

Performance Validation Report of Early Detection Center and Registry Cleaner for



Performance Validation Report

By



January 22, 2010

Submitted by: QASource Team

Seller Restrictions

This data shall not be duplicated, used nor disclosed in whole or in part for any purpose.

This restriction does not limit the client's or prospective client's right to use the information contained in the data if it is obtained from another source without restriction. The data subject to this restriction is contained in all marked sheets.

Table of Contents

1	Objective.....	4
2	Test Report for Machine 1	4
2.1	Machine1 configuration.....	4
2.2	List of Malware installed on Machine1	4
2.3	Final Conclusion of tests conducted on Machine 1.....	5
3	Test Report for Machine 2.....	5
3.1	Machine2 configuration.....	5
3.2	List of Malware installed on Machine 2.....	5
3.3	Final Conclusion of tests conducted on Machine 2.....	6
4	Test Report for Machine 3.....	7
4.1	Machine3 configuration.....	7
4.2	List of Malware installed on Machine3	7
4.3	Final Conclusion for Machine 3.....	8
Annexure:		
5	Assumptions.....	8
1	Performance Test Scenarios for Machine 1	9
1.1	Test Scenario 1	9
1.2	Test Scenario 1 a).....	10
1.3	Test Scenario 2	11
1.4	Test Scenario 3	12
1.5	Test Scenario 4.....	13
1.6	Test Scenario 5.....	14
1.7	Test Scenario 6.....	15
1.8	Test Scenario 7	16
1.9	Test Scenario 8.....	17
2	Performance Test Scenarios for Machine 2.....	18
2.1	Test Scenario 1	18
2.2	Test Scenario 1 a).....	19
2.3	Test Scenario 2	20
2.4	Test Scenario 3	21
2.5	Test Scenario 4.....	22
2.6	Test Scenario 5.....	23
2.7	Test Scenario 6.....	24
2.8	Test Scenario 7	25
2.9	Test Scenario 8.....	26
3	Performance Test Scenarios for Machine 3	27
3.1	Test Scenario 1	27
3.2	Test Scenario 1 a).....	28
3.3	Test Scenario 2	29
3.4	Test Scenario 3	30
3.5	Test Scenario 4.....	31
3.6	Test Scenario 5.....	32
3.7	Test Scenario 6.....	33
3.8	Test Scenario 7	34
3.9	Test Scenario 8.....	35

1 Objective

This document contains the measurements/observations and conclusion of the tests conducted by QASource to evaluate the performance of machines with CyberDefender's Early Detection Center (EDC) and Registry Cleaner (RC) products run on them. Team executed the variety of tests on different configurations and gathered the data when test machines are:

- i) Setup freshly and totally clean
- ii) Infected with malware
- iii) Cleaned up after running EDC and RC

2 Test Report for Machine 1

2.1 Machine1 configuration

Machine1 – High-end	
Processor	Intel Pentium dual CPU 1.80 GHz
RAM	4GB
Graphics Card	GeForce7050.NVIDIA nForce 610i
OS	Windows 7
Office	Microsoft Office 2007
Internet Explorer	IE 8.0
Hard Disk	40 GB

2.2 List of Malware installed on Machine1

- i) \malware_samples\exe_samples -

Software Names	Machine1 (XP OS)
AntiMalwareGF	Installed
AntivirusXP	Not working
comp-def-2009	Installed
defender-2009	Installed
pdinstall2009	Installed
setup2	Installed
setup3	Installed
setup_1	Installed
Setupxv	Installed
SystemGuardCenter_Setup_Dual_en	Installed
TSC.exe	Installed
WinDefender2009	Installed

- ii) \malware_part2\part2 -

AntivirusPC2009	Not working
GreatDefender	Installed
PcsProtector	Installed
spywareremover	Installed

