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UNIVERSITY OF RHODE ISLAND DEPARTMENT OF COMPUTER SCIENCE

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Technical Report TR10-328

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This report applies the U.S. government's National Institute of Standards (NIST) NIST Software Write Blocker Test Suite V1.2 [1] to SAFE Block Win7 V1.0 [2], a software write blocker prototyped at the University of Rhode Island and marketed by ForensicSoft, Inc. The results demonstrate that SAFE Block Win7 V1.0 meets all NIST base requirements, and all NIST mandatory and optional test assertions. To facilitate comparison, this report generally follows the format of the NIST report "ACES Software Write Block Tool Test Report: Writeblocker Windows XP Version 6.10.0" January 2008 [3]. However, this is not a NIST report and should in no way be construed as NIST-conducted tests, or NIST-approved results.

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1. NIST Base Requirements and Our Conclusions

SAFE Block Win7 V1.0 shall not allow a protected drive to be changed.

SAFE Block Win7 Version 1.0 blocked all test commands from the protected categories that were sent to protected drives, and there were no changes to the protected drives.

SAFE Block Win7 V1.0 shall not prevent obtaining any information from or about any drive.

SAFE Block Win7 Version 1.0 did not prevent obtaining information from or about any drive.

SAFE Block Win7 V1.0 shall not prevent any operations to a drive that is not protected.

SAFE Block Win7 Version 1.0 did not alter or block any test commands sent to unprotected drives. Thus, SAFE Block Win7 V1.0 meets all base requirements.

2. Deviations from Expectations

This section explains two deviations, or apparent deviations, from expected behavior in our test results. One is a deviation from NIST's specified behavior, which is documented as a design decision in the SAFE Block Win7 V1.0 tool. The second explains what at first appears to be a strange MD5 hash result on unprotected disks, but is actually correct.

2.1 Variation from NIST's Expected Behavior

The NIST test specification expects all commands from its "Other" category to be allowed (see test assertion SWB-AO-05 in [3]; which is also summarized in Section 5.2 below). SAFE Block Win7 Version 1.0 does this, except that it blocks the WRITE_ATTRIBUTE "Other" command. The SAFE Block Win7 Version 1.0 documentation explains that this command could possibly alter the data of a disk so in its default conservative mode, used during the test as specified in Appendix B, SAFE Block Win7 Version 1.0 blocks the command. We refer to this as Variation 1 when analyzing test results in Section 8.

2.1a. Same Hash Test Result

In some tests the MD5 hash value before and after a write test to an unprotected disk can be the same, which at first glance is unexpected. This behavior can be found in the NIST report pages 101 and 105 [3].

This is actually correct behavior for these reasons:

- The NIST Software Write Blocker Test Suite V1.2 tests the issuing of write commands with a control structure that specifies zero bytes to write, and does not actually pass the command through. This is sufficient for the NIST Software Write Blocker Test Suite V1.2 because the test suite intercepts write commands to determine if they pass the blocking tool. However, the testing software will not actually ever write any data to the disk.
- In NIST's original report [3], hash values changed on all NTFS disks, but did not change on FAT32 disks (see pages 101 and 105 of [3]). This is due to the fact that NTFS itself writes a log file to its disks, FAT32 does not. Since, as stated above, NIST Software Write Blocker Test Suite V1.2 itself does not write to the disks, the changes in the hashes in the NIST test are a result of the NTFS log being written while the testing software executed.
- We verified that the hash value to unprotected NTFS disks does change using the NIST Software Write Blocker Test Suite V1.2 with SAFE Block Win7 V1.0 installed, and does not change for FAT32 disks.

Neither of these seemingly unexpected behaviors are concerns for SAFE Block Win7 V1.0's ability to protect and unprotect disks.

3. SAFE Block Description

SAFE Block Win7 Version 1.0 consists of a disk drive level device driver with a GUI and system tray application. This is similar to the NTWBPM driver used by WriteBlocker XP that NIST tested in [3], which makes the NIST testing software that tested that NTWBPM driver applicable to SAFE Block Win7 Version 1.0 evaluation, for the reasons NIST puts forth in [3].

