PASSMARK
SOFTWARE

Norton 360 v4
Startup Manager

Boot Time Performance Testing

Windows XP, Windows Vista and Windows 7

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REVISION HISTORY

Revision	Revision History	Date
1	Initial version of the Norton 360 v4 Startup Manager and Boot Time Performance Testing Report.	17 February 2010

REFERENCES

Ref #	Document	Author	Date

EXECUTIVE SUMMARY

PassMark Software has conducted performance testing to investigate the impact of using Norton's 360 Startup Manager to optimize system boot time. The Startup Manager is a PC tune-up feature in Norton 360 v4 which shows the applications registered to automatically start when the user's system starts up and allows the user to manage them.

Testing was conducted on three Windows platforms (Windows XP, Windows Vista and Windows 7) on three different hardware configurations (see Appendix 4 – Test Environments).

In addition to installing Norton 360 v4, PassMark also installed twenty-four (24) common software tools and applications on each test platform prior to obtaining test results. These applications range from Instant Messaging Clients (e.g. AIM, Live Messenger) to Media Formats (e.g. RealMedia, QuickTime) and other common applications found on typical home user PCs (see Appendix 3 – Application Versions Used).

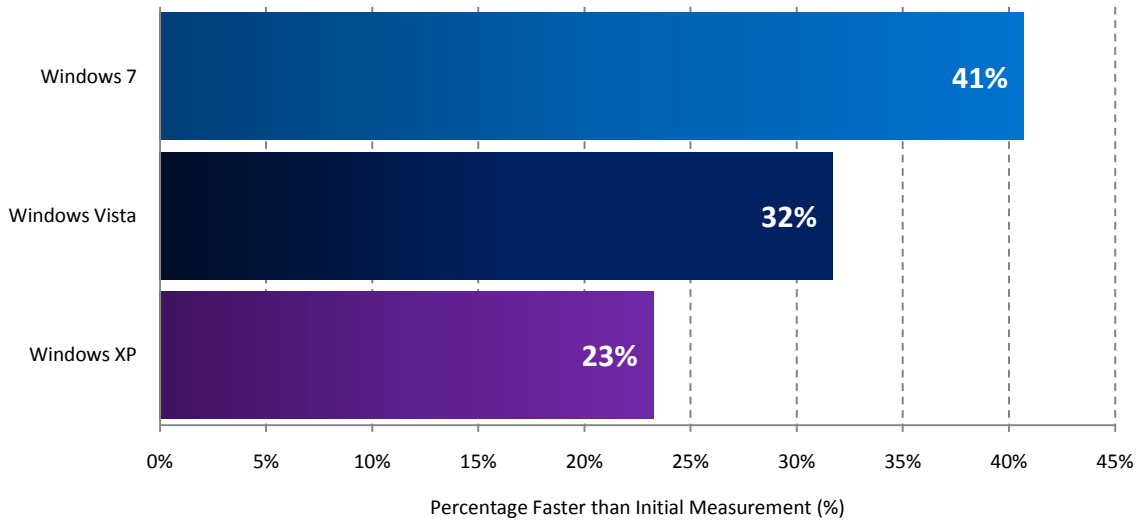
For each test platform, PassMark conducted an initial measurement of the average time taken for the system to boot without optimization, and then conducted a subsequent measurement of the average time taken to boot after optimization with the Startup Manager. The initial measurement was compared with the subsequent measurement to determine any improvements on a system's boot time resulting from Startup Manager's optimizations.

This report contains our results and findings for our boot time performance testing.

RESULTS SUMMARY

Overall, all three test platforms showed a reduction in time taken to boot as a result of startup optimization using Norton 360's Startup Manager function. The amount of improvement varied for each platform.

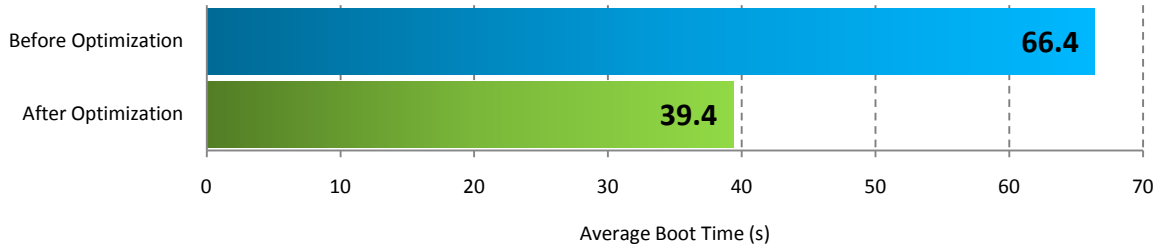
The graph below shows the amount of improvement as a percentage over the initial time it took a machine to boot.