2.3 Final Conclusion of tests conducted on Machine 1

S.No.	Test Scenarios	Conclusions	
		% Speed over Nasty machine	% Speed over Clean machine
1	Measuring the time for the login screen to appear, after performing a Cold boot of the machine	107.0	97.4
1a)	Measuring the time from cold boot to login to a successful launch of Internet Explorer (visiting page, Google.com)	99.3	78.0
2	After starting a machine from standby.	107.8	101.1
3	After starting a machine when it was in hibernate mode.	97.2	96.7
4	Measure the time it takes to launch Excel with a large file containing data in 10,000 cells.	125.3	101.9
5	Measuring the time to launch a 5 MB Microsoft Word file.	112.3	97.5
6	Measuring the time to launch IE8	64.3	46.8
7	Measure the time it takes to visit apple.com and time it takes to load the page.	256.7	88.2
8	Measuring the time to launch IE and visiting Google.com from a freshly booted machine.	68.9	54.6

***Please refer the Annexure for detailed readings of each test.

3 Test Report for Machine 2

3.1 Machine2 configuration

Machine2 - Typical	
Processor	Intel Pentium 4 CPU 3.0 GHz
RAM	1GB
Graphics Card	Intel 82865G Graphics Controller
OS	Windows XP SP2
Office	Microsoft Office 2003
Internet Explorer	IE 7.0
Hard Disk	40GB

3.2 List of Malware installed on Machine 2

i) \malware_samples\exe_samples -

Software Names	Machine2 (XP OS)

AntieMalwareGF	Installed
AntivirusXP	Installed
comp-def-2009	Installed
defender-2009	Installed
pdinstall2009	Installed
setup2	Installed
setup3	Installed
setup_1	Installed
Setupxv	Installed
SystemGuardCenter_Setup_Dual_en	Installed
TSC.exe	Installed
WinDefender2009	Installed

ii) \malware_part2\part2 -

AntivirusPC2009	Installed
GreatDefender	Installed
PcsProtector	Installed
spywareremover	Installed

3.3 Final Conclusion of tests conducted on Machine 2

S.No.	Test Scenarios	Conclusions	
		% Speed over Nasty machine	% Speed over Clean machine
1	Measuring the time for the login screen to appear, after performing a Cold boot of the machine	104.1	90.5
1a)	Measuring the time from cold boot to login to a successful launch of Internet Explorer (visiting page, Google.com)	123.6	95.1
2	After starting a machine from standby.	196.1	110.5
3	After starting a machine when it was in hibernate mode.	99.2	82.2
4	Measure the time it takes to launch Excel with a large file containing data in 10,000 cells.	223.3	123.3
5	Measuring the time to launch a 5 MB Microsoft Word file.	119.1	115.6
6	Measuring the time to launch IE 7	125.4	133.3
7	Measure the time it takes to visit apple.com and time it takes to load the page.	132.7	64.0
8	Measuring the time to launch IE and visiting Google.com from a freshly booted machine.	175.4	261.0

***Please refer the Annexure for detailed readings of each test.

4 Test Report for Machine 3

4.1 Machine3 configuration

Machine 3 - Obsolete	
Processor	Intel 1.8 GHz
RAM	256 MB
Graphics Card	Via 82845GL Graphic controller
OS	Windows XP SP2
Office	Microsoft Office 2000
Internet Explorer	IE 6.0
Hard Disk	20 GB

4.2 List of Malware installed on Machine3

i) \malware_samples\exe_samples -

Software Names	Machine3 (XP OS)
AntieMalwareGF	Installed
AntivirusXP	Installed
comp-def-2009	Installed
defender-2009	Installed
pdinstall2009	Installed
setup2	Installed
setup3	Installed
setup_1	Installed
Setupxv	Installed
SystemGuardCenter_Setup_Dual_en	Installed
TSC.exe	Installed
WinDefender2009	Installed

ii) \malware_part2\part2 -

AntivirusPC2009	Installed
GreatDefender	Installed
PcsProtector	Installed
spywareremover	Installed

4.3 Final Conclusion for Machine 3

S.No.	Test Scenarios	Conclusions	
		% Speed over Nasty machine	% Speed over Clean machine
1	Measuring the time for the login screen to appear, after performing a Cold boot of the machine	103.0	96.6
1a)	Measuring the time from cold boot to login to a successful launch of Internet Explorer (visiting page, Google.com)	264.7	68.1
2	After starting a machine from standby.	109.8	98.8
3	After starting a machine when it was in hibernate mode.	112.8	106.5
4	Measure the time it takes to launch Excel with a large file containing data in 10,000 cells.	181.3	154.0
5	Measuring the time to launch a 5 MB Microsoft Word file.	106.5	99.3
6	Measuring the time to launch IE	98.4	85.2
7	Measure the time it takes to visit apple.com and time it takes to load the page.	100.2	89.3
8	Measuring the time to launch IE and visiting Google.com from a freshly booted machine.	162.2	106.1