4. Test Case Selection

The test cases are the 30 tests used in the NIST report [3], most of which are implemented in NIST Software Write Blocker Test Suite V1.2 [1].

5. Test Results by Assertion

This section evaluates SAFE Block Win7 V1.0 using the NIST test assertions [3]. The meaning of the test assertions is that described in Section 7 of the NIST report [3].

5.1 NIST Mandatory Assertions

SWB-AM-01 If a drive is unprotected then SAFE Block Win7 V1.0 shall not block any command.

SAFE Block Win7 Version 1.0 did not alter or block any test commands sent to unprotected drives.

SWB-AM-02 If a drive is protected and a command from the READ category is issued then SAFE Block Win7 V1.0 shall not block the command.

SAFE Block Win7 Version 1.0 did not block or alter any test command from the READ category sent to a protected drive.

SWB-AM-03 If a drive is protected and a command from the WRITE category is issued then SAFE Block Win7 V1.0 shall block the command.

SAFE Block Win7 Version 1.0 blocked all of the 34 test commands from the WRITE category issued to protected drives.

SWB-AM-04 If a drive is protected and a command from the VENDOR_SPECIFIC category is issued then SAFE Block Win7 V1.0 shall block the command.

SAFE Block Win7 Version 1.0 blocked all of the 80 test commands from the VENDOR_SPECIFIC category issued to protected drives.

SWB-AM-05 If a drive is protected and a command from the UNDEFINED category is issued then SAFE Block Win7 V1.0 shall block the command.

SAFE Block Win7 Version 1.0 blocked all of the of the 53 test commands from the UNDEFINED category issued to protected drives.

SWB-AM-06 If a drive is protected and a command from the OTHER category is issued then SAFE Block Win7 V1.0 shall not block the command.

SAFE Block Win7 Version 1.0 blocked one test command from the OTHER category sent to a protected drive, as explained in Section 2.1 above.

SWB-AM-07 If SAFE Block Win7 Version 1.0 is executed then SAFE Block Win7 V1.0 shall issue a message indicating SAFE Block Win7 Version 1.0 is active.

This is not applicable to the driver, which runs continually from the point of reboot after installation to the point of reboot after de-installation. The GUI application being active is indicated by a tray icon. A pop-up message from the tray indicates when SAFE Block blocks and unblocks devices, including automatic blocking specified as default behavior.

SWB-AM-08 If SAFE Block Win7 V1.0 is executed then SAFE Block Win7 V1.0 shall issue a message indicating all drives accessible by the covered interfaces.

The SAFE Block GUI application displays a tree of all channels and devices accessible by the covered interfaces.

SWB-AM-09 If SAFE Block Win7 V1.0 is executed then SAFE Block Win7 V1.0 shall issue a message indicating the protection status of each drive connected to a covered interface.

The SAFE Block GUI application displays the protection status of all devices connected to covered interfaces.

SWB-AM-10 If a drive is protected and a command from the BASIC operation category is issued then the command shall fail with an error status and the drive shall not be altered in any way.

Conclusion: SAFE Block Win7 V1.0 meets all NIST mandatory assertions.

5.2 NIST Optional assertions

SWB-AO-01 If a subset of all covered drives is specified for protection, then commands from the write category shall be blocked for drives in the selected subset.

SAFE Block Win7 Version 1.0 blocked all of the 34 test commands from the WRITE category issued to protected drives.

SWB-AO-02 If a subset of all drives is specified for protection, then commands from the VENDOR_SPECIFIC category shall be blocked for drives in the selected set.

SAFE Block Win7 Version 1.0 blocked all of the 80 test commands from the VENDOR_SPECIFIC category issued to protected drives.

SWB-AO-03 If a subset of covered drives is selected for protection, then commands from the UNDEFINED category shall be blocked for drives in the selected set.

SAFE Block Win7 Version 1.0 blocked all of the 53 test commands from the UNDEFINED category sent to protected drives.

SWB-AO-04 If a subset of covered drives is selected for protection, then commands from the READ category shall be not blocked for drives in the selected set.

SAFE Block Win7 Version 1.0 did not block any test commands from the READ category sent to the drives.

SWB-AO-05 If a subset of covered drives is selected for protection, then commands from the OTHER category shall be not blocked for drives in the selected set.

