	71	33668	754	56308	106.28
24	144	69	33656	742	58004	105.71
25	145	68	34320	715	56704	106.33
26	143	65	33648	753	56960	106.83
27	142	66	33600	718	54560	105.91
28	140	72	33792	730	54864	106.36
29	141	69	34496	734	55808	105.49
30	141	72	34496	779	58624	105.68
31	140	72	33756	709	53380	105.91
32	141	65	33728	776	54984	105.28
33	143	72	33732	752	58592	105.16
34	143	68	33716	751	54356	105.11
35	147	73	33668	763	54288	105.58
36	143	64	33900	716	54420	105.27
37	139	65	33896	729	67316	105.13
38	138	68	33872	752	53880	105.53
39	143	67	33840	796	55528	105.86
40	139	63	33796	747	56760	106.19

Lampiran 3 : Tabel hasil pengujian AVG keenam parameter

AVG						
Loop	Boot	Restart	Memory Idle	Full Scan	Memory Full Scan	Copy Paste
1	170	68	44532	248	65840	109.54
2	168	69	44536	82	68824	107.75
3	171	68	44536	148	72508	108.55
4	168	71	44536	112	69780	108.14
5	167	67	44536	95	74168	107.98
6	168	88	44536	76	73952	108.12
7	168	69	44540	109	76008	108.65
8	167	91	44540	78	76292	108.98
9	168	90	44356	69	77396	117.3
10	168	87	44360	68	73492	120.65
11	174	88	44360	74	78464	121.71
12	168	89	44360	73	78632	120.13
13	168	92	44360	72	80196	118.78
14	167	89	44360	71	79716	119.98
15	169	89	44360	82	81896	117.75
16	168	88	44360	66	81680	127.56
17	167	88	44360	68	80868	132.84
18	169	87	44360	80	82136	121.38
19	168	87	44360	76	82856	123.76
20	168	87	44664	82	83888	119.54

21	168	85	44664	70	84004	118.76
22	173	90	44664	74	85180	118.76
23	167	90	44664	79	87456	118.76
24	167	89	44664	75	87560	119.23
25	168	89	44664	79	86692	118.89
26	168	89	44664	73	89520	118.17
27	169	89	44664	88	89516	121.81
28	168	88	44664	82	88184	117.83
29	169	88	44672	67	90388	118.7
30	168	88	44744	69	90388	118.65
31	167	84	44744	90	88252	119.58
32	168	84	44744	80	90788	118.55
33	167	90	44744	71	90868	118.48
34	170	91	44744	68	89372	119.59
35	168	88	44744	83	91460	117.63
36	175	87	44744	81	91444	119.51
37	173	90	44744	68	87632	119.23
38	168	87	44744	80	92524	120.92
39	171	88	44744	82	88684	119.89
40	168	88	44744	73	95004	120.46

Lampiran 4 : Tabel hasil pengujian Avira keenam parameter

Avira						
Loop	Boot	Restart	Memory Idle	Full Scan	Memory Full Scan	Copy Paste
1	82	41	51808	1156	224452	108.72
2	79	59	52000	1152	226856	106.96
3	84	59	51308	1208	225116	106.78
4	81	59	51476	1214	217168	108.8
5	81	59	51791	1230	222588	108.9
6	84	88	52000	1157	232752	107.38
7	80	90	52328	1285	232820	107.42
8	80	89	52328	1185	229860	107.41
9	78	94	52476	1226	232932	109.29
10	79	92	52652	1144	232248	107.32
11	80	90	52832	1195	240804	107.14
12	80	89	52972	1180	240368	106.53
13	79	94	53060	1169	241980	106.58
14	81	91	53204	1124	245452	106.27
15	79	96	53444	1194	244460	106.81
16	81	93	53560	1254	235008	107.59
17	81	88	54376	1157	232808	106.74
18	83	94	53960	1191	237236	107.47
19	80	92	54136	1167	238804	106.16
20	80	90	54244	1164	241976	104.83

21	84	93	54340	1155	243296	105.46
22	78	89	54524	1156	244316	104.97
23	81	94	54792	1177	239252	105.35
24	80	88	54920	1107	233232	107.84
25	79	94	55008	1253	233612	104.24
26	80	92	55088	1149	235640	103.74
27	80	91	55208	1200	236728	105.16
28	79	89	55296	1196	237776	106.19
29	81	95	55376	1089	237692	106.5
30	84	93	55384	1129	238156	104.22
31	79	90	55452	1189	237824	103.93
32	81	86	55468	1233	259036	103.54
33	79	89	55604	1220	258728	105.14
34	80	93	55596	1219	258864	103.38
35	79	94	55672	1195	245872	104.69
36	78	88	55788	1229	242468	103.91
37	80	94	55820	1197	224820	103.69
38	81	89	55804	1194	225040	103.97
39	81	93	55908	1185	223596	104.37
40	80	92	56012	1222	224180	104.22

Lampiran 5 : Tabel hasil pengujian Ad-Aware keenam parameter

AdAware						
Loop	Boot	Restart	Memory Idle	Full Scan	Memory Full Scan	Copy Paste
1	126	46	210144	691	260468	109.45
2	128	79	210252	116	264716	108.44
3	125	82	210252	111	254392	106.14
4	124	82	210240	114	267332	105.33
5	124	82	210252	110	301216	106.69
6	124	81	210252	111	281044	107.83
7	119	83	210240	109	291488	108.11
8	124	79	210252	114	284700	108.75
9	124	79	210252	113	280536	108.75
10	124	78	210240	111	281604	108.53
11	122	78	210252	112	279688	108.12
12	121	79	210252	112	286472	109.91
13	125	116	210240	109	285000	108.26
14	123	80	210252	146	288892	108.44
15	124	79	210252	118	283216	108.14
16	123	80	210240	108	288192	107.48
17	119	81	210252	109	287220	108
18	123	82	210192	111	289924	108.22
19	125	80	210180	113	295296	120.54
20	122	80	210192	108	288720	116.45

21	126	79	210192	111	287868	108.2
22	124	79	210180	111	285744	108.83
23	124	81	210192	109	291016	107.98
24	121	79	210192	110	292000	108.58
25	125	77	210180	110	292024	107.72
26	119	78	210192	114	292640	108.37
27	122	59	210192	112	294692	108.86
28	127	77	210180	111	294104	108.41
29	124	79	210192	113	284056	108.17
30	125	80	210192	109	283612	108.65
31	128	79	210180	106	283716	109.29
32	118	78	210192	109	293624	108.94
33	125	78	210192	107	288892	108.75
34	129	81	210180	110	287128	109.44
35	124	79	210192	111	283632	109.31
36	125	80	210192	113	293160	107.67
37	125	79	210180	175	295728	109.81
38	126	80	210192	112	286404	108.62
39	123	80	210192	110	283804	108.5
40	124	79	210180	113	292560	109.26

Lampiran 6 : Rebooter Avast log

[3] 2015-Okt-09 21:42:08 STARTING CYCLE OF 40 REBOOTS

[3] 2015-Okt-09 21:42:24 ABOUT TO REBOOT, COUNT 1

[3] 2015-Okt-09 21:43:05 LOADED AFTER REBOOT, COUNT 1

[3] 2015-Okt-09 21:43:05 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 1

[3] 2015-Okt-09 21:43:21 ABOUT TO REBOOT, COUNT 2

[3] 2015-Okt-09 21:44:04 LOADED AFTER REBOOT, COUNT 2

[3] 2015-Okt-09 21:44:04 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 2

[3] 2015-Okt-09 21:44:20 ABOUT TO REBOOT, COUNT 3

[3] 2015-Okt-09 21:45:03 LOADED AFTER REBOOT, COUNT 3

[3] 2015-Okt-09 21:45:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 3

[3] 2015-Okt-09 21:45:19 ABOUT TO REBOOT, COUNT 4

[3] 2015-Okt-09 21:46:03 LOADED AFTER REBOOT, COUNT 4

[3] 2015-Okt-09 21:46:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 4

[3] 2015-Okt-09 21:46:18 ABOUT TO REBOOT, COUNT 5

[3] 2015-Okt-09 21:47:01 LOADED AFTER REBOOT, COUNT 5

[3] 2015-Okt-09 21:47:01 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 5

[3] 2015-Okt-09 21:47:17 ABOUT TO REBOOT, COUNT 6

[3] 2015-Okt-09 21:48:21 LOADED AFTER REBOOT, COUNT 6

[3] 2015-Okt-09 21:48:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 6

[3] 2015-Okt-09 21:48:37 ABOUT TO REBOOT, COUNT 7

[3] 2015-Okt-09 21:49:53 LOADED AFTER REBOOT, COUNT 7

[3] 2015-Okt-09 21:49:53 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 7

[3] 2015-Okt-09 21:50:09 ABOUT TO REBOOT, COUNT 8

[3] 2015-Okt-09 21:51:29 LOADED AFTER REBOOT, COUNT 8

[3] 2015-Okt-09 21:51:29 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 8

[3] 2015-Okt-09 21:51:48 ABOUT TO REBOOT, COUNT 9

[3] 2015-Okt-09 21:52:52 LOADED AFTER REBOOT, COUNT 9

[3] 2015-Okt-09 21:52:52 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 9

[3] 2015-Okt-09 21:53:08 ABOUT TO REBOOT, COUNT 10

[3] 2015-Okt-09 21:54:21 LOADED AFTER REBOOT, COUNT 10

[3] 2015-Okt-09 21:54:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 10

[3] 2015-Okt-09 21:54:37 ABOUT TO REBOOT, COUNT 11

[3] 2015-Okt-09 21:55:46 LOADED AFTER REBOOT, COUNT 11

[3] 2015-Okt-09 21:55:46 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 11

[3] 2015-Okt-09 21:56:02 ABOUT TO REBOOT, COUNT 12

[3] 2015-Okt-09 21:57:17 LOADED AFTER REBOOT, COUNT 12

[3] 2015-Okt-09 21:57:17 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 12

[3] 2015-Okt-09 21:57:33 ABOUT TO REBOOT, COUNT 13

[3] 2015-Okt-09 21:58:42 LOADED AFTER REBOOT, COUNT 13

[3] 2015-Okt-09 21:58:43 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 13

[3] 2015-Okt-09 21:58:58 ABOUT TO REBOOT, COUNT 14

[3] 2015-Okt-09 22:00:07 LOADED AFTER REBOOT, COUNT 14

[3] 2015-Okt-09 22:00:07 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 14

[3] 2015-Okt-09 22:00:22 ABOUT TO REBOOT, COUNT 15

[3] 2015-Okt-09 22:01:38 LOADED AFTER REBOOT, COUNT 15

[3] 2015-Okt-09 22:01:38 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 15

[3] 2015-Okt-09 22:01:54 ABOUT TO REBOOT, COUNT 16

[3] 2015-Okt-09 22:03:09 LOADED AFTER REBOOT, COUNT 16

[3] 2015-Okt-09 22:03:09 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 16

[3] 2015-Okt-09 22:03:25 ABOUT TO REBOOT, COUNT 17

[3] 2015-Okt-09 22:04:30 LOADED AFTER REBOOT, COUNT 17

[3] 2015-Okt-09 22:04:30 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 17

[3] 2015-Okt-09 22:04:46 ABOUT TO REBOOT, COUNT 18

[3] 2015-Okt-09 22:05:54 LOADED AFTER REBOOT, COUNT 18

[3] 2015-Okt-09 22:05:54 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 18

[3] 2015-Okt-09 22:06:10 ABOUT TO REBOOT, COUNT 19

[3] 2015-Okt-09 22:07:21 LOADED AFTER REBOOT, COUNT 19

[3] 2015-Okt-09 22:07:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 19

[3] 2015-Okt-09 22:07:37 ABOUT TO REBOOT, COUNT 20

[3] 2015-Okt-09 22:08:46 LOADED AFTER REBOOT, COUNT 20

[3] 2015-Okt-09 22:08:46 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 20

[3] 2015-Okt-09 22:09:02 ABOUT TO REBOOT, COUNT 21

[3] 2015-Okt-09 22:10:15 LOADED AFTER REBOOT, COUNT 21

[3] 2015-Okt-09 22:10:15 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 21

[3] 2015-Okt-09 22:10:31 ABOUT TO REBOOT, COUNT 22

[3] 2015-Okt-09 22:11:37 LOADED AFTER REBOOT, COUNT 22

[3] 2015-Okt-09 22:11:37 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 22

[3] 2015-Okt-09 22:11:53 ABOUT TO REBOOT, COUNT 23

[3] 2015-Okt-09 22:13:05 LOADED AFTER REBOOT, COUNT 23

[3] 2015-Okt-09 22:13:05 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 23