*** Please refer the Annexure for detailed readings of each test.

5 Assumptions

1. Test machines were isolated from the local network and internet. Test machines were connected to Internet only for performing specific test(s).
2. Readings were taken before and after installing and running the Early Detection Center “EDC” and RC together on test machines. We ran 1 scan cycle of earlySPY + 1 scan cycle of earlyVIRUS with enabled state of earlySPAM and early Monitor.
3. Bing toolbar was installed during installation of Early Detection Center (EDC).
4. The MyIdentityDefender toolbar was installed for enabling earlyScam while taking readings after running EDC and RC.
5. All the nasty software as provided by Cyberdefender were installed and they further had infected the system registry entries.
6. Three sets of reading were taken for each performance test scenario before and after installing the nasty software and then after installing and running the EDC and Registry cleaner.
7. The test machine had just the Microsoft Office installed on it. No other software was installed.
8. Tests were run with EDC and RC installed together and no individual readings have been taken.

A. Annexure

1 Performance Test Scenarios for Machine 1

1.1 Test Scenario 1

Measuring the time for the login screen to appear, after performing a Cold boot of the machine

Steps :

1. Ensure that system is already shut down
2. Switch on power i.e. Boot up the system and wait until the Log-in dialog appears.

Data of Machine1

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	41.2	41.9	41.9	42.0	42.2	41.8
After installing the malware	46.2	46.1	45.9	45.8	45.8	46.0
After installing and running EDC and RC	42.0	42.3	43.0	43.4	44.1	42.9

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
41.8	46.0	42.9	107.0%

Formula used for calculating %speed:-

$$\text{Speed of machine cleaned up with EDC \& RC} = \frac{\text{Nasty machine avg reading}}{\text{After running EDC and RC}} \times 100$$

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 107.0% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 97.4% of the speed of Clean machine.

1.2 Test Scenario 1 a)

Measuring the time from cold power down to login to a successful launch of Internet Explorer (visiting page, Google.com).

Steps:

1. Ensure that system is already shut down, auto-login is enabled and IE8 (with Google.com as default page) exist in the system's startup task.
2. Switch on power i.e. Boot up the system and wait until the google.com page is completely loaded in the IE8 browser.
3. Clear the browser cache after page has loaded completely.

Data of Machine1

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	51.4	51.4	51.2	51.6	51.2	51.4
After installing the malware	66.1	65.3	65.0	65.4	65.0	65.4
After installing and running EDC and RC	68.1	64.3	67.2	63.6	66.0	65.9

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
51.4	65.4	65.9	99.3%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 99.3% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 78.0% of the speed of Clean machine.

1.3 Test Scenario 2

After starting a machine from standby.

Steps:

1. Ensure that system is already put in Stand-by mode.
2. Press any key to come out of Stand-by mode and wait until the Log-in dialog appears.

Data of Machine1

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	5.9	6.1	6.0	6.1	6.1	6.0
After installing the malware	6.7	6.4	6.2	6.6	6.3	6.4
After installing and running EDC and RC	6.0	5.9	6.1	5.9	6.0	6.0

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
6.0	6.4	6.0	107.8%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 107.8% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 101.1% of the speed of Clean machine.

1.4 Test Scenario 3

After starting a machine when it was in hibernate mode.

Steps:

1. Ensure that system is already put in Hibernate mode.
2. Press the power button and wait until the Log-in dialog appears.

Data of Machine1

	Time taken for login dialog to appear (secs)					Avg(secs)
	Reading1	Reading2	Reading3	Reading4	Reading5	
Clean machine Readings	49.7	49.5	50.4	50.0	49.8	49.9
After installing the malware	50.0	50.2	50.1	50.1	50.1	50.1
After installing and running EDC and RC	51.3	51.4	52.9	50.1	51.9	51.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
49.9	50.1	51.6	97.2%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 97.2% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 96.7% of the speed of Clean machine.