SAFE Block Win7 Version 1.0 blocked one of the test commands from the OTHER category sent to the drives, as described in Section 2.1.

SWB-AO-06 If a subset of covered drives is selected for protection, then no commands from any category shall be blocked for drives not in the selected set.

SAFE Block Win7 Version 1.0 did not block any commands sent to unprotected drives.

SWB-AO-07 If SAFE Block Win7 V1.0 is active and SAFE Block Win7 V1.0 is deactivated then no commands to any drive shall be blocked.

No commands to any drive were blocked after SAFE Block Win7 Version 1.0 was de-installed.

SWB-AO-08 If SAFE Block Win7 V1.0 blocks a command then SAFE Block Win7 V1.0 shall issue either an audio or visual signal.

SAFE Block Win7 Version 1.0 does not issue its own signal. However, in most instances Windows itself detects the blocking and issues an informational dialog box that the drive is write-protected.

Conclusion: SAFE Block Win7 V1.0 meets all NIST optional assertions, with a caveat on SWB-AO-05 (explained in Section 2.1).

6. Testing Environment

All tests were run at the University Of Rhode Island Department Of Computer Science. The test computer consisted of:

Model: *Hewlett-Packard Pavilion p6116f*

CPU: AMD Athlon X2 (K) 7550 (95W) [Socket 771 LGA; 2.5 GHz; 1066 FSB; 4MB L2 Cache]

RAM: Kingston 8 GB [DDR2 2 GBx4; PC2-6400]

Motherboard: Pegatron M2N78-LA [HP/Compaq Name: Violet-GL8E; NVidia GeForce 9100 Chipset]
4 SATA slots

BIOS: HP Inc. Standard 06/09/09

Hard Drive(s): Seagate Barracuda ST380815AS [7200.10 RPM; 160 GB]

Operating System: Microsoft Windows® Windows 7

PCI(x1) Card: Startech PEX2IDE 1-Port PATA Adapter

SAS(x1) Card: Promise TX4680 4-Port SAS/SATA Adapter

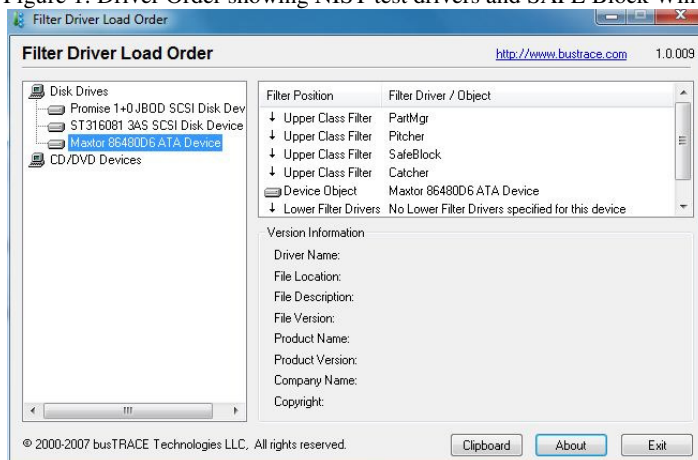
Table 1: Storage Devices Used in Test Computer

Model	Interface	Useable Sectors	Size
Maxtor DiamondMax	PATA	999424	500 MB
Seagate Barracuda	SATA	313524224	80 GB
Toshiba MBA3073RC	SAS	274333696	73.5 GB
PNY Attache Thumb Drive	USB	1943552	1 GB

Note that when used “MB” is correct – these are small drives to facilitate fast hashing.

The testing was performed using *NIST Software Write Blocker Test Suite V1.2* [1] installed on the test machine as per installation instructions included in [1] with the modifications described in Appendix C. A screenshot of the busTRACE Filter Driver Load Order v1.0.009 tool [5] showing the NIST filters installed properly can be seen below. Hashes were computed using AccessData FTK Imager 2.9.0 [4].