[3] 2015-Okt-09 22:13:21 ABOUT TO REBOOT, COUNT 24

[3] 2015-Okt-09 22:14:31 LOADED AFTER REBOOT, COUNT 24

[3] 2015-Okt-09 22:14:31 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 24

[3] 2015-Okt-09 22:14:46 ABOUT TO REBOOT, COUNT 25

[3] 2015-Okt-09 22:15:55 LOADED AFTER REBOOT, COUNT 25

[3] 2015-Okt-09 22:15:55 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 25

[3] 2015-Okt-09 22:16:11 ABOUT TO REBOOT, COUNT 26

[3] 2015-Okt-09 22:17:17 LOADED AFTER REBOOT, COUNT 26

[3] 2015-Okt-09 22:17:17 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 26

[3] 2015-Okt-09 22:17:32 ABOUT TO REBOOT, COUNT 27

[3] 2015-Okt-09 22:18:39 LOADED AFTER REBOOT, COUNT 27

[3] 2015-Okt-09 22:18:39 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 27

[3] 2015-Okt-09 22:18:54 ABOUT TO REBOOT, COUNT 28

[3] 2015-Okt-09 22:20:07 LOADED AFTER REBOOT, COUNT 28

[3] 2015-Okt-09 22:20:08 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 28

[3] 2015-Okt-09 22:20:23 ABOUT TO REBOOT, COUNT 29

[3] 2015-Okt-09 22:21:33 LOADED AFTER REBOOT, COUNT 29

[3] 2015-Okt-09 22:21:33 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 29

[3] 2015-Okt-09 22:21:48 ABOUT TO REBOOT, COUNT 30

[3] 2015-Okt-09 22:23:01 LOADED AFTER REBOOT, COUNT 30

[3] 2015-Okt-09 22:23:01 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 30

[3] 2015-Okt-09 22:23:17 ABOUT TO REBOOT, COUNT 31

[3] 2015-Okt-09 22:24:30 LOADED AFTER REBOOT, COUNT 31

[3] 2015-Okt-09 22:24:30 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 31

[3] 2015-Okt-09 22:24:46 ABOUT TO REBOOT, COUNT 32

[3] 2015-Okt-09 22:25:52 LOADED AFTER REBOOT, COUNT 32

[3] 2015-Okt-09 22:25:52 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 32

[3] 2015-Okt-09 22:26:08 ABOUT TO REBOOT, COUNT 33

[3] 2015-Okt-09 22:27:21 LOADED AFTER REBOOT, COUNT 33

[3] 2015-Okt-09 22:27:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 33

[3] 2015-Okt-09 22:27:37 ABOUT TO REBOOT, COUNT 34

[3] 2015-Okt-09 22:28:46 LOADED AFTER REBOOT, COUNT 34

[3] 2015-Okt-09 22:28:46 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 34

[3] 2015-Okt-09 22:29:02 ABOUT TO REBOOT, COUNT 35

[3] 2015-Okt-09 22:30:16 LOADED AFTER REBOOT, COUNT 35

[3] 2015-Okt-09 22:30:16 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 35

[3] 2015-Okt-09 22:30:32 ABOUT TO REBOOT, COUNT 36

[3] 2015-Okt-09 22:31:37 LOADED AFTER REBOOT, COUNT 36

[3] 2015-Okt-09 22:31:37 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 36

[3] 2015-Okt-09 22:31:53 ABOUT TO REBOOT, COUNT 37

[3] 2015-Okt-09 22:32:59 LOADED AFTER REBOOT, COUNT 37

[3] 2015-Okt-09 22:33:00 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 37

[3] 2015-Okt-09 22:33:15 ABOUT TO REBOOT, COUNT 38

[3] 2015-Okt-09 22:34:24 LOADED AFTER REBOOT, COUNT 38

[3] 2015-Okt-09 22:34:24 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 38

[3] 2015-Okt-09 22:34:39 ABOUT TO REBOOT, COUNT 39

[3] 2015-Okt-09 22:35:47 LOADED AFTER REBOOT, COUNT 39

[3] 2015-Okt-09 22:35:47 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 39

[3] 2015-Okt-09 22:36:03 ABOUT TO REBOOT, COUNT 40

[3] 2015-Okt-09 22:37:07 LOADED AFTER REBOOT, COUNT 40

[3] 2015-Okt-09 22:37:07 LAST REBOOT, COUNT 40

[3] 2015-Okt-09 22:37:08 FINISHED REBOOT CYCLE

Lampiran 7 : Rebooter AVG log

[3] 2015-Nop-06 06:24:24 STARTING CYCLE OF 40 REBOOTS

[3] 2015-Nop-06 06:24:39 ABOUT TO REBOOT, COUNT 1

[3] 2015-Nop-06 06:25:48 LOADED AFTER REBOOT, COUNT 1

[3] 2015-Nop-06 06:25:48 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 1

[3] 2015-Nop-06 06:26:04 ABOUT TO REBOOT, COUNT 2

[3] 2015-Nop-06 06:27:14 LOADED AFTER REBOOT, COUNT 2

[3] 2015-Nop-06 06:27:14 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 2

[3] 2015-Nop-06 06:27:30 ABOUT TO REBOOT, COUNT 3

[3] 2015-Nop-06 06:28:39 LOADED AFTER REBOOT, COUNT 3

[3] 2015-Nop-06 06:28:39 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 3

[3] 2015-Nop-06 06:28:55 ABOUT TO REBOOT, COUNT 4

[3] 2015-Nop-06 06:30:07 LOADED AFTER REBOOT, COUNT 4

[3] 2015-Nop-06 06:30:07 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 4

[3] 2015-Nop-06 06:30:23 ABOUT TO REBOOT, COUNT 5

[3] 2015-Nop-06 06:31:31 LOADED AFTER REBOOT, COUNT 5

[3] 2015-Nop-06 06:31:31 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 5

[3] 2015-Nop-06 06:31:47 ABOUT TO REBOOT, COUNT 6

[3] 2015-Nop-06 06:33:16 LOADED AFTER REBOOT, COUNT 6

[3] 2015-Nop-06 06:33:16 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 6

[3] 2015-Nop-06 06:33:31 ABOUT TO REBOOT, COUNT 7

[3] 2015-Nop-06 06:35:01 LOADED AFTER REBOOT, COUNT 7

[3] 2015-Nop-06 06:35:01 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 7

[3] 2015-Nop-06 06:35:17 ABOUT TO REBOOT, COUNT 8

[3] 2015-Nop-06 06:36:49 LOADED AFTER REBOOT, COUNT 8

[3] 2015-Nop-06 06:36:49 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 8

[3] 2015-Nop-06 06:37:04 ABOUT TO REBOOT, COUNT 9

[3] 2015-Nop-06 06:38:35 LOADED AFTER REBOOT, COUNT 9

[3] 2015-Nop-06 06:38:35 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 9

[3] 2015-Nop-06 06:38:50 ABOUT TO REBOOT, COUNT 10

[3] 2015-Nop-06 06:40:18 LOADED AFTER REBOOT, COUNT 10

[3] 2015-Nop-06 06:40:18 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 10

[3] 2015-Nop-06 06:40:34 ABOUT TO REBOOT, COUNT 11

[3] 2015-Nop-06 06:42:03 LOADED AFTER REBOOT, COUNT 11

[3] 2015-Nop-06 06:42:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 11

[3] 2015-Nop-06 06:42:18 ABOUT TO REBOOT, COUNT 12

[3] 2015-Nop-06 06:43:48 LOADED AFTER REBOOT, COUNT 12

[3] 2015-Nop-06 06:43:48 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 12

[3] 2015-Nop-06 06:44:04 ABOUT TO REBOOT, COUNT 13

[3] 2015-Nop-06 06:45:37 LOADED AFTER REBOOT, COUNT 13

[3] 2015-Nop-06 06:45:37 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 13

[3] 2015-Nop-06 06:45:53 ABOUT TO REBOOT, COUNT 14

[3] 2015-Nop-06 06:47:23 LOADED AFTER REBOOT, COUNT 14

[3] 2015-Nop-06 06:47:23 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 14

[3] 2015-Nop-06 06:47:39 ABOUT TO REBOOT, COUNT 15

[3] 2015-Nop-06 06:49:09 LOADED AFTER REBOOT, COUNT 15

[3] 2015-Nop-06 06:49:09 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 15

[3] 2015-Nop-06 06:49:25 ABOUT TO REBOOT, COUNT 16

[3] 2015-Nop-06 06:50:54 LOADED AFTER REBOOT, COUNT 16

[3] 2015-Nop-06 06:50:54 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 16

[3] 2015-Nop-06 06:51:10 ABOUT TO REBOOT, COUNT 17

[3] 2015-Nop-06 06:52:39 LOADED AFTER REBOOT, COUNT 17

[3] 2015-Nop-06 06:52:39 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 17

[3] 2015-Nop-06 06:52:55 ABOUT TO REBOOT, COUNT 18

[3] 2015-Nop-06 06:54:23 LOADED AFTER REBOOT, COUNT 18

[3] 2015-Nop-06 06:54:23 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 18

[3] 2015-Nop-06 06:54:39 ABOUT TO REBOOT, COUNT 19

[3] 2015-Nop-06 06:56:07 LOADED AFTER REBOOT, COUNT 19

[3] 2015-Nop-06 06:56:08 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 19

[3] 2015-Nop-06 06:56:23 ABOUT TO REBOOT, COUNT 20

[3] 2015-Nop-06 06:57:51 LOADED AFTER REBOOT, COUNT 20

[3] 2015-Nop-06 06:57:52 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 20

[3] 2015-Nop-06 06:58:08 ABOUT TO REBOOT, COUNT 21

[3] 2015-Nop-06 06:59:34 LOADED AFTER REBOOT, COUNT 21

[3] 2015-Nop-06 06:59:34 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 21

[3] 2015-Nop-06 06:59:50 ABOUT TO REBOOT, COUNT 22

[3] 2015-Nop-06 07:01:21 LOADED AFTER REBOOT, COUNT 22

[3] 2015-Nop-06 07:01:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 22

[3] 2015-Nop-06 07:01:37 ABOUT TO REBOOT, COUNT 23

[3] 2015-Nop-06 07:03:08 LOADED AFTER REBOOT, COUNT 23

[3] 2015-Nop-06 07:03:08 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 23

[3] 2015-Nop-06 07:03:23 ABOUT TO REBOOT, COUNT 24

[3] 2015-Nop-06 07:04:53 LOADED AFTER REBOOT, COUNT 24

[3] 2015-Nop-06 07:04:53 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 24

[3] 2015-Nop-06 07:05:08 ABOUT TO REBOOT, COUNT 25

[3] 2015-Nop-06 07:06:38 LOADED AFTER REBOOT, COUNT 25

[3] 2015-Nop-06 07:06:38 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 25

[3] 2015-Nop-06 07:06:54 ABOUT TO REBOOT, COUNT 26

[3] 2015-Nop-06 07:08:24 LOADED AFTER REBOOT, COUNT 26

[3] 2015-Nop-06 07:08:24 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 26

[3] 2015-Nop-06 07:08:40 ABOUT TO REBOOT, COUNT 27

[3] 2015-Nop-06 07:10:10 LOADED AFTER REBOOT, COUNT 27

[3] 2015-Nop-06 07:10:10 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 27

[3] 2015-Nop-06 07:10:25 ABOUT TO REBOOT, COUNT 28

[3] 2015-Nop-06 07:11:54 LOADED AFTER REBOOT, COUNT 28

[3] 2015-Nop-06 07:11:55 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 28

[3] 2015-Nop-06 07:12:10 ABOUT TO REBOOT, COUNT 29

[3] 2015-Nop-06 07:13:39 LOADED AFTER REBOOT, COUNT 29

[3] 2015-Nop-06 07:13:39 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 29

[3] 2015-Nop-06 07:13:55 ABOUT TO REBOOT, COUNT 30

[3] 2015-Nop-06 07:15:24 LOADED AFTER REBOOT, COUNT 30

[3] 2015-Nop-06 07:15:24 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 30

[3] 2015-Nop-06 07:15:40 ABOUT TO REBOOT, COUNT 31

[3] 2015-Nop-06 07:17:05 LOADED AFTER REBOOT, COUNT 31

[3] 2015-Nop-06 07:17:06 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 31

[3] 2015-Nop-06 07:17:22 ABOUT TO REBOOT, COUNT 32

[3] 2015-Nop-06 07:18:47 LOADED AFTER REBOOT, COUNT 32

[3] 2015-Nop-06 07:18:47 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 32