1.5 Test Scenario 4

Measure the time it takes to launch Excel with a large file containing data in 10,000 cells.

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. Excel file having data in 10,000 cells is present on desktop of the machine.
3. Double Click the excel icon on the desktop and wait until it open.

Data of Machine1

	Time taken to open excel sheet (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	1.2	1.2	1.2	1.2	1.2	1.2
After installing the malware	1.5	1.4	1.7	1.4	1.4	1.5
After installing and running EDC and RC	1.2	1.2	1.1	1.1	1.3	1.2

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
1.2	1.5	1.2	125.3%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 125.3% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 101.9% of the speed of Clean machine.

1.6 Test Scenario 5

Measuring the time to launch a 5 MB Microsoft Word file.

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. 5 MB word file is placed on desktop.
3. Double Click the word icon on the desktop and wait until it open.

Data of Machine1

	Time taken to open Word document (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	1.8	1.6	1.6	1.8	1.6	1.7
After installing the malware	2.5	1.9	2.1	1.7	1.7	2.0
After installing and running EDC and RC	1.5	1.8	1.8	1.8	1.8	1.7

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
1.7	2.0	1.7	112.3%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 112.3% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 97.5% of the speed of Clean machine.

1.7 Test Scenario 6

Measuring the time to launch IE8

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. Double Click the Internet Explorer icon on the desktop.
3. There is no home page set for IE.
4. Wait until we get Done message in IE status bar.

Data of Machine1

	Time taken to launch IE8(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	0.9	1.0	0.8	0.8	0.9	0.9
After installing the malware	1.1	1.4	1.1	1.2	1.2	1.2
After installing and running EDC and RC	1.9	1.7	1.9	1.8	1.9	1.9

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
0.9	1.2	1.9	64.3%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 64.3% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 46.8% of the speed of Clean machine.

1.8 Test Scenario 7

Measure the time it takes to visit apple.com and time it takes to load the page. (For this specific test the machine was connected to internet).

Steps:

1. Ensure that Windows user is already logged-in and IE8 blank page is open.
2. Put the url i.e. apple.com and press enter button.
3. Wait until we get done message in IE status bar.

Data of Machine1

	Time taken to visit apple.com(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	11.4	11.3	11.6	12.0	10.9	11.4
After installing the malware	30.3	30.8	30.9	35.7	38.6	33.2
After installing and running EDC and RC	12.9	11.8	13.1	14.0	13.0	13.0

* For this specific test, time taken will always be dependent on the load on the website and the available internet bandwidth.

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
11.4	33.2	13.0	256.7%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 256.7% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 88.2% of the speed of Clean machine.

1.9 Test Scenario 8

Measuring the time to launch IE and visiting Google.com from a freshly booted machine.

Steps:

1. Ensure that Windows is freshly booted up and IE browser has google.com as default page.
2. Wait until all software/ malware/ settings are loaded in the memory and CPU usage has become consistent.
3. Open IE8 browser and wait until google.com page is loaded to success (i.e. wait until we get Done message in IE status bar.)
4. Clear the browser cache

Data of Machine1

	Time taken to visit google.com(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	3.5	3.9	3.4	3.4	3.7	3.6
After installing the malware	4.3	4.9	4.5	4.5	4.4	4.5
After installing and running EDC and RC	7.8	7.8	5.2	6.4	5.5	6.5

* For this specific test, time taken will always be dependent on the load on the website and the available internet bandwidth.

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
3.6	4.5	6.5	68.9%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 68.9% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 54.6% of the speed of Clean machine.

2 Performance Test Scenarios for Machine 2

2.1 Test Scenario 1

Measuring the time for the login screen to appear, after performing a Cold boot of the machine

Steps :

1. Ensure that system is already shut down
2. Switch on power i.e. Boot up the system and wait until the Log-in dialog appears.