Figure 1: Driver Order showing NIST test drivers and SAFE Block Win7 V1.0



7. Reading Test Results

Each of the test results in the following section show the disk configuration active on the test machine using the Windows Computer Management interface. It is followed by a screen shot of the SAFE Block Win7 Version 1.0 interface with the blocked/unblocked disk configuration for the test. The use of a lock icon over the drive icon in the device tree on the left in the SAFE Block Win7 Version 1.0 GUI indicates that the drive is protected (blocked), a non-lock icon indicates that the disk is unprotected (not blocked).

The test results are shown by summary text displayed by the NIST Software Write Blocker Test Suite V1.2, the general format and meaning of which is fully described in the NIST report [3]. A sample of the full report can be found in Appendix A. The key elements of the display are:

- Line 7 which shows the pattern of blocked disks that the test software expects. In this display:
 - U = Unprotected (unblocked) disk
 - P = Protected (blocked) disk

For instance:

- U = only the first disk of the disks described in Section 6 is sent commands and it is expected to be unblocked.
- PU = the first two disks of the disks described in Section 6 are sent commands and it is expected that disk 1 is protected and disk 2 is unprotected.
- UUP = the first three disks of the disks described in Section 6 are sent commands and it is expected that disks 1 and 2 are unprotected and disk 3 is protected.
- The summary which shows how many of each type of command got through the SAFE Block Win7 Version 1.0 tool.

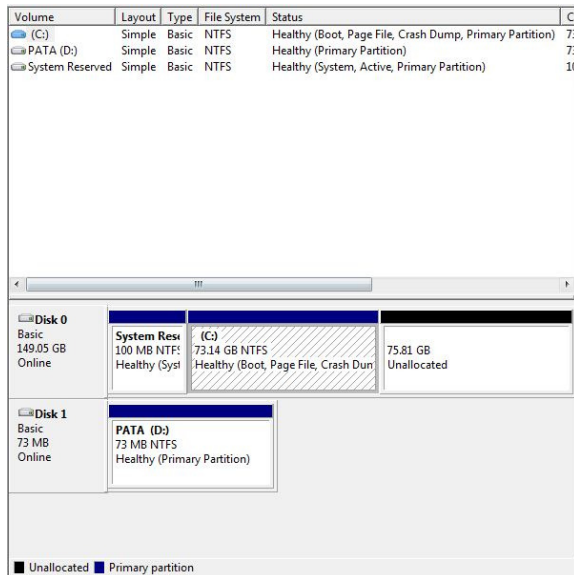
Each test also contains before and after MD5 hash values of all disks involved in the test. The MD5 hash serves as digital signature of the bits on the disk. If the MD5 hash value changes, the disk was written to. If the MD5 hash value remains the same, then it is generally accepted that the disk was not written to. We now provide a subsection for each of the 30 NIST software write blocker tests. Each subsection is patterned after similar subsections in Section 9 of the NIST report.

8. Test Results

8.1 Test Case SWB-01

This test case’s primary purpose is to test SAFE Block Win7 V1.0’s compliance with SWB-AM-01. It issues all possible I/O commands to a single unprotected disk drive.

Figure 2: SWB-01 Drive Configuration



- System Disk
- Unblocked PATA Disk

Figure 3: SWB-01 SAFE Block Win7 v1.0 Configuration

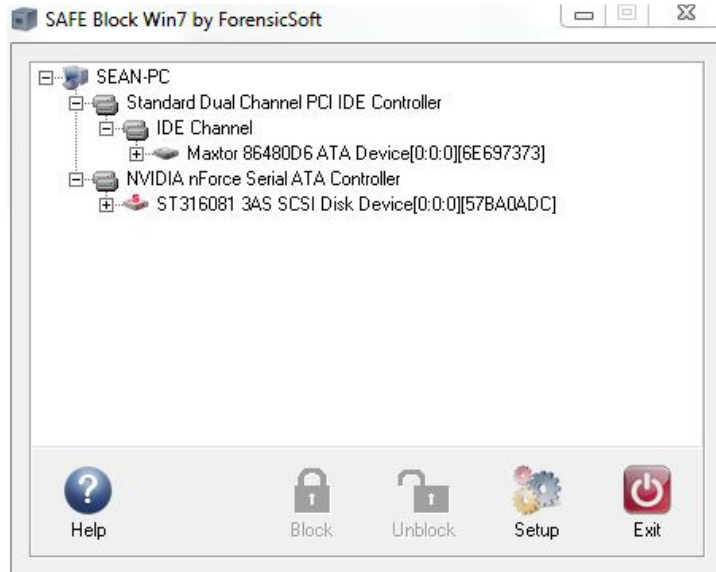


Table 2: SWB-01 MD5 Hash Values

Before PATA Disk	8a59a5b51f735541201e58519829352e
After PATA Disk	425e344e0037a971f7a2d6c66f6f0708