[3] 2015-Nop-06 07:19:03 ABOUT TO REBOOT, COUNT 33

[3] 2015-Nop-06 07:20:34 LOADED AFTER REBOOT, COUNT 33

[3] 2015-Nop-06 07:20:34 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 33

[3] 2015-Nop-06 07:20:50 ABOUT TO REBOOT, COUNT 34

[3] 2015-Nop-06 07:22:22 LOADED AFTER REBOOT, COUNT 34

[3] 2015-Nop-06 07:22:22 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 34

[3] 2015-Nop-06 07:22:37 ABOUT TO REBOOT, COUNT 35

[3] 2015-Nop-06 07:24:06 LOADED AFTER REBOOT, COUNT 35

[3] 2015-Nop-06 07:24:07 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 35

[3] 2015-Nop-06 07:24:22 ABOUT TO REBOOT, COUNT 36

[3] 2015-Nop-06 07:25:50 LOADED AFTER REBOOT, COUNT 36

[3] 2015-Nop-06 07:25:50 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 36

[3] 2015-Nop-06 07:26:06 ABOUT TO REBOOT, COUNT 37

[3] 2015-Nop-06 07:27:37 LOADED AFTER REBOOT, COUNT 37

[3] 2015-Nop-06 07:27:37 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 37

[3] 2015-Nop-06 07:27:53 ABOUT TO REBOOT, COUNT 38

[3] 2015-Nop-06 07:29:21 LOADED AFTER REBOOT, COUNT 38

[3] 2015-Nop-06 07:29:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 38

[3] 2015-Nop-06 07:29:37 ABOUT TO REBOOT, COUNT 39

[3] 2015-Nop-06 07:31:06 LOADED AFTER REBOOT, COUNT 39

[3] 2015-Nop-06 07:31:06 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 39

[3] 2015-Nop-06 07:31:22 ABOUT TO REBOOT, COUNT 40

[3] 2015-Nop-06 07:32:51 LOADED AFTER REBOOT, COUNT 40

[3] 2015-Nop-06 07:32:51 LAST REBOOT, COUNT 40

[3] 2015-Nop-06 07:32:51 FINISHED REBOOT CYCLE

Lampiran 8 : Rebooter Avira log

[3] 2015-Okt-26 19:10:15 STARTING CYCLE OF 40 REBOOTS

[3] 2015-Okt-26 19:10:30 ABOUT TO REBOOT, COUNT 1

[3] 2015-Okt-26 19:11:12 LOADED AFTER REBOOT, COUNT 1

[3] 2015-Okt-26 19:11:12 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 1

[3] 2015-Okt-26 19:11:28 ABOUT TO REBOOT, COUNT 2

[3] 2015-Okt-26 19:12:28 LOADED AFTER REBOOT, COUNT 2

[3] 2015-Okt-26 19:12:28 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 2

[3] 2015-Okt-26 19:12:44 ABOUT TO REBOOT, COUNT 3

[3] 2015-Okt-26 19:13:44 LOADED AFTER REBOOT, COUNT 3

[3] 2015-Okt-26 19:13:44 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 3

[3] 2015-Okt-26 19:13:59 ABOUT TO REBOOT, COUNT 4

[3] 2015-Okt-26 19:14:59 LOADED AFTER REBOOT, COUNT 4

[3] 2015-Okt-26 19:14:59 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 4

[3] 2015-Okt-26 19:15:14 ABOUT TO REBOOT, COUNT 5

[3] 2015-Okt-26 19:16:14 LOADED AFTER REBOOT, COUNT 5

[3] 2015-Okt-26 19:16:14 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 5

[3] 2015-Okt-26 19:16:29 ABOUT TO REBOOT, COUNT 6

[3] 2015-Okt-26 19:17:58 LOADED AFTER REBOOT, COUNT 6

[3] 2015-Okt-26 19:17:58 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 6

[3] 2015-Okt-26 19:18:14 ABOUT TO REBOOT, COUNT 7

[3] 2015-Okt-26 19:19:45 LOADED AFTER REBOOT, COUNT 7

[3] 2015-Okt-26 19:19:45 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 7

[3] 2015-Okt-26 19:20:01 ABOUT TO REBOOT, COUNT 8

[3] 2015-Okt-26 19:21:31 LOADED AFTER REBOOT, COUNT 8

[3] 2015-Okt-26 19:21:31 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 8

[3] 2015-Okt-26 19:21:46 ABOUT TO REBOOT, COUNT 9

[3] 2015-Okt-26 19:23:21 LOADED AFTER REBOOT, COUNT 9

[3] 2015-Okt-26 19:23:21 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 9

[3] 2015-Okt-26 19:23:36 ABOUT TO REBOOT, COUNT 10

[3] 2015-Okt-26 19:25:09 LOADED AFTER REBOOT, COUNT 10

[3] 2015-Okt-26 19:25:09 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 10

[3] 2015-Okt-26 19:25:25 ABOUT TO REBOOT, COUNT 11

[3] 2015-Okt-26 19:26:56 LOADED AFTER REBOOT, COUNT 11

[3] 2015-Okt-26 19:26:56 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 11

[3] 2015-Okt-26 19:27:12 ABOUT TO REBOOT, COUNT 12

[3] 2015-Okt-26 19:28:42 LOADED AFTER REBOOT, COUNT 12

[3] 2015-Okt-26 19:28:42 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 12

[3] 2015-Okt-26 19:28:58 ABOUT TO REBOOT, COUNT 13

[3] 2015-Okt-26 19:30:33 LOADED AFTER REBOOT, COUNT 13

[3] 2015-Okt-26 19:30:33 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 13

[3] 2015-Okt-26 19:30:48 ABOUT TO REBOOT, COUNT 14

[3] 2015-Okt-26 19:32:20 LOADED AFTER REBOOT, COUNT 14

[3] 2015-Okt-26 19:32:20 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 14

[3] 2015-Okt-26 19:32:36 ABOUT TO REBOOT, COUNT 15

[3] 2015-Okt-26 19:34:13 LOADED AFTER REBOOT, COUNT 15

[3] 2015-Okt-26 19:34:13 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 15

[3] 2015-Okt-26 19:34:28 ABOUT TO REBOOT, COUNT 16

[3] 2015-Okt-26 19:36:02 LOADED AFTER REBOOT, COUNT 16

[3] 2015-Okt-26 19:36:02 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 16

[3] 2015-Okt-26 19:36:18 ABOUT TO REBOOT, COUNT 17

[3] 2015-Okt-26 19:37:47 LOADED AFTER REBOOT, COUNT 17

[3] 2015-Okt-26 19:37:47 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 17

[3] 2015-Okt-26 19:38:03 ABOUT TO REBOOT, COUNT 18

[3] 2015-Okt-26 19:39:38 LOADED AFTER REBOOT, COUNT 18

[3] 2015-Okt-26 19:39:38 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 18

[3] 2015-Okt-26 19:39:54 ABOUT TO REBOOT, COUNT 19

[3] 2015-Okt-26 19:41:27 LOADED AFTER REBOOT, COUNT 19

[3] 2015-Okt-26 19:41:27 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 19

[3] 2015-Okt-26 19:41:43 ABOUT TO REBOOT, COUNT 20

[3] 2015-Okt-26 19:43:14 LOADED AFTER REBOOT, COUNT 20

[3] 2015-Okt-26 19:43:14 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 20

[3] 2015-Okt-26 19:43:29 ABOUT TO REBOOT, COUNT 21

[3] 2015-Okt-26 19:45:03 LOADED AFTER REBOOT, COUNT 21

[3] 2015-Okt-26 19:45:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 21

[3] 2015-Okt-26 19:45:18 ABOUT TO REBOOT, COUNT 22

[3] 2015-Okt-26 19:46:48 LOADED AFTER REBOOT, COUNT 22

[3] 2015-Okt-26 19:46:48 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 22

[3] 2015-Okt-26 19:47:04 ABOUT TO REBOOT, COUNT 23

[3] 2015-Okt-26 19:48:39 LOADED AFTER REBOOT, COUNT 23

[3] 2015-Okt-26 19:48:40 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 23

[3] 2015-Okt-26 19:48:55 ABOUT TO REBOOT, COUNT 24

[3] 2015-Okt-26 19:50:24 LOADED AFTER REBOOT, COUNT 24

[3] 2015-Okt-26 19:50:24 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 24

[3] 2015-Okt-26 19:50:39 ABOUT TO REBOOT, COUNT 25

[3] 2015-Okt-26 19:52:14 LOADED AFTER REBOOT, COUNT 25

[3] 2015-Okt-26 19:52:14 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 25

[3] 2015-Okt-26 19:52:29 ABOUT TO REBOOT, COUNT 26

[3] 2015-Okt-26 19:54:02 LOADED AFTER REBOOT, COUNT 26

[3] 2015-Okt-26 19:54:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 26

[3] 2015-Okt-26 19:54:18 ABOUT TO REBOOT, COUNT 27

[3] 2015-Okt-26 19:55:50 LOADED AFTER REBOOT, COUNT 27

[3] 2015-Okt-26 19:55:50 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 27

[3] 2015-Okt-26 19:56:06 ABOUT TO REBOOT, COUNT 28

[3] 2015-Okt-26 19:57:36 LOADED AFTER REBOOT, COUNT 28

[3] 2015-Okt-26 19:57:36 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 28

[3] 2015-Okt-26 19:57:52 ABOUT TO REBOOT, COUNT 29

[3] 2015-Okt-26 19:59:28 LOADED AFTER REBOOT, COUNT 29

[3] 2015-Okt-26 19:59:28 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 29

[3] 2015-Okt-26 19:59:43 ABOUT TO REBOOT, COUNT 30

[3] 2015-Okt-26 20:01:17 LOADED AFTER REBOOT, COUNT 30

[3] 2015-Okt-26 20:01:17 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 30

[3] 2015-Okt-26 20:01:33 ABOUT TO REBOOT, COUNT 31

[3] 2015-Okt-26 20:03:04 LOADED AFTER REBOOT, COUNT 31

[3] 2015-Okt-26 20:03:04 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 31

[3] 2015-Okt-26 20:03:20 ABOUT TO REBOOT, COUNT 32

[3] 2015-Okt-26 20:04:47 LOADED AFTER REBOOT, COUNT 32

[3] 2015-Okt-26 20:04:47 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 32

[3] 2015-Okt-26 20:05:03 ABOUT TO REBOOT, COUNT 33

[3] 2015-Okt-26 20:06:33 LOADED AFTER REBOOT, COUNT 33

[3] 2015-Okt-26 20:06:34 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 33

[3] 2015-Okt-26 20:06:49 ABOUT TO REBOOT, COUNT 34

[3] 2015-Okt-26 20:08:23 LOADED AFTER REBOOT, COUNT 34

[3] 2015-Okt-26 20:08:23 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 34

[3] 2015-Okt-26 20:08:38 ABOUT TO REBOOT, COUNT 35

[3] 2015-Okt-26 20:10:13 LOADED AFTER REBOOT, COUNT 35

[3] 2015-Okt-26 20:10:13 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 35

[3] 2015-Okt-26 20:10:29 ABOUT TO REBOOT, COUNT 36

[3] 2015-Okt-26 20:11:58 LOADED AFTER REBOOT, COUNT 36

[3] 2015-Okt-26 20:11:59 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 36

[3] 2015-Okt-26 20:12:15 ABOUT TO REBOOT, COUNT 37

[3] 2015-Okt-26 20:13:50 LOADED AFTER REBOOT, COUNT 37

[3] 2015-Okt-26 20:13:50 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 37

[3] 2015-Okt-26 20:14:06 ABOUT TO REBOOT, COUNT 38

[3] 2015-Okt-26 20:15:36 LOADED AFTER REBOOT, COUNT 38

[3] 2015-Okt-26 20:15:36 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 38

[3] 2015-Okt-26 20:15:51 ABOUT TO REBOOT, COUNT 39

[3] 2015-Okt-26 20:17:25 LOADED AFTER REBOOT, COUNT 39

[3] 2015-Okt-26 20:17:25 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 39