WINDOWS 7

Test Results

The Windows 7 test machine took **66.4** seconds to boot before optimization, on average[1]. After optimization with Norton 360's Startup Manager, the machine took **39.4** seconds to boot, on average[1].



Improvement over Initial Time Taken to Boot

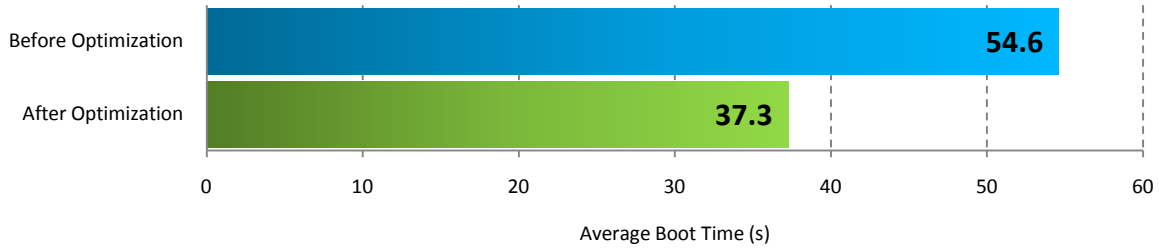
Boot Time Improvement in Seconds	Boot Time Improvement as a Percentage
27s Faster	41% Faster

[1] This average is taken from a set of five Boot Time measurements. Prior to taking all boot time measurements, the boot time process was first optimized using the boot time preparation command in *xbootmgr*. For more information, please refer to **Appendix 1 – Boot Time Methodology** on p9.

WINDOWS VISTA

Test Results

The Windows Vista machine took **54.6** seconds to boot before optimization, on average[2]. After optimization with Norton 360's Startup Manager, the machine took **37.3** seconds to boot, on average[2].



Improvement over Initial Time Taken to Boot

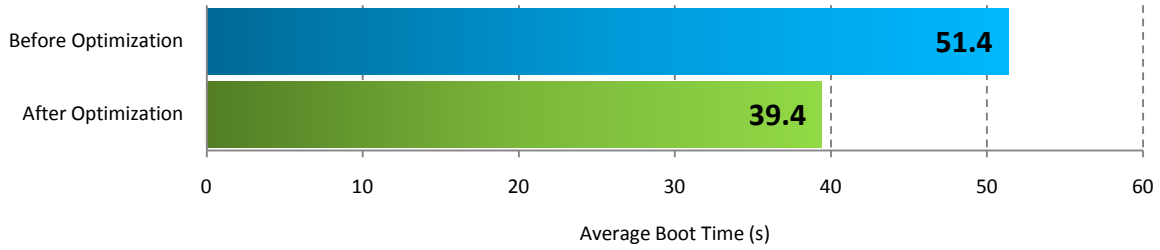
Boot Time Improvement in Seconds	Boot Time Improvement as a Percentage
17s Faster	32% Faster

[2] This average is taken from a set of fifteen Boot Time measurements. Prior to taking all boot time measurements, the boot time process was first optimized using the Windows command *ProcessIdleTasks*. For more information, please refer to **Appendix 1 – Boot Time Methodology** on p9.

WINDOWS XP

Test Results

The Windows XP machine took **51.4** seconds to boot before optimization, on average[3]. After optimization with Norton 360's Startup Manager, the machine took **39.4** seconds to boot, on average[3].



Improvement over Initial Time Taken to Boot

Boot Time Improvement in Seconds	Boot Time Improvement as a Percentage
12s Faster	23% Faster

[3] This average is taken from a set of fifteen Boot Time measurements. Prior to taking all boot time measurements, the boot time process was first optimized using the Windows command *ProcessIdleTasks*. For more information, please refer to **Appendix 1 – Boot Time Methodology** on p9.

DISCLAIMER AND DISCLOSURE

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Disclosure

Symantec Corporation commissioned the production of this report and testing.