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Table 3: SWB-01 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53
```

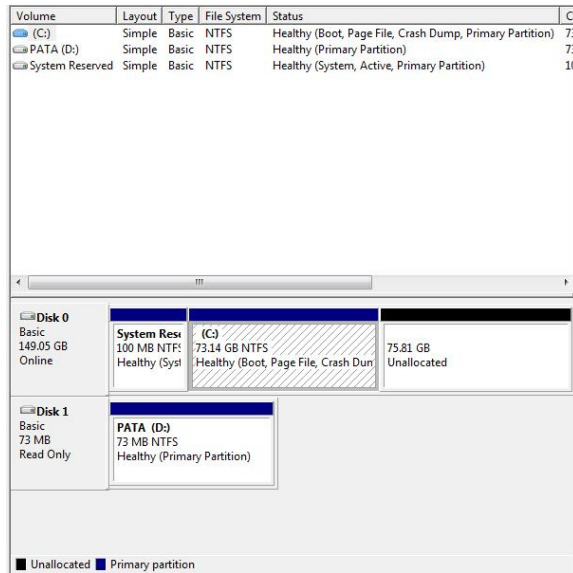
SWB-01 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - all commands were issued and all were allowed on the unblocked disk.

8.2 Test Case SWB-02

This test case tests SAFE Block Win7 V1.0's compliance with SWB-AM-02. It issues all possible READ commands to a single protected disk drive. The expected result is that SAFE Block Win7 V1.0 will not block any READ command issued by the test application.

Figure 4: SWB-02 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 5: SWB-02 SAFE Block Win7 v1.0 Configuration



Table 4: SWB-02 MD5 Hash Values

Before PATA Disk	7faa386805dcd5740a6a9daa23865c81
After PATA Disk	7faa386805dcd5740a6a9daa23865c81

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Table 5: SWB-02 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         0         0
Other IRP's .....         0         0         0

Read CDB's .....        27         0        27
Write CDB's .....         0         0         0
Other CDB's .....         0         0         0
Vendor SPecific CDB's ..... 0         0         0
Undefined CDB's.....     0         0         0
```

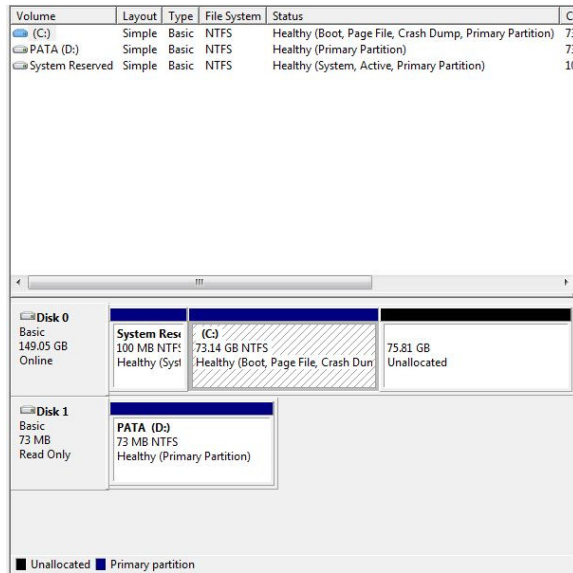
SWB-02 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - only READ commands were issued and all were allowed on the blocked disk.

8.3 Test Case SWB-03

This test case tests SAFE Block Win7 V1.0's compliance with SWB-AM-03. It issues all possible commands from the WRITE category to a single protected disk drive. The expected result of this test is that SAFE Block Win7 V1.0 will block all commands issued by the test application.