[3] 2015-Okt-26 20:17:41 ABOUT TO REBOOT, COUNT 40

[3] 2015-Okt-26 20:19:14 LOADED AFTER REBOOT, COUNT 40

[3] 2015-Okt-26 20:19:14 LAST REBOOT, COUNT 40

[3] 2015-Okt-26 20:19:14 FINISHED REBOOT CYCLE

Lampiran 9 : Rebooter Ad-Aware log

[3] 2015-Nop-09 22:08:13 STARTING CYCLE OF 40 REBOOTS

[3] 2015-Nop-09 22:08:28 ABOUT TO REBOOT, COUNT 1

[3] 2015-Nop-09 22:09:15 LOADED AFTER REBOOT, COUNT 1

[3] 2015-Nop-09 22:09:15 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 1

[3] 2015-Nop-09 22:09:31 ABOUT TO REBOOT, COUNT 2

[3] 2015-Nop-09 22:10:51 LOADED AFTER REBOOT, COUNT 2

[3] 2015-Nop-09 22:10:51 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 2

[3] 2015-Nop-09 22:11:07 ABOUT TO REBOOT, COUNT 3

[3] 2015-Nop-09 22:12:30 LOADED AFTER REBOOT, COUNT 3

[3] 2015-Nop-09 22:12:30 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 3

[3] 2015-Nop-09 22:12:45 ABOUT TO REBOOT, COUNT 4

[3] 2015-Nop-09 22:14:08 LOADED AFTER REBOOT, COUNT 4

[3] 2015-Nop-09 22:14:08 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 4

[3] 2015-Nop-09 22:14:25 ABOUT TO REBOOT, COUNT 5

[3] 2015-Nop-09 22:15:48 LOADED AFTER REBOOT, COUNT 5

[3] 2015-Nop-09 22:15:48 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 5

[3] 2015-Nop-09 22:16:04 ABOUT TO REBOOT, COUNT 6

[3] 2015-Nop-09 22:17:26 LOADED AFTER REBOOT, COUNT 6

[3] 2015-Nop-09 22:17:26 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 6

[3] 2015-Nop-09 22:17:41 ABOUT TO REBOOT, COUNT 7

[3] 2015-Nop-09 22:19:05 LOADED AFTER REBOOT, COUNT 7

[3] 2015-Nop-09 22:19:05 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 7

[3] 2015-Nop-09 22:19:21 ABOUT TO REBOOT, COUNT 8

[3] 2015-Nop-09 22:20:41 LOADED AFTER REBOOT, COUNT 8

[3] 2015-Nop-09 22:20:41 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 8

[3] 2015-Nop-09 22:20:57 ABOUT TO REBOOT, COUNT 9

[3] 2015-Nop-09 22:22:17 LOADED AFTER REBOOT, COUNT 9

[3] 2015-Nop-09 22:22:17 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 9

[3] 2015-Nop-09 22:22:33 ABOUT TO REBOOT, COUNT 10

[3] 2015-Nop-09 22:23:52 LOADED AFTER REBOOT, COUNT 10

[3] 2015-Nop-09 22:23:52 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 10

[3] 2015-Nop-09 22:24:08 ABOUT TO REBOOT, COUNT 11

[3] 2015-Nop-09 22:25:27 LOADED AFTER REBOOT, COUNT 11

[3] 2015-Nop-09 22:25:27 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 11

[3] 2015-Nop-09 22:25:43 ABOUT TO REBOOT, COUNT 12

[3] 2015-Nop-09 22:27:03 LOADED AFTER REBOOT, COUNT 12

[3] 2015-Nop-09 22:27:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 12

[3] 2015-Nop-09 22:27:19 ABOUT TO REBOOT, COUNT 13

[3] 2015-Nop-09 22:29:16 LOADED AFTER REBOOT, COUNT 13

[3] 2015-Nop-09 22:29:16 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 13

[3] 2015-Nop-09 22:29:32 ABOUT TO REBOOT, COUNT 14

[3] 2015-Nop-09 22:30:53 LOADED AFTER REBOOT, COUNT 14

[3] 2015-Nop-09 22:30:53 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 14

[3] 2015-Nop-09 22:31:08 ABOUT TO REBOOT, COUNT 15

[3] 2015-Nop-09 22:32:28 LOADED AFTER REBOOT, COUNT 15

[3] 2015-Nop-09 22:32:28 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 15

[3] 2015-Nop-09 22:32:44 ABOUT TO REBOOT, COUNT 16

[3] 2015-Nop-09 22:34:05 LOADED AFTER REBOOT, COUNT 16

[3] 2015-Nop-09 22:34:05 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 16

[3] 2015-Nop-09 22:34:21 ABOUT TO REBOOT, COUNT 17

[3] 2015-Nop-09 22:35:43 LOADED AFTER REBOOT, COUNT 17

[3] 2015-Nop-09 22:35:43 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 17

[3] 2015-Nop-09 22:35:59 ABOUT TO REBOOT, COUNT 18

[3] 2015-Nop-09 22:37:22 LOADED AFTER REBOOT, COUNT 18

[3] 2015-Nop-09 22:37:22 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 18

[3] 2015-Nop-09 22:37:38 ABOUT TO REBOOT, COUNT 19

[3] 2015-Nop-09 22:38:59 LOADED AFTER REBOOT, COUNT 19

[3] 2015-Nop-09 22:38:59 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 19

[3] 2015-Nop-09 22:39:15 ABOUT TO REBOOT, COUNT 20

[3] 2015-Nop-09 22:40:36 LOADED AFTER REBOOT, COUNT 20

[3] 2015-Nop-09 22:40:36 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 20

[3] 2015-Nop-09 22:40:52 ABOUT TO REBOOT, COUNT 21

[3] 2015-Nop-09 22:42:12 LOADED AFTER REBOOT, COUNT 21

[3] 2015-Nop-09 22:42:12 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 21

[3] 2015-Nop-09 22:42:28 ABOUT TO REBOOT, COUNT 22

[3] 2015-Nop-09 22:43:48 LOADED AFTER REBOOT, COUNT 22

[3] 2015-Nop-09 22:43:48 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 22

[3] 2015-Nop-09 22:44:05 ABOUT TO REBOOT, COUNT 23

[3] 2015-Nop-09 22:45:27 LOADED AFTER REBOOT, COUNT 23

[3] 2015-Nop-09 22:45:27 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 23

[3] 2015-Nop-09 22:45:43 ABOUT TO REBOOT, COUNT 24

[3] 2015-Nop-09 22:47:03 LOADED AFTER REBOOT, COUNT 24

[3] 2015-Nop-09 22:47:03 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 24

[3] 2015-Nop-09 22:47:19 ABOUT TO REBOOT, COUNT 25

[3] 2015-Nop-09 22:48:37 LOADED AFTER REBOOT, COUNT 25

[3] 2015-Nop-09 22:48:37 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 25

[3] 2015-Nop-09 22:48:52 ABOUT TO REBOOT, COUNT 26

[3] 2015-Nop-09 22:50:11 LOADED AFTER REBOOT, COUNT 26

[3] 2015-Nop-09 22:50:11 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 26

[3] 2015-Nop-09 22:50:26 ABOUT TO REBOOT, COUNT 27

[3] 2015-Nop-09 22:51:45 LOADED AFTER REBOOT, COUNT 27

[3] 2015-Nop-09 22:51:45 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 27

[3] 2015-Nop-09 22:52:00 ABOUT TO REBOOT, COUNT 28

[3] 2015-Nop-09 22:53:18 LOADED AFTER REBOOT, COUNT 28

[3] 2015-Nop-09 22:53:18 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 28

[3] 2015-Nop-09 22:53:34 ABOUT TO REBOOT, COUNT 29

[3] 2015-Nop-09 22:54:54 LOADED AFTER REBOOT, COUNT 29

[3] 2015-Nop-09 22:54:54 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 29

[3] 2015-Nop-09 22:55:09 ABOUT TO REBOOT, COUNT 30

[3] 2015-Nop-09 22:56:30 LOADED AFTER REBOOT, COUNT 30

[3] 2015-Nop-09 22:56:30 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 30

[3] 2015-Nop-09 22:56:46 ABOUT TO REBOOT, COUNT 31

[3] 2015-Nop-09 22:58:06 LOADED AFTER REBOOT, COUNT 31

[3] 2015-Nop-09 22:58:06 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 31

[3] 2015-Nop-09 22:58:22 ABOUT TO REBOOT, COUNT 32

[3] 2015-Nop-09 22:59:41 LOADED AFTER REBOOT, COUNT 32

[3] 2015-Nop-09 22:59:41 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 32

[3] 2015-Nop-09 22:59:57 ABOUT TO REBOOT, COUNT 33

[3] 2015-Nop-09 23:01:16 LOADED AFTER REBOOT, COUNT 33

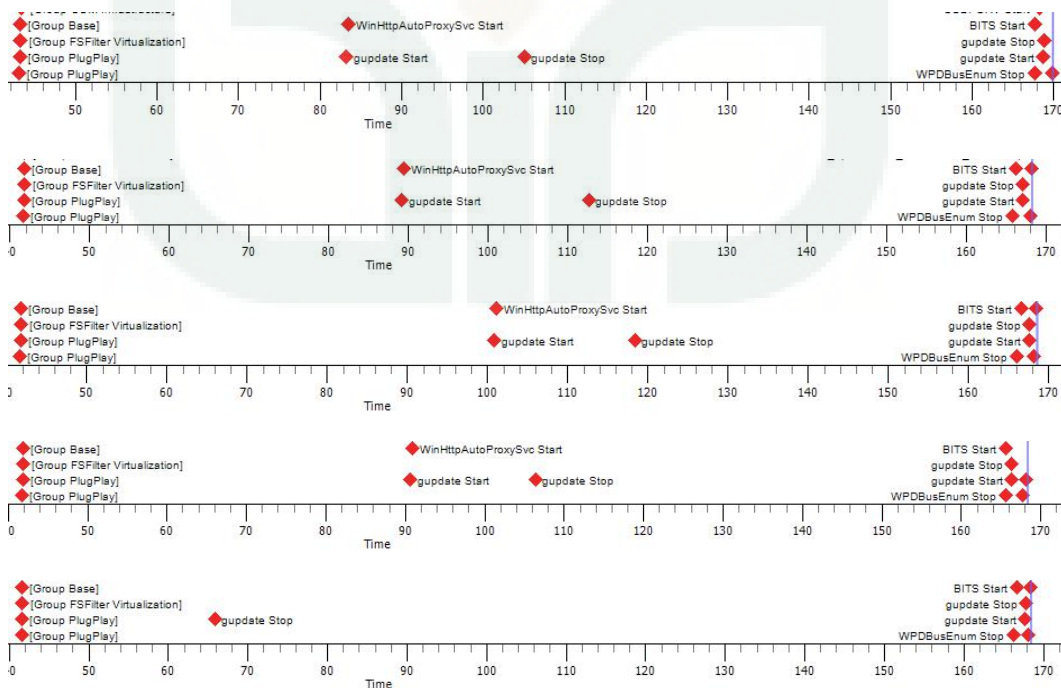
[3] 2015-Nop-09 23:01:16 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 33

[3] 2015-Nop-09 23:01:32 ABOUT TO REBOOT, COUNT 34
[3] 2015-Nop-09 23:02:54 LOADED AFTER REBOOT, COUNT 34
[3] 2015-Nop-09 23:02:54 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 34
[3] 2015-Nop-09 23:03:10 ABOUT TO REBOOT, COUNT 35
[3] 2015-Nop-09 23:04:30 LOADED AFTER REBOOT, COUNT 35
[3] 2015-Nop-09 23:04:30 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 35
[3] 2015-Nop-09 23:04:46 ABOUT TO REBOOT, COUNT 36
[3] 2015-Nop-09 23:06:07 LOADED AFTER REBOOT, COUNT 36
[3] 2015-Nop-09 23:06:07 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 36
[3] 2015-Nop-09 23:06:23 ABOUT TO REBOOT, COUNT 37
[3] 2015-Nop-09 23:07:43 LOADED AFTER REBOOT, COUNT 37
[3] 2015-Nop-09 23:07:43 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 37
[3] 2015-Nop-09 23:07:58 ABOUT TO REBOOT, COUNT 38
[3] 2015-Nop-09 23:09:19 LOADED AFTER REBOOT, COUNT 38
[3] 2015-Nop-09 23:09:19 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 38
[3] 2015-Nop-09 23:09:34 ABOUT TO REBOOT, COUNT 39
[3] 2015-Nop-09 23:10:55 LOADED AFTER REBOOT, COUNT 39
[3] 2015-Nop-09 23:10:55 STARTING COUNTDOWN TIMER FOR REBOOT, COUNT 39
[3] 2015-Nop-09 23:11:11 ABOUT TO REBOOT, COUNT 40
[3] 2015-Nop-09 23:12:31 LOADED AFTER REBOOT, COUNT 40
[3] 2015-Nop-09 23:12:31 LAST REBOOT, COUNT 40
[3] 2015-Nop-09 23:12:32 FINISHED REBOOT CYCLE