Data of Machine2

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	26.5	26.2	27.9	27.9	28.0	27.3
After installing the malware	31.4	31.2	31.3	31.8	31.4	31.42
After installing and running EDC and RC	30.1	30.3	30.4	30.4	29.7	30.2

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
27.3	31.42	30.2	104.1%

Formula used for calculating %speed:-

$$\text{Speed of machine cleaned up with EDC \& RC} = \frac{\text{Nasty machine avg reading}}{\text{After running EDC and RC}} \times 100$$

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 104.1% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 90.5% of the speed of Clean machine.

2.2 Test Scenario 1 a)

Measuring the time from cold power down to login to a successful launch of Internet Explorer (visiting page, Google.com).

Steps:

1. Ensure that system is already shut down, auto-login is enabled and IE7 (with Google.com as default page) exist in the system's startup task.
2. Switch on power i.e. Boot up the system and wait until the google.com page is completely loaded in the IE7 browser.
3. Clear the browser cache after page has loaded completely.

Data of Machine2

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	43.2	43.7	43.6	43.2	43.1	43.4
After installing the malware	55.9	54.8	57.7	58.6	54.6	56.32
After installing and running EDC and RC	46.4	44.9	45.3	45.5	45.8	45.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
43.4	56.32	45.6	123.6%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 123.6% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 95.1% of the speed of Clean machine.

2.3 Test Scenario 2

After starting a machine from standby.

Steps:

1. Ensure that system is already put in Stand-by mode.
2. Press any key to come out of Stand-by mode and wait until the Log-in dialog appears.

Data of Machine2

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	4.6	4.0	3.9	3.6	3.9	4.0
After installing the malware	9.2	6.2	7.1	7.3	5.7	7.1
After installing and running EDC and RC	3.7	3.8	3.5	3.6	3.5	3.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
4.0	7.1	3.6	196.1%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 196.1% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 110.5% of the speed of Clean machine.

2.4 Test Scenario 3

After starting a machine when it was in hibernate mode.

Steps:

1. Ensure that system is already put in Hibernate mode.
2. Press the power button and wait until the Log-in dialog appears.

Data of Machine2

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	20.7	20.7	20.6	19.7	19.9	20.3
After installing the malware	24.3	24.6	24.8	24.7	24.2	24.52
After installing and running EDC and RC	24.8	24.7	24.7	24.6	24.8	24.7

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
20.3	24.52	24.7	99.2%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 99.2% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 82.2% of the speed of Clean machine.

2.5 Test Scenario 4

Measure the time it takes to launch Excel with a large file containing data in 10,000 cells.

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. Excel file having data in 10,000 cells is present on desktop of the machine.
3. Double Click the excel icon on the desktop and wait until it open.

Data of Machine2

	Time taken to open excel sheet (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	0.8	0.6	0.6	0.8	0.9	0.7
After installing the malware	2.1	1.5	1	1	1.1	1.34
After installing and running EDC and RC	0.6	0.6	0.7	0.5	0.6	0.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
0.7	1.34	0.6	223.3%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 223.3% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 123.3% of the speed of Clean machine.

2.6 Test Scenario 5

Measuring the time to launch a 5 MB Microsoft Word file.

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. 5 MB word file is placed on desktop.
3. Double Click the word icon on the desktop and wait until it open.

Data of Machine2

	Time taken to open Word document (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	10.6	10.2	10.5	9.4	8.9	9.9
After installing the malware	10.8	10.1	10.2	10.1	9.9	10.22
After installing and running EDC and RC	9.3	7.8	7.5	9.4	8.9	8.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
9.9	10.22	8.6	119.1%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 119.1% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 115.6% of the speed of Clean machine.

2.7 Test Scenario 6

Measuring the time to launch IE 7

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. Double Click the Internet Explorer icon on the desktop.
3. There is no home page set for IE.
4. Wait until we get Done message in IE status bar.

Data of Machine2

	Time taken to launch IE 7(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	1.7	1.5	1.8	1.8	1.6	1.7
After installing the malware	1.9	2.1	1.4	1.2	1.3	1.58
After installing and running EDC and RC	1.3	1.4	1.1	1.2	1.3	1.3

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
1.7	1.58	1.3	125.4%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 125.4% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 133.3% of the speed of Clean machine.

2.8 Test Scenario 7

Measure the time it takes to visit apple.com and time it takes to load the page. (For this specific test the machine was connected to internet).