Figure 6: SWB-03 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 7: SWB-03 SAFE Block Win7 v1.0 Configuration

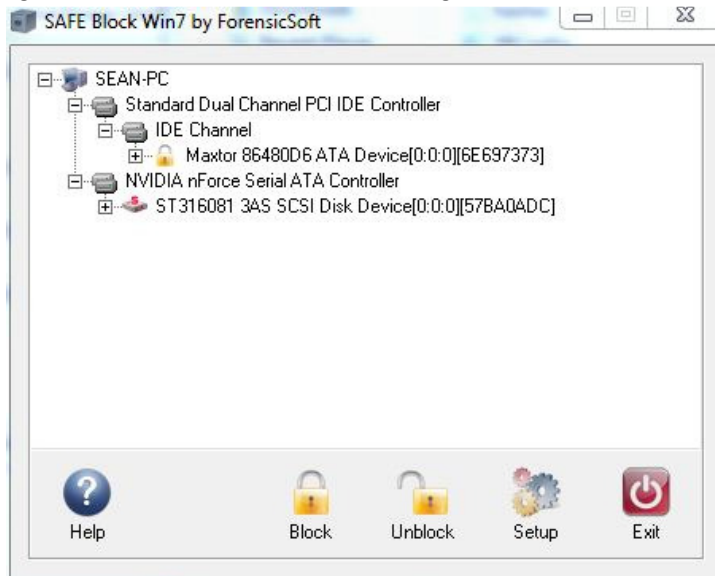


Table 6: SWB-03 MD5 Hash Values

Before PATA Disk	7faa386805dcd5740a6a9daa23865c81
After PATA Disk	7faa386805dcd5740a6a9daa23865c81

Table 7: SWB-03 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....           0         0         0
Write IRP's .....           0         8         8
Other IRP's .....           0         0         0

Read CDB's .....           0         0         0
Write CDB's .....           0        34        34
Other CDB's .....           0         0         0
Vendor SPecific CDB's ..... 0         0         0
Undefined CDB's..... 0         0         0
```

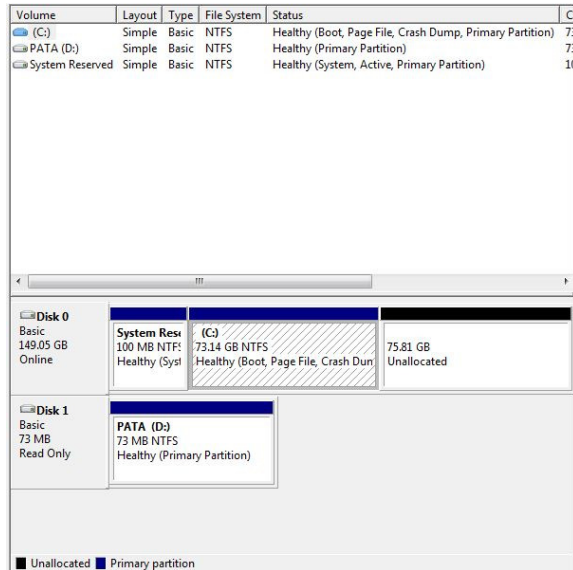
SWB-03 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly – only WRITE commands were issued and all were blocked on the blocked disk.

8.4 Test Case SWB-04

This test case tests SAFE Block Win7 V1.0's compliance with SWB-AM-04. It issues all possible commands from the `VENDOR_SPECIFIC` command set to a single protected disk drive. It uses the same hard drive setup as SWB-03. The expected result of this test is that SAFE Block Win7 V1.0 will block all commands issued by the test application.

Figure 8: SWB-04 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 9: SWB-04 SAFE Block Win7 v1.0 Configuration

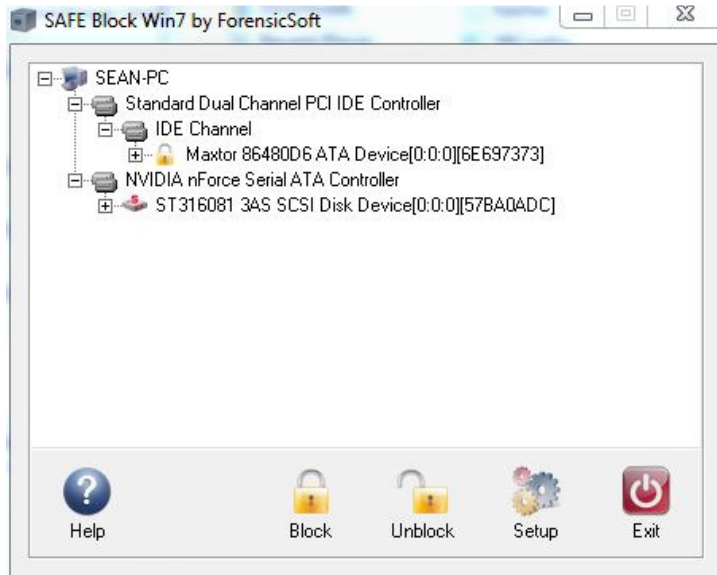


Table 8: SWB-04 MD5 Hash Values

Before PATA Disk	7faa386805dcd5740a6a9daa23865c81
After PATA Disk	7faa386805dcd5740a6a9daa23865c81

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 9: SWB-04 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....           0         0         0
Write IRP's .....           0         0         0
Other IRP's .....           0         0         0

Read CDB's .....           0         0         0
Write CDB's .....           0         0         0
Other CDB's .....           0         0         0
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's..... 0         0         0
```