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APPENDIX 1 – BOOT TIME METHODOLOGY

Boot Time – Windows Vista / Windows XP

The PerfLog++ tool was used to capture Boot Times on Windows Vista platform.
The Vista machine is then rebooted in a cyclic manner, capturing the time it takes to boot the machine for fifteen reboots. To increase the reliability of boot time testing on Windows Vista, we performed three runs containing five reboots each, leaving a five minute wait time between each cycle. Our final result is the average of 15 boot time samples taken.

We have defined the start of the boot process to be the end of the BIOS initialization. Further, we have defined the end of the boot process to be when the CPU was idle for five continuous seconds.

Windows has various functions to optimize the boot process. For this metric, we have forced optimization of the system with the product installed with ProcessIdleTasks on five consecutive reboots.

For the duration of this test, we have removed the network cable to eliminate the possibility of network activity interfering with result.

Boot Time – Windows 7

On the Windows 7 platform, PassMark Software has used tools available from the **Windows Performance Toolkit version 4.6** (as part of the Microsoft Windows 7 SDK obtainable from the Microsoft Website) with a view to obtain more precise and consistent boot time results on the Windows 7 platform.

The boot process was first optimized with xbootmgr.exe using the command "*xbootmgr.exe -trace boot –prepSystem*" which prepared the system for the testing over six optimization boots. The boot traces obtained from the optimization process are discarded.

After boot optimization, five boot time measurements are collected using the command "*xbootmgr.exe -trace boot -numruns 5*". This command boots the system five times in succession, taking detailed boot traces for each boot cycle.

xperf.exe is then used to parse the boot traces and obtain the BootTimeViaPostBoot value. This value reflects the amount of time it takes the system to complete all (and only) boot time processes. The final result is an average of five boot traces.

For the duration of this test, we have removed the network cable to eliminate the possibility of network activity interfering with result.

APPENDIX 2 – OPTIMIZING WITH STARTUP MANAGER

The subsequent boot time measurement was taken after using the Startup Manager to disable all listed application startup processes.

APPENDIX 3 – APPLICATION VERSIONS USED

Prior to boot time performance testing, the following products and versions were installed on each test platform:

Application Name	Version
Norton 360 v4	4.0.0.127
Adobe Air	1.5.3.9120
Adobe Flash Player	10.0.42.34
Adobe Reader	9.3.0
Adobe Shockwave Player	11.5.6.606
AOL Instant Messenger (AIM)	7.1.6.4
AIM Toolbar	5.96.9.1
Google Chrome	4.0.249.78
Google Desktop	5.9.0911.03589
Google Toolbar	6.4.1321.1732
iTunes	9.0.2
Mobile Me	2.6.0.29
LightScribe	1.18.10.2
LogMeInRescue	6.1.617
Microsoft Office Suite 2007	12.0.6504.500
Nero CD Burner (Trial version)	9.4.19.100
QuickTime	7.6.5
RealPlayer SP	1.0.5
RoboForm	6.9.98
SnapFish Picture Mover	3.4.1.15
Sun Java	6.18
Windows Live Messenger	14.0.8089.726
Windows Live Toolbar	14.0.8064.0206
Yahoo Messenger	10.0.0.1102-au
Yahoo Toolbar	2.1

APPENDIX 4 – TEST ENVIRONMENTS

The following environments were used for this Boot Time performance testing:

Windows 7 (64-bit) System

CPU:	Intel Core i7 920 Quad-Core @ 2.67GHz
Motherboard:	Intel x58 Motherboard
RAM:	6GB DDR3 RAM
HDD:	Western Digital 500GB 7200RPM.
O/S:	Windows 7 Ultimate (x64)

Windows Vista (32-bit) System

Model:	IBM/Lenovo A55 ThinkCentre Desktop
CPU:	Core2 Duo 6300
RAM:	1GB DDR2
HDD:	220GB
O/S:	Windows Vista Ultimate (32-bit) with Service Pack 2.
Secondary SSD:	Corsair CMFSSD-64D1 64GB SSD

Windows XP (32-bit) System

Model:	Acer Aspire One Netbook
CPU:	Intel(R) Atom(TM) CPU N270 @ 1.60GHz
RAM:	1GB 533MHz DDR2 SDRAM
HDD:	Corsair CMFSSD-64D1 64GB SSD
Video Card:	Integrated Graphics Media Accelerator 945 Express
O/S:	Windows XP Home (32-bit) with Service Pack 3