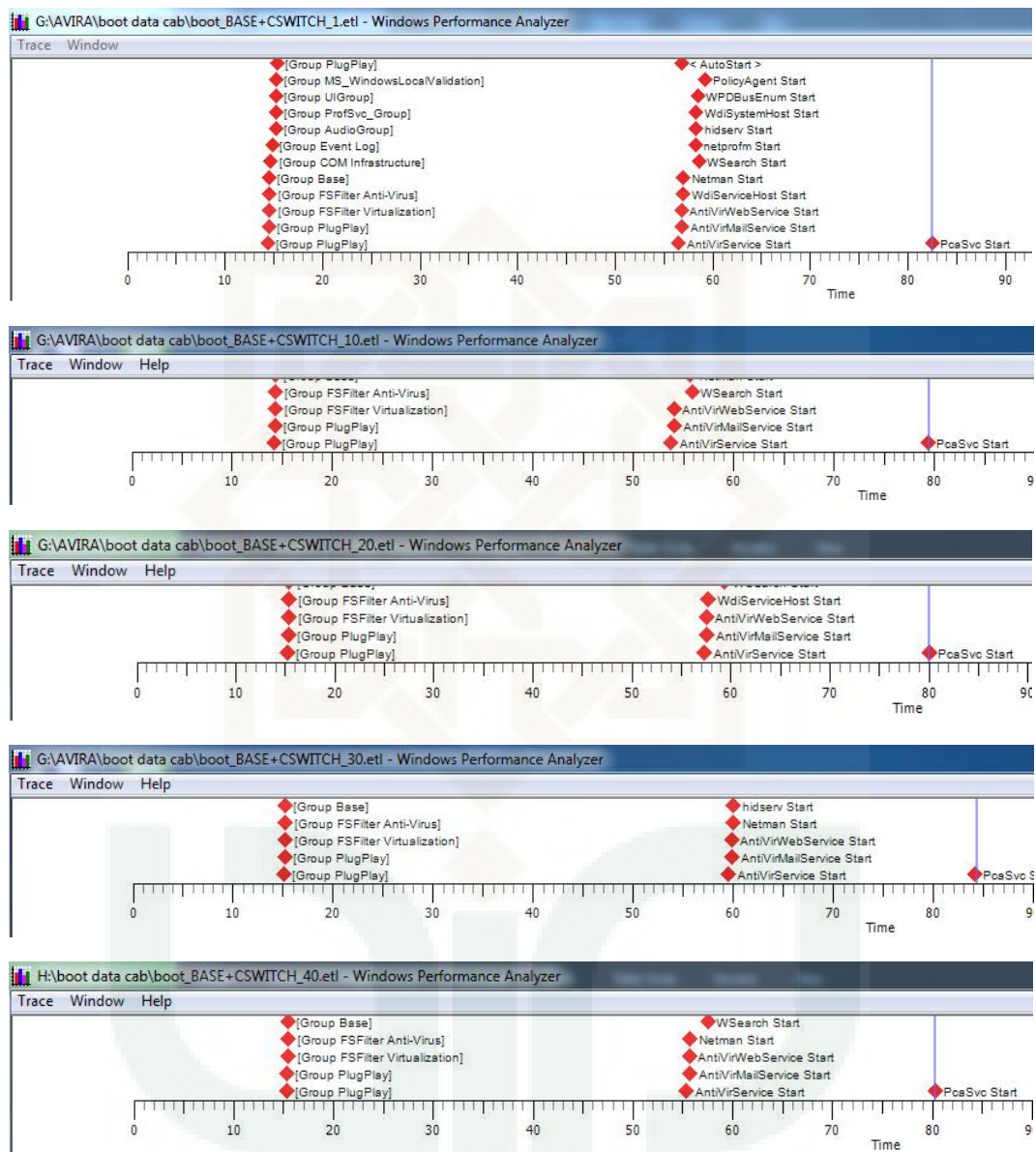
Lampiran 10 : Sampel pengujian boot Avast ke 1, 10, 20, 30, 40



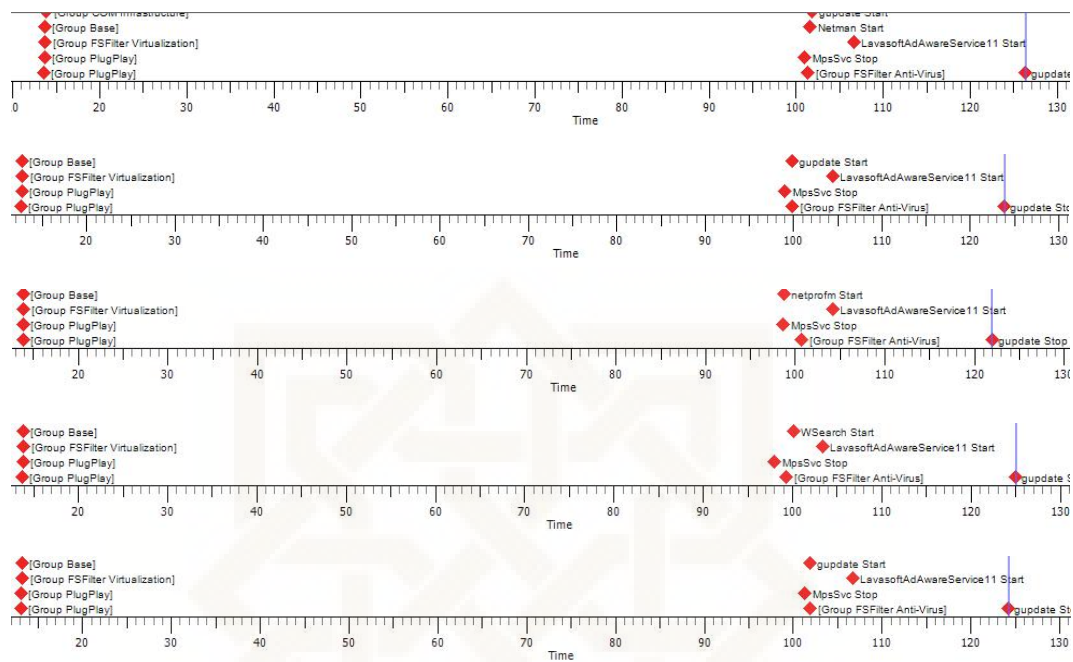
Lampiran 11 : Sampel pengujian boot AVG ke 1, 10, 20, 30, 40



Lampiran 12 : Sampel pengujian boot Avira ke 1, 10, 20, 30, 40



Lampiran 13 : Sampel pengujian boot Ad-Aware ke 1, 10, 20, 30, 40



Lampiran 14 : Sampel pengujian memori *idle* Avast ke 1, 10, 20, 30, 40

AvastVBoxSV...	0	2848	3,512 K	0 K	0 K	168 K	3,680 K
AvastUI.exe	1	1448	6,036 K	0 K	3,184 K	352 K	9,572 K
AvastSvc.exe	0	1428	10,936 K	0 K	4,644 K	404 K	15,984 K
AvastVBoxSV...	0	2848	3,304 K	0 K	0 K	164 K	3,468 K
AvastUI.exe	1	1448	6,228 K	0 K	3,112 K	356 K	9,696 K
AvastSvc.exe	0	1428	5,248 K	0 K	13,912 K	408 K	19,568 K
AvastVBoxSV...	0	2848	3,496 K	0 K	0 K	168 K	3,664 K
AvastUI.exe	1	1448	6,724 K	0 K	2,964 K	360 K	10,048 K
AvastSvc.exe	0	1428	10,296 K	0 K	9,276 K	412 K	19,984 K
AvastVBoxSV...	0	2848	3,600 K	0 K	0 K	168 K	3,768 K
AvastUI.exe	1	1448	6,752 K	0 K	2,956 K	360 K	10,068 K
AvastSvc.exe	0	1428	13,812 K	0 K	6,436 K	412 K	20,660 K
AvastVBoxSV...	0	2848	3,476 K	0 K	0 K	168 K	3,644 K
AvastUI.exe	1	1448	6,740 K	0 K	2,956 K	360 K	10,056 K
AvastSvc.exe	0	1428	10,836 K	0 K	8,848 K	412 K	20,096 K

Lampiran 15 : Sampel pengujian memori *idle* AVG ke 1, 10, 20, 30, 40

avgcmgr.exe	0	1768	4K	0K	0K	8K	12K
avgcsrvx.exe	-1	484	9,820K	0K	0K	308K	10,128K
avgemcx.exe	0	3484	1,880K	0K	0K	84K	1,964K
avgidsagent.ex	0	2128	7,356K	0K	0K	168K	7,524K
avgmfapx.exe	0	3008	4K	0K	0K	8K	12K
avgnsx.exe	0	3472	5,956K	0K	0K	128K	6,084K
avgrsx.exe	-1	368	2,924K	0K	0K	180K	3,104K
avgui.exe	1	2880	2,844K	0K	3,468K	244K	6,556K
avgwdsvc.exe	0	2188	8,932K	0K	4K	212K	9,148K
avgcmgr.exe	0	1768	4K	0K	0K	8K	12K
avgcsrvx.exe	-1	484	9,820K	0K	0K	308K	10,128K
avgemcx.exe	0	3484	1,880K	0K	0K	84K	1,964K
avgidsagent.ex	0	2128	7,184K	0K	0K	168K	7,352K
avgmfapx.exe	0	3008	4K	0K	0K	8K	12K
avgnsx.exe	0	3472	5,956K	0K	0K	128K	6,084K
avgrsx.exe	-1	368	2,924K	0K	0K	180K	3,104K
avgui.exe	1	2880	2,844K	0K	3,468K	244K	6,556K
avgwdsvc.exe	0	2188	8,932K	0K	4K	212K	9,148K
avgcmgr.exe	0	1400	4K	0K	0K	8K	12K
avgcsrvx.exe	-1	484	9,820K	0K	0K	308K	10,128K
avgemcx.exe	0	3484	1,880K	0K	0K	84K	1,964K
avgidsagent.ex	0	2128	7,488K	0K	0K	168K	7,656K
avgmfapx.exe	0	3008	4K	0K	0K	8K	12K
avgnsx.exe	0	3472	5,956K	0K	0K	128K	6,084K
avgrsx.exe	-1	368	2,924K	0K	0K	180K	3,104K
avgui.exe	1	2880	2,860K	0K	3,452K	244K	6,556K
avgwdsvc.exe	0	2188	8,932K	0K	4K	212K	9,148K
avgcmgr.exe	0	1400	4K	0K	0K	8K	12K
avgcsrvx.exe	-1	484	9,820K	0K	0K	308K	10,128K
avgemcx.exe	0	3484	1,880K	0K	0K	84K	1,964K
avgidsagent.ex	0	2128	7,568K	0K	0K	168K	7,736K
avgmfapx.exe	0	3008	4K	0K	0K	8K	12K
avgnsx.exe	0	3472	5,956K	0K	0K	128K	6,084K
avgrsx.exe	-1	368	2,924K	0K	0K	180K	3,104K
avgui.exe	1	2880	2,860K	0K	3,452K	244K	6,556K
avgwdsvc.exe	0	2188	8,932K	0K	4K	212K	9,148K
avgcmgr.exe	0	1400	4K	0K	0K	8K	12K
avgcsrvx.exe	-1	484	9,820K	0K	0K	308K	10,128K
avgemcx.exe	0	3484	1,880K	0K	0K	84K	1,964K
avgidsagent.ex	0	2128	7,568K	0K	0K	168K	7,736K
avgmfapx.exe	0	3008	4K	0K	0K	8K	12K
avgnsx.exe	0	3472	5,956K	0K	0K	128K	6,084K
avgrsx.exe	-1	368	2,924K	0K	0K	180K	3,104K
avgui.exe	1	2880	2,860K	0K	3,452K	244K	6,556K
avgwdsvc.exe	0	2188	8,932K	0K	4K	212K	9,148K