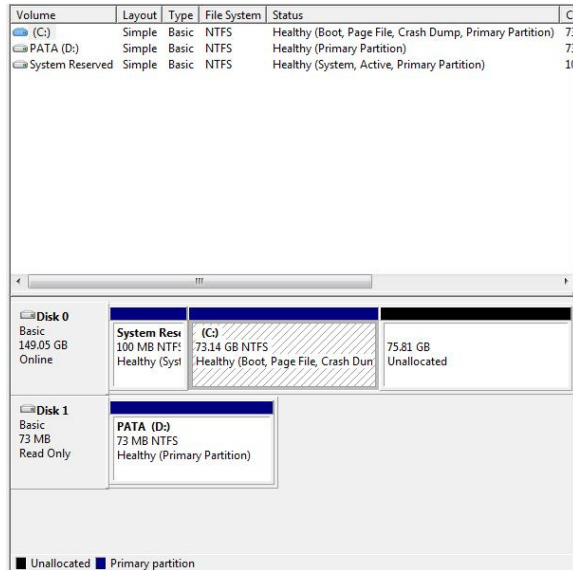
SWB-04 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - only VENDOR SPECIFIC commands were issued and all were blocked on the blocked disk.

8.5 Test Case SWB-05

This test case tests SAFE Block Win7 V1.0's compliance with SWB-AM-05. It issues all possible commands from the UNDEFINED command set to a single protected disk drive. It uses the same hard drive setup as SWB-04. The expected result of this test is that SAFE Block Win7 V1.0 will block all commands issued by the test application.

Figure 10: SWB-05 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 11: SWB-05 SAFE Block Win7 v1.0 Configuration

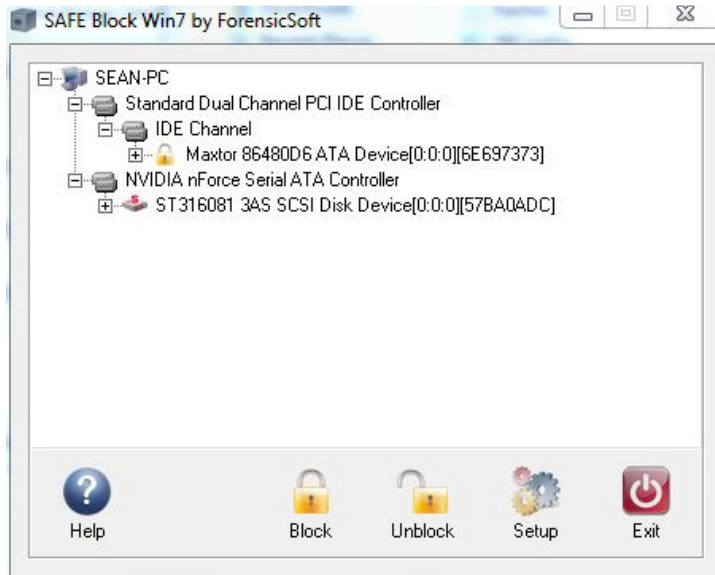


Table 10: SWB-05 MD5 Hash Values

Before PATA Disk	7faa386805dcd5740a6a9daa23865c81
After PATA Disk	7faa386805dcd5740a6a9daa23865c81