Steps:

1. Ensure that Windows user is already logged-in and IE 7 blank page is open.
2. Put the url i.e. apple.com and press enter button.
3. Wait until we get done message in IE status bar.

Data of Machine2

	Time taken to visit apple.com(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	6.4	3.2	4.5	5.9	3.1	4.6
After installing the malware	10.6	9	9.2	9.6	9.5	9.58
After installing and running EDC and RC	7.1	6.9	7.4	6.3	8.4	7.2

* For this specific test, time taken will always be dependent on the load on the website and the available internet bandwidth.

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
4.6	9.58	7.2	132.7%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 132.7% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 64.0% of the speed of Clean machine.

2.9 Test Scenario 8

Measuring the time to launch IE and visiting Google.com from a freshly booted machine.

Steps:

1. Ensure that Windows is freshly booted up and IE browser has google.com as default page.
2. Wait until all software/ malware/ settings are loaded in the memory and CPU usage has become consistent.
3. Open IE7 browser and wait until google.com page is loaded to success (i.e. wait until we get Done message in IE status bar.)
4. Clear the browser cache.

Data of Machine2

	Time taken to visit google.com(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	6.4	6.0	6.5	5.9	6.0	6.2
After installing the malware	5.8	3.4	4.7	3.9	2.9	4.14
After installing and running EDC and RC	2.2	2.4	2.5	2.5	2.2	2.4

* For this specific test, time taken will always be dependent on the load on the website and the available internet bandwidth.

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
6.2	4.14	2.4	175.4%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 175.4% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 261.0% of the speed of Clean machine.

3 Performance Test Scenarios for Machine 3

3.1 Test Scenario 1

Measuring the time for the login screen to appear, after performing a Cold boot of the machine

Steps :

1. Ensure that system is already shut down
2. Switch on power i.e. Boot up the system and wait until the Log-in dialog appears.

Data of Machine3

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	29.4	29.8	26.0	29.2	28.9	28.7
After installing the malware	32.71	32.9	28.89	28.89	29.34	30.5
After installing and running EDC and RC	29.83	30.98	29.16	29.25	29.11	29.7

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
28.7	30.5	29.7	102.9%

Formula used for calculating %speed:-

$$\text{Speed of machine cleaned up with EDC \& RC} = \frac{\text{Nasty machine avg reading}}{\text{After running EDC and RC}} \times 100$$

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 102.9% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 96.6% of the speed of Clean machine.

3.2 Test Scenario 1 a)

Measuring the time from cold power down to login to a successful launch of Internet Explorer (visiting page, Google.com).

Steps:

1. Ensure that system is already shut down, auto-login is enabled and IE (with Google.com as default page) exist in the system's startup task.
2. Switch on power i.e. Boot up the system and wait until the google.com page is completely loaded in the IE browser.
3. Clear the browser cache after page has loaded completely.

Data of Machine3

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	35.5	32.0	40.1	35.8	35.4	35.8
After installing the malware	147	127	136	159	126	139.0
After installing and running EDC and RC	54.76	51.57	51.34	53.55	51.34	52.5

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
35.8	139.0	52.5	264.7%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 264.7% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 68% of the speed of Clean machine.

3.3 Test Scenario 2

After starting a machine from standby.

Steps:

1. Ensure that system is already put in Stand-by mode.
2. Press any key to come out of Stand-by mode and wait until the Log-in dialog appears.

Data of Machine3

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	4.5	4.7	4.7	4.6	4.7	4.6
After installing the malware	5.31	5.4	5.04	5.04	5	5.2
After installing and running EDC and RC	4.86	4.94	4.5	4.59	4.59	4.7

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
4.6	5.2	4.7	109.8%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 109.8% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 98.8% of the speed of Clean machine.

3.4 Test Scenario 3

After starting a machine when it was in hibernate mode.

Steps:

1. Ensure that system is already put in Hibernate mode.
2. Press the power button and wait until the Log-in dialog appears.

Data of Machine3

	Time taken for login dialog to appear (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	28.5	32.1	32.0	32.2	31.7	31.3
After installing the malware	37.57	33.4	31.81	31.41	31.45	33.1
After installing and running EDC and RC	29.88	29.92	29.34	28.89	28.89	29.4

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
31.3	33.1	29.4	112.7%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 112.7% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 106.5% of the speed of Clean machine.