Lampiran 16 : Sampel pengujian memori *idle* Avira ke 1, 10, 20, 30, 40

avgnt.exe	1	2244	1,752 K	0 K	4,208 K	188 K	6,148 K
avguard.exe	0	1844	10,640 K	7,900 K	25,084 K	464 K	44,088 K
avshadow.exe	0	2652	1,464 K	0 K	0 K	108 K	1,572 K
avgnt.exe	1	2244	1,908 K	0 K	4,056 K	192 K	6,156 K
avguard.exe	0	1844	12,236 K	9,408 K	22,816 K	464 K	44,924 K
avshadow.exe	0	2652	1,464 K	0 K	0 K	108 K	1,572 K
avgnt.exe	1	2244	1,916 K	0 K	4,056 K	192 K	6,164 K
avguard.exe	0	1844	9,552 K	12,208 K	24,284 K	464 K	46,508 K
avshadow.exe	0	2652	1,464 K	0 K	0 K	108 K	1,572 K
avgnt.exe	1	2244	1,484 K	0 K	4,488 K	192 K	6,164 K
avguard.exe	0	1844	11,888 K	12,856 K	22,440 K	464 K	47,648 K
avshadow.exe	0	2652	1,464 K	0 K	0 K	108 K	1,572 K
avgnt.exe	1	2244	1,544 K	0 K	4,416 K	192 K	6,152 K
avguard.exe	0	1844	9,176 K	14,984 K	23,660 K	468 K	48,288 K
avshadow.exe	0	2652	1,464 K	0 K	0 K	108 K	1,572 K

Lampiran 17 : Sampel pengujian memori *idle* Ad-Aware ke 1, 10, 20, 30, 40

AdAwareSer...	0	1864	200,928 K	0 K	0 K	764 K	201,692 K
AdAwareTra...	1	2128	8,256 K	0 K	0 K	196 K	8,452 K
AdAwareSer...	0	1864	201,024 K	0 K	0 K	764 K	201,788 K
AdAwareTra...	1	2128	8,256 K	0 K	0 K	196 K	8,452 K
AdAwareSer...	0	1864	200,980 K	0 K	0 K	760 K	201,740 K
AdAwareTra...	1	2128	8,256 K	0 K	0 K	196 K	8,452 K
AdAwareSer...	0	1864	200,980 K	0 K	0 K	760 K	201,740 K
AdAwareTra...	1	2128	8,256 K	0 K	0 K	196 K	8,452 K
AdAwareSer...	0	1864	200,968 K	0 K	0 K	760 K	201,728 K
AdAwareTra...	1	2128	8,256 K	0 K	0 K	196 K	8,452 K

Lampiran 18 : Sampel pengujian memori *full scan* Avast ke 1, 10, 20, 30, 40

AvastSvc.exe	0	1432	13,400 K	0 K	18,888 K	444 K	32,732 K
AvastUI.exe	1	2476	10,408 K	0 K	2,224 K	396 K	13,028 K
AvastVBoxSV...	0	3068	3,476 K	0 K	8 K	152 K	3,636 K
AvastSvc.exe	0	1432	13,676 K	0 K	33,584 K	468 K	47,728 K
AvastUI.exe	1	2476	10,752 K	0 K	2,144 K	392 K	13,288 K
AvastVBoxSV...	0	3068	3,580 K	0 K	8 K	156 K	3,744 K
AvastSvc.exe	0	1432	16,044 K	0 K	20,760 K	436 K	37,240 K
AvastUI.exe	1	2476	11,384 K	0 K	2,068 K	404 K	13,856 K
AvastVBoxSV...	0	3068	3,524 K	0 K	8 K	156 K	3,688 K
AvastSvc.exe	0	1432	19,232 K	0 K	21,432 K	456 K	41,120 K
AvastUI.exe	1	2476	11,424 K	0 K	2,068 K	400 K	13,892 K
AvastVBoxSV...	0	3068	3,452 K	0 K	8 K	152 K	3,612 K

AvastSvc.exe	0	1432	16,796 K	0 K	21,640 K	452 K	38,888 K
AvastUI.exe	1	2476	11,840 K	0 K	2,056 K	400 K	14,296 K
AvastVBoxSV...	0	3068	3,416 K	0 K	8 K	152 K	3,576 K

Lampiran 19 : Sampel pengujian memori *full scan* AVG ke 1, 10, 20, 30, 40

avgcmgr.exe	0	2884	4 K	0 K	0 K	8 K	12 K
avgcsrvx.exe	-1	480	12,560 K	0 K	0 K	472 K	13,032 K
avgemcx.exe	0	3396	1,912 K	0 K	0 K	92 K	2,004 K
avgidsagent.ex	0	972	7,736 K	0 K	0 K	180 K	7,916 K
avgnsx.exe	0	3388	6,084 K	0 K	0 K	132 K	6,216 K
avgrsx.exe	-1	368	5,744 K	0 K	0 K	196 K	5,940 K
avgui.exe	1	2896	10,648 K	0 K	7,660 K	308 K	18,616 K
avgwdsvc.exe	0	1728	11,844 K	0 K	0 K	260 K	12,104 K
avgcmgr.exe	0	2776	4 K	0 K	0 K	8 K	12 K
avgcsrvx.exe	-1	480	13,380 K	0 K	0 K	472 K	13,852 K
avgemcx.exe	0	3396	1,912 K	0 K	0 K	92 K	2,004 K
avgidsagent.ex	0	972	7,736 K	0 K	0 K	180 K	7,916 K
avgnsx.exe	0	3388	6,140 K	0 K	0 K	132 K	6,272 K
avgrsx.exe	-1	368	5,752 K	0 K	0 K	196 K	5,948 K
avgui.exe	1	2896	10,472 K	0 K	14,704 K	308 K	25,484 K
avgwdsvc.exe	0	1728	11,744 K	0 K	0 K	260 K	12,004 K
avgcmgr.exe	0	1596	4 K	0 K	0 K	8 K	12 K
avgcsrvx.exe	-1	480	17,996 K	0 K	0 K	516 K	18,512 K
avgemcx.exe	0	3396	1,912 K	0 K	0 K	92 K	2,004 K
avgidsagent.ex	0	972	7,760 K	0 K	0 K	180 K	7,940 K
avgnsx.exe	0	3388	6,140 K	0 K	0 K	132 K	6,272 K
avgrsx.exe	-1	368	6,172 K	0 K	0 K	240 K	6,412 K
avgui.exe	1	2896	3,784 K	0 K	26,336 K	312 K	30,432 K
avgwdsvc.exe	0	1728	12,056 K	0 K	0 K	248 K	12,304 K
avgcmgr.exe	0	1596	4 K	0 K	0 K	8 K	12 K
avgcsrvx.exe	-1	480	19,524 K	0 K	0 K	516 K	20,040 K
avgemcx.exe	0	3396	1,912 K	0 K	0 K	92 K	2,004 K
avgidsagent.ex	0	972	7,768 K	0 K	0 K	180 K	7,948 K
avgnsx.exe	0	3388	6,140 K	0 K	0 K	132 K	6,272 K
avgrsx.exe	-1	368	6,172 K	0 K	0 K	240 K	6,412 K
avgui.exe	1	2896	4,372 K	0 K	29,572 K	320 K	34,264 K
avgwdsvc.exe	0	1728	13,188 K	0 K	0 K	248 K	13,436 K
avgcmgr.exe	0	1596	4 K	0 K	0 K	8 K	12 K
avgcsrvx.exe	-1	480	19,852 K	0 K	0 K	516 K	20,368 K
avgemcx.exe	0	3396	1,912 K	0 K	0 K	92 K	2,004 K
avgidsagent.ex	0	972	7,780 K	0 K	0 K	176 K	7,956 K
avgnsx.exe	0	3388	6,140 K	0 K	0 K	132 K	6,272 K
avgrsx.exe	-1	368	6,168 K	0 K	0 K	240 K	6,408 K
avgui.exe	1	2896	4,420 K	0 K	34,044 K	320 K	38,784 K
avgwdsvc.exe	0	1728	12,952 K	0 K	0 K	248 K	13,200 K

Lampiran 20 : Sampel pengujian memori *full scan* Avira ke 1, 10, 20, 30, 40

avgnt.exe	1	2244	2,248 K	0 K	3,728 K	192 K	6,168 K
avguard.exe	0	1844	12,852 K	4,952 K	17,976 K	464 K	36,244 K
avscan.exe	1	2772	179,924 K	0 K	0 K	412 K	180,336 K
avshadow.exe	0	2652	1,592 K	0 K	0 K	112 K	1,704 K
avgnt.exe	1	2244	2,360 K	0 K	3,616 K	192 K	6,168 K
avguard.exe	0	1844	9,268 K	6,248 K	20,908 K	464 K	36,888 K
avscan.exe	1	2772	186,804 K	0 K	0 K	432 K	187,236 K
avshadow.exe	0	2652	1,844 K	0 K	0 K	112 K	1,956 K
avgnt.exe	1	2244	2,360 K	0 K	3,616 K	192 K	6,168 K
avguard.exe	0	1844	12,672 K	4,076 K	18,124 K	464 K	35,336 K
avscan.exe	1	2772	198,096 K	0 K	0 K	448 K	198,544 K
avshadow.exe	0	2652	1,816 K	0 K	0 K	112 K	1,928 K
avgnt.exe	1	2244	2,360 K	0 K	3,616 K	192 K	6,168 K
avguard.exe	0	1844	8,944 K	4,712 K	20,112 K	464 K	34,232 K
avscan.exe	1	2772	195,460 K	0 K	0 K	448 K	195,908 K
avshadow.exe	0	2652	1,736 K	0 K	0 K	112 K	1,848 K
avgnt.exe	1	2244	2,268 K	0 K	3,708 K	188 K	6,164 K
avguard.exe	0	1844	12,192 K	6,036 K	16,296 K	464 K	34,988 K
avscan.exe	1	2340	180,588 K	0 K	0 K	416 K	181,004 K
avshadow.exe	0	2652	1,912 K	0 K	0 K	112 K	2,024 K

Lampiran 21 : Sampel pengujian memori *full scan* Ad-Aware ke 1, 10, 20, 30, 40

AdAwareDes...	1	2120	51,492 K	0 K	0 K	308 K	51,800 K
AdAwareSer...	0	1836	199,348 K	0 K	0 K	740 K	200,088 K
AdAwareTra...	1	2140	8,360 K	0 K	0 K	220 K	8,580 K
AdAwareDes...	1	2120	51,512 K	0 K	0 K	304 K	51,816 K
AdAwareSer...	0	1836	220,316 K	0 K	0 K	848 K	221,164 K
AdAwareTra...	1	2140	8,404 K	0 K	0 K	220 K	8,624 K
AdAwareDes...	1	2120	51,532 K	0 K	0 K	308 K	51,840 K
AdAwareSer...	0	1836	227,396 K	0 K	0 K	848 K	228,244 K
AdAwareTra...	1	2140	8,416 K	0 K	0 K	220 K	8,636 K
AdAwareDes...	1	2120	51,584 K	0 K	0 K	300 K	51,884 K
AdAwareSer...	0	1836	222,240 K	0 K	0 K	844 K	223,084 K
AdAwareTra...	1	2140	8,424 K	0 K	0 K	220 K	8,644 K
AdAwareDes...	1	2120	51,588 K	0 K	0 K	308 K	51,896 K
AdAwareSer...	0	1836	231,164 K	0 K	0 K	848 K	232,012 K
AdAwareTra...	1	2140	8,432 K	0 K	0 K	220 K	8,652 K

Lampiran 22 : Sampel pengujian *full scan* Avast ke 1, 10, 20, 30, 40**Detil Pemindaian**

Waktu Jalankan:	0:12:26
File dicoba:	108015
Folder dicoba:	12249
Jumlah data yang dicoba:	21,9 GB
File terinfeksi:	0

Detil Pemindaian

Waktu Jalankan:	0:11:59
File dicoba:	108024
Folder dicoba:	12251
Jumlah data yang dicoba:	21,9 GB
File terinfeksi:	0

Detil Pemindaian

Waktu Jalankan:	0:11:36
File dicoba:	108029
Folder dicoba:	12251
Jumlah data yang dicoba:	21,9 GB
File terinfeksi:	0

Detil Pemindaian

Waktu Jalankan:	0:12:59
File dicoba:	108027
Folder dicoba:	12251
Jumlah data yang dicoba:	21,9 GB
File terinfeksi:	0

Detil Pemindaian

Waktu Jalankan:	0:12:27
File dicoba:	108016
Folder dicoba:	12249
Jumlah data yang dicoba:	21,9 GB
File terinfeksi:	0

Lampiran 23 : Sampel pengujian *full scan* AVG ke 1, 10, 20, 30, 40

Scanned:	Scan Whole Computer
Number of items:	89551
Started:	06/11/2015, 11:43:22
Finished:	06/11/2015, 11:47:31
Launched by:	TOSHIBA

Scanned:	Scan Whole Computer
Number of items:	77118
Started:	06/11/2015, 13:17:30
Finished:	06/11/2015, 13:18:39
Launched by:	TOSHIBA

Scanned:	Scan Whole Computer
Number of items:	77188
Started:	06/11/2015, 13:41:36
Finished:	06/11/2015, 13:42:59
Launched by:	TOSHIBA

Scanned:	Scan Whole Computer
Number of items:	77235
Started:	06/11/2015, 14:06:45
Finished:	06/11/2015, 14:07:55
Launched by:	TOSHIBA

Scanned:	Scan Whole Computer
Number of items:	77217
Started:	06/11/2015, 14:28:48
Finished:	06/11/2015, 14:30:02
Launched by:	TOSHIBA

Lampiran 24 : Sampel pengujian *full scan* Avira ke 1, 10, 20, 30, 40

Scanned files:	118924
Scanned directories:	11979
Scanned archives:	1028
Used time:	19:16
Scanned:	100%

Scanned files:	119134
Scanned directories:	11984
Scanned archives:	1041
Used time:	19:04
Scanned:	100%

Scanned files:	119462
Scanned directories:	11971
Scanned archives:	1043
Used time:	19:24
Scanned:	100%

Scanned files:	119386
Scanned directories:	11990
Scanned archives:	1044
Used time:	18:49
Scanned:	100%

Scanned files:	119624
Scanned directories:	11994
Scanned archives:	1045
Used time:	20:22
Scanned:	100%

Lampiran 25 : Sampel pengujian *full scan* Ad-Aware ke 1, 10, 20, 30, 40

Type:	Full
Mode:	Manual
Date/Time:	11/10/15 14:35:37
Duration:	00:11:31

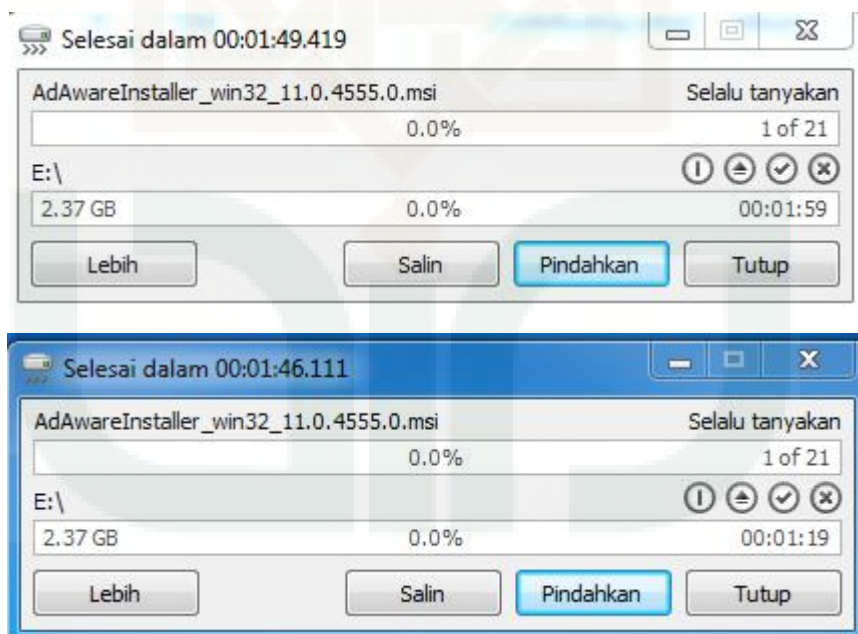
Type:	Full
Mode:	Manual
Date/Time:	11/10/15 15:21:33
Duration:	00:01:51

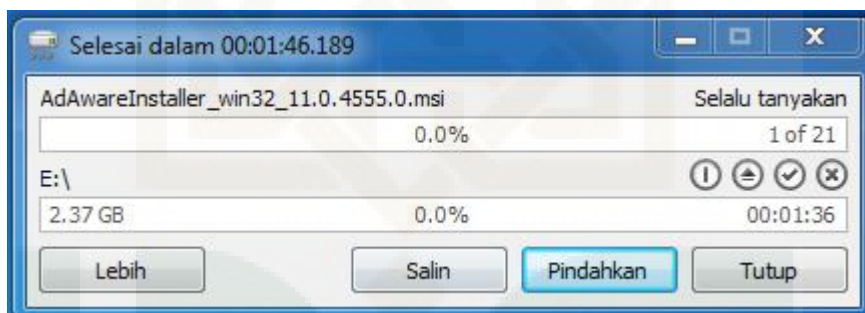
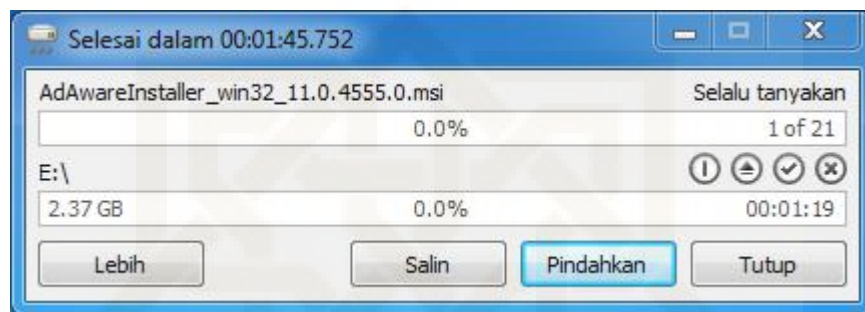
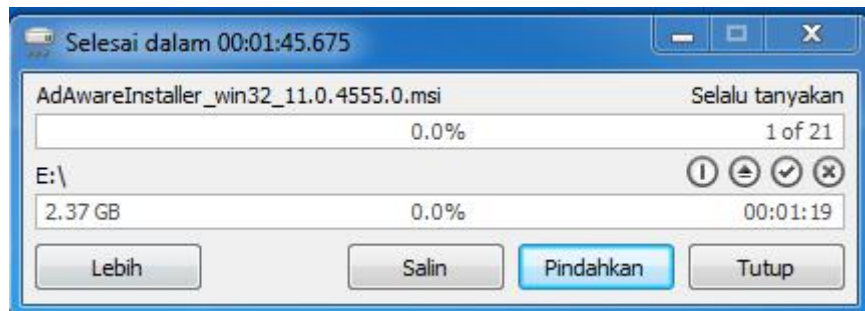
Type:	Full
Mode:	Manual
Date/Time:	11/10/15 15:48:34
Duration:	00:01:48

Type:	Full
Mode:	Manual
Date/Time:	11/10/15 16:14:29
Duration:	00:01:49

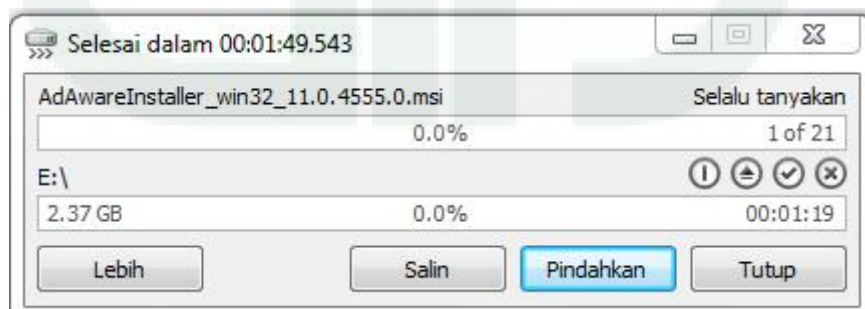
Type:	Full
Mode:	Manual
Date/Time:	11/10/15 16:53:19
Duration:	00:01:53

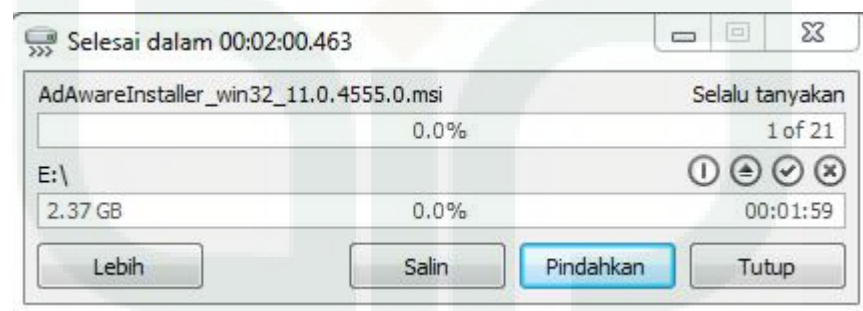
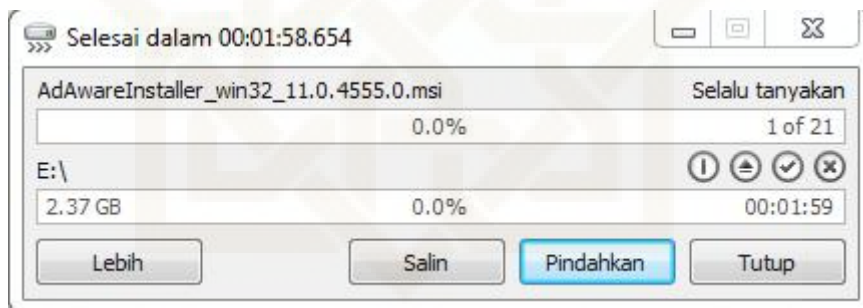
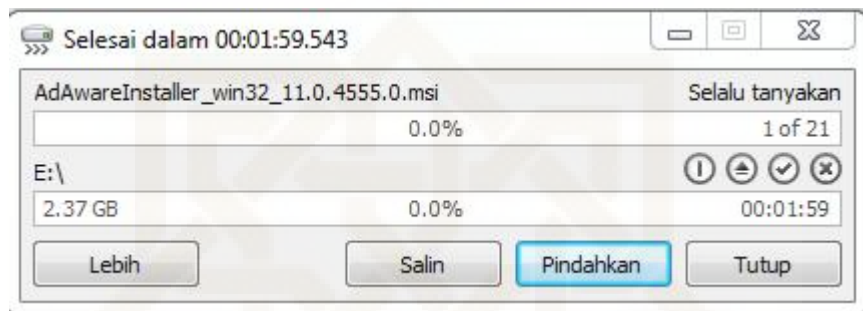
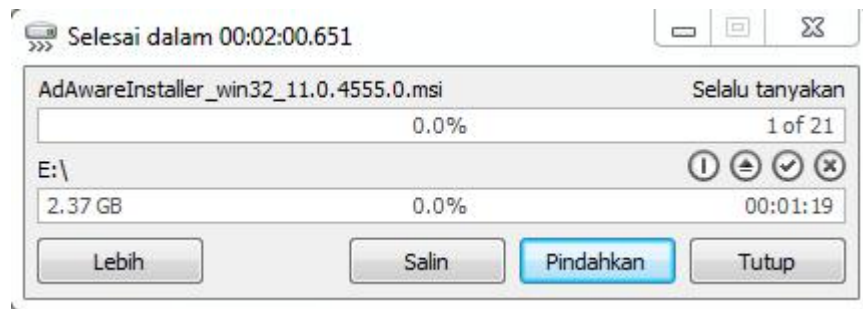
Lampiran 26 : Sampel pengujian *copy paste* Avast ke 1, 10, 20, 30, 40