3.5 Test Scenario 4

Measure the time it takes to launch Excel with a large file containing data in 10,000 cells.

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. Excel file having data in 10,000 cells is present on desktop of the machine.
3. Double Click the excel icon on the desktop and wait until it open.

Data of Machine3

	Time taken to open excel sheet (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	1.8	1.6	1.5	1.0	1.0	1.4
After installing the malware	2.25	1.39	1.2	1.35	1.93	1.6
After installing and running EDC and RC	0.85	0.9	0.94	0.94	0.85	0.9

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
1.4	1.6	0.9	181.25%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 181.25% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 154% of the speed of Clean machine.

3.6 Test Scenario 5

Measuring the time to launch a 5 MB Microsoft Word file.

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. 5 MB word file is placed on desktop.
3. Double Click the word icon on the desktop and wait until it open.

Data of Machine3

	Time taken to open Word document (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	4.5	3.5	3.3	3.4	3.2	3.6
After installing the malware	5.22	3.87	3.82	3.01	3.28	3.8
After installing and running EDC and RC	4.36	3.24	2.92	3.6	3.91	3.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
3.6	3.8	3.6	106.5%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 106.5% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 99.3% of the speed of Clean machine.

3.7 Test Scenario 6

Measuring the time to launch IE

Steps:

1. Ensure that Windows user is already logged-in and no other application is open.
2. Double Click the Internet Explorer icon on the desktop.
3. There is no home page set for IE.
4. Wait until we get Done message in IE status bar.

Data of Machine3

	Time taken to launch IE (secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	2.4	1.2	1.1	1.0	1.1	1.4
After installing the malware	1.48	1.39	1.3	2.11	1.57	1.6
After installing and running EDC and RC	1.66	1.48	1.56	1.62	1.66	1.6

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
1.4	1.6	1.6	98.4%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 98.4% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 85.2% of the speed of Clean machine.

3.8 Test Scenario 7

Measure the time it takes to visit apple.com and time it takes to load the page. (For this specific test the machine was connected to internet).

Steps:

1. Ensure that Windows user is already logged-in and IE blank page is open.
2. Put the url i.e. apple.com and press enter button.
3. Wait until we get done message in IE status bar.

Data of Machine3

	Time taken to visit apple.com(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	7.2	8.4	11.2	9.5	8.7	9.0
After installing the malware	10.44	9.31	9.36	11.61	9.76	10.1
After installing and running EDC and RC	11.74	10.71	9.85	9.41	8.68	10.1

* For this specific test, time taken will always be dependent on the load on the website and the available internet bandwidth.

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
9.0	10.1	10.1	100.2%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 100.2% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 89.3% of the speed of Clean machine.

3.9 Test Scenario 8

Measuring the time to launch IE and visiting Google.com from a freshly booted machine.

Steps:

1. Ensure that Windows is freshly booted up and IE browser has google.com as default page.
2. Wait until all software/ malware/ settings are loaded in the memory and CPU usage has become consistent.
3. Open IE6 browser and wait until google.com page is loaded to success (i.e. wait until we get Done message in IE status bar.)
4. Clear the browser cache

Data of Machine3

	Time taken to visit google.com(secs)					
	Reading1	Reading2	Reading3	Reading4	Reading5	Avg(secs)
Clean machine Readings	4.8	5.1	4.8	4.7	3.7	4.6
After installing the malware	7.38	7.38	7.69	6.21	6.66	7.1
After installing and running EDC and RC	4.5	4.45	4.5	4.18	4.14	4.4

* For this specific test, time taken will always be dependent on the load on the website and the available internet bandwidth.

Comparison of readings

Clean Machine Avg reading(secs)	Nasty machine avg reading(secs)	After running EDC and RC(secs)	%age Speed over Nasty machine
4.6	7.1	4.4	162.2%

Conclusion:

1. Speed of machine cleaned up with EDC & RC is 162.2% of the speed of Nasty machine.
2. Speed of machine cleaned up with EDC & RC is 106.1% of the speed of Clean machine.