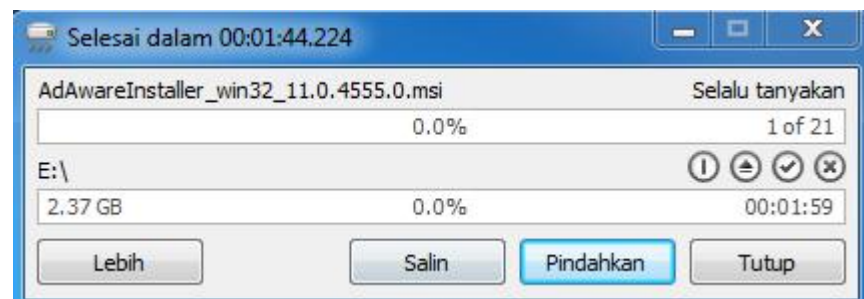
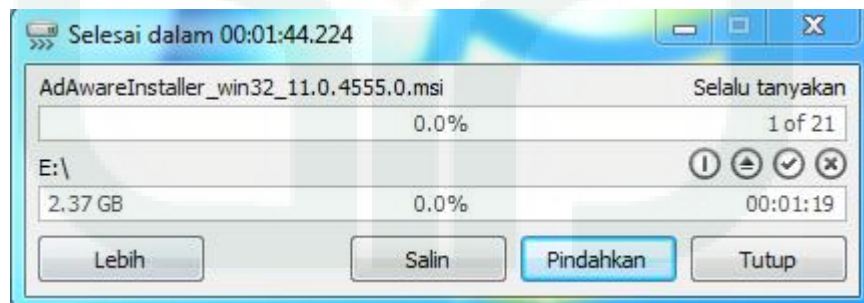
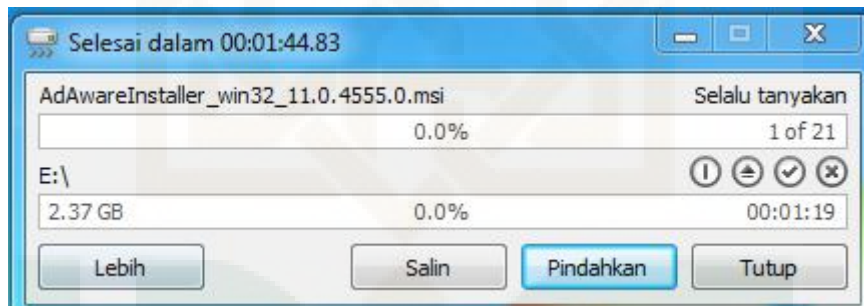
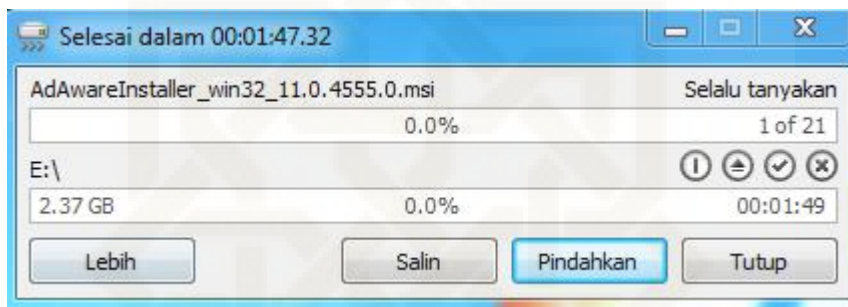
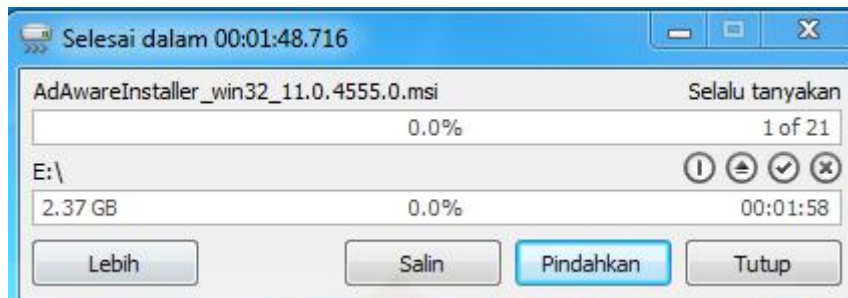




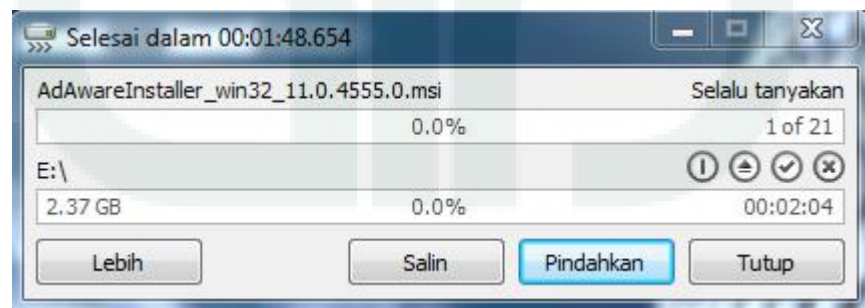
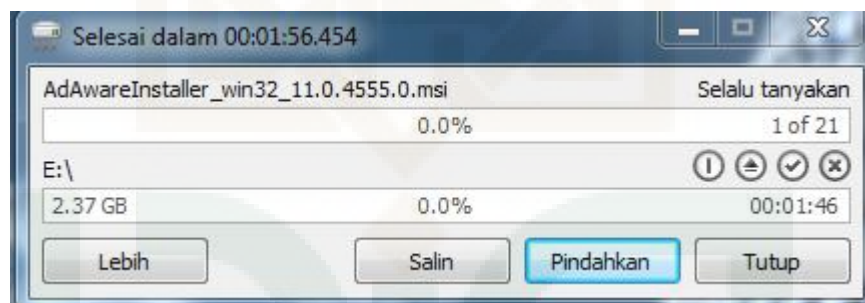
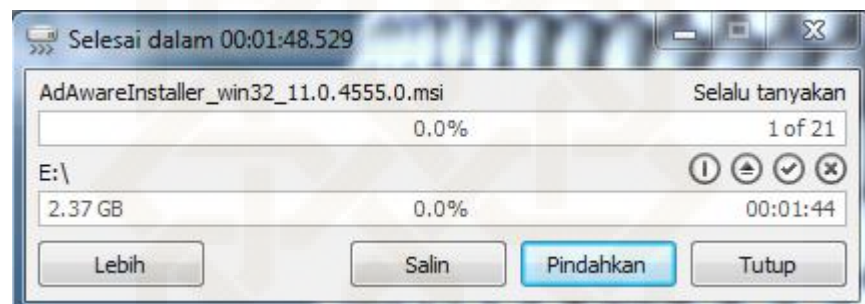
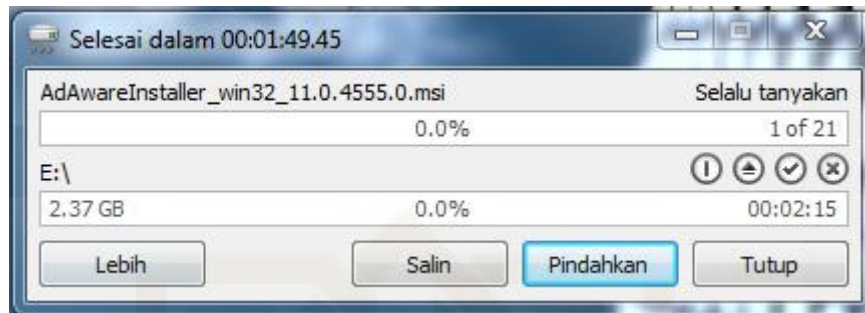
Lampiran 27 : Sampel pengujian *copy paste* AVG ke 1, 10, 20, 30, 40

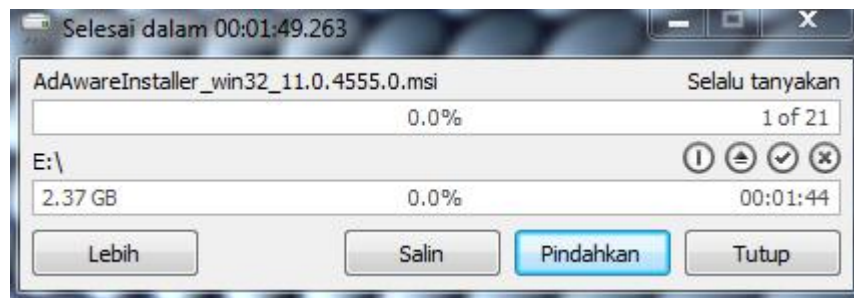




Lampiran 28 : Sampel pengujian *copy paste* Avira ke 1, 10, 20, 30, 40

Lampiran 29 : Sampel pengujian *copy paste* Ad-Aware ke 1, 10, 20, 30, 40





Lampiran 30 : Selisih performa antara memori saat full scan dengan memori saat idle Avast

Loop	Full scan	Idle	Selisih
1	49396	29236	20160
2	48884	29364	19520
3	48708	29396	19312
4	50320	29368	20952
5	50232	29464	20768
6	50160	31624	18536
7	51880	34440	17440
8	65100	48196	16904
9	65836	32030	33806
10	64760	32732	32028
11	55092	32576	22516
12	58796	33580	25216
13	53904	33588	20316
14	53868	33600	20268
15	53760	33580	20180
16	67880	33576	34304
17	54484	34360	20124
18	55184	33544	21640
19	55868	34364	21504
20	54784	33696	21088
21	54722	33696	21026
22	56268	33684	22584
23	56308	33668	22640
24	58004	33656	24348
25	56704	34320	22384
26	56960	33648	23312
27	54560	33600	20960
28	54864	33792	21072
29	55808	34496	21312
30	58624	34496	24128
31	53380	33756	19624
32	54984	33728	21256
33	58592	33732	24860
34	54356	33716	20640
35	54288	33668	20620
36	54420	33900	20520
37	67316	33896	33420
38	53880	33872	20008
39	55528	33840	21688
40	56760	33796	22964
Selisih rata-rata>			21562

Lampiran 31 : Selisih performa antara memori saat full scan dengan memori saat idle AVG

Loop	Full scan	Idle	Selisih				
1	65840	44532	21308	21	84004	44664	39340
2	68824	44536	24288	22	85180	44664	40516
3	72508	44536	27972	23	87456	44664	42792
4	69780	44536	25244	24	87560	44664	42896
5	74168	44536	29632	25	86692	44664	42028
6	73952	44536	29416	26	89520	44664	44856
7	76008	44540	31468	27	89516	44664	44852
8	76292	44540	31752	28	88184	44664	43520
9	77396	44356	33040	29	90388	44672	45716
10	73492	44360	29132	30	90388	44744	45644
11	78464	44360	34104	31	88252	44744	43508
12	78632	44360	34272	32	90788	44744	46044
13	80196	44360	35836	33	90868	44744	46124
14	79716	44360	35356	34	89372	44744	44628
15	81896	44360	37536	35	91460	44744	46716
16	81680	44360	37320	36	91444	44744	46700
17	80868	44360	36508	37	87632	44744	42888
18	82136	44360	37776	38	92524	44744	47780
19	82856	44360	38496	39	88684	44744	43940
20	83888	44664	39224	40	95004	44744	50260
				Selisih rata-rata>			35784

Lampiran 32 : Selisih performa antara memori saat full scan dengan memori saat idle Avira

Loop	Full scan	Idle	Selisih
1	224452	51808	172644
2	226856	52000	174856
3	225116	51308	173808
4	217168	51476	165692
5	222588	51791	170797
6	232752	52000	180752
7	232820	52328	180492
8	229860	52328	177532
9	232932	52476	180456
10	232248	52652	179596
11	240804	52832	187972
12	240368	52972	187396
13	241980	53060	188920
14	245452	53204	192248
15	244460	53444	191016
16	235008	53560	181448
17	232808	54376	178432
18	237236	53960	183276
19	238804	54136	184668
20	241976	54244	187732
21	243296	54340	188956
22	244316	54524	189792
23	239252	54792	184460
24	233232	54920	178312
25	233612	55008	178604
26	235640	55088	180552
27	236728	55208	181520
28	237776	55296	182480
29	237692	55376	182316
30	238156	55384	182772
31	237824	55452	182372
32	259036	55468	203568
33	258728	55604	203124
34	258864	55596	203268
35	245872	55672	190200
36	242468	55788	186680
37	224820	55820	169000
38	225040	55804	169236
39	223596	55908	167688
40	224180	56012	168168
Selisih rata-rata>			170406

Lampiran 33 : Selisih performa antara memori saat full scan dengan memori saat idle Ad-Aware

Loop	Full scan	Idle	Selisih				
1	260468	210144	50324	21	287868	210192	77676
2	264716	210252	54464	22	285744	210180	75564
3	254392	210252	44140	23	291016	210192	80824
4	267332	210240	57092	24	292000	210192	81808
5	301216	210252	90964	25	292024	210180	81844
6	281044	210252	70792	26	292640	210192	82448
7	291488	210240	81248	27	294692	210192	84500
8	284700	210252	74448	28	294104	210180	83924
9	280536	210252	70284	29	284056	210192	73864
10	281604	210240	71364	30	283612	210192	73420
11	279688	210252	69436	31	283716	210180	73536
12	286472	210252	76220	32	293624	210192	83432
13	285000	210240	74760	33	288892	210192	78700
14	288892	210252	78640	34	287128	210180	76948
15	283216	210252	72964	35	283632	210192	73440
16	288192	210240	77952	36	293160	210192	82968
17	287220	210252	76968	37	295728	210180	85548
18	289924	210192	79732	38	286404	210192	76212
19	295296	210180	85116	39	283804	210192	73612
20	288720	210192	78528	40	292560	210180	82380
				Selisih rata-rata>			66352

DAFTAR RIWAYAT HIDUP

A. Identitas Diri

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B. Riwayat Pendidikan

Pendidikan Formal :

1. SDN Negeri Lidah Kulon 1 Surabaya, tahun lulus 2004
2. MTs Negeri 2 Surabaya, tahun lulus 2007
3. SMA Negeri 9 Surabaya, tahun lulus 2010