Table 11: SWB-05 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****
```

Test Category	Allowed	Blocked	Total
Read IRP's	0	0	0
Write IRP's	0	0	0
Other IRP's	0	0	0
Read CDB's	0	0	0
Write CDB's	0	0	0
Other CDB's	0	0	0
Vendor SPecific CDB's	0	0	0
Undefined CDB's.....	0	53	53

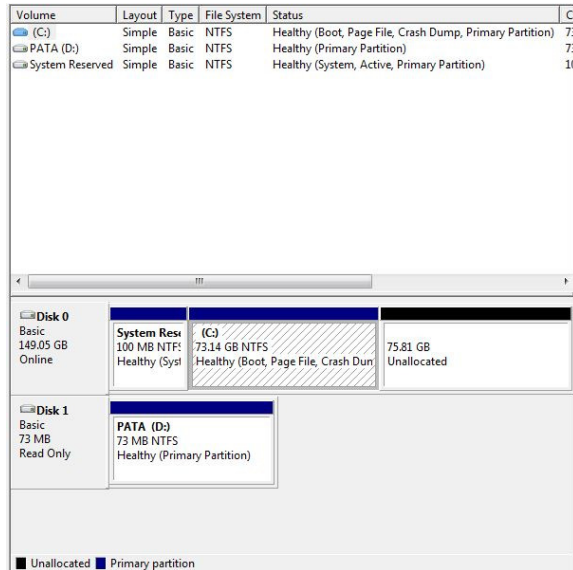
SWB-05 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - only UNDEFINED commands were issued and all were blocked on the blocked disk.

8.6 Test Case SWB-06

This test case tests SAFE Block Win7 V1.0's compliance with SWB-AM-06. It issues all possible commands from the OTHER command set to a single protected disk drive. It uses the same hard drive setup as SWB-05. The expected result of this test is that SAFE Block Win7 V1.0 will allow all commands issued by the test application.

Figure 12: SWB-06 Drive Configuration



- System Disk
- Blocked PATA Disk

Figure 13: SWB-06 SAFE Block Win7 v1.0 Configuration

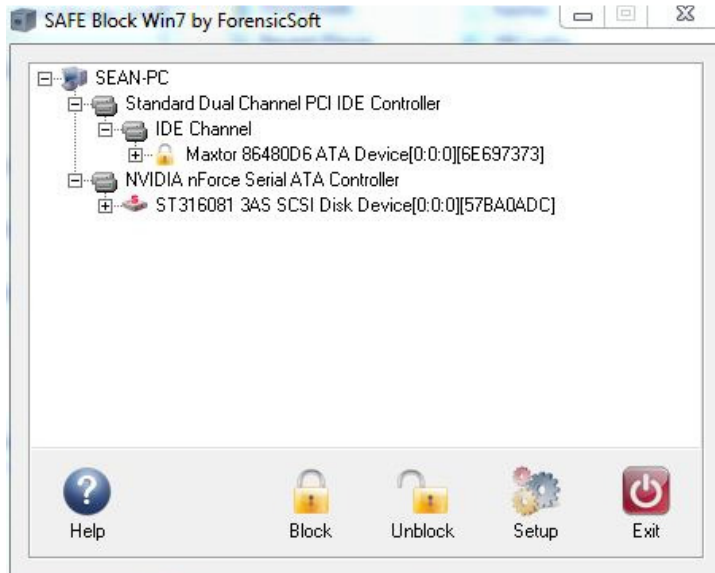


Table 12: SWB-06 MD5 Hash Values

Before PATA Disk	7faa386805dcd5740a6a9daa23865c81
After PATA Disk	7faa386805dcd5740a6a9daa23865c81

Table 13: SWB-06 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....           0         0         0
Write IRP's .....           0         0         0
Other IRP's .....          15         0         15

Read CDB's .....           0         0         0
Write CDB's .....           0         0         0
Other CDB's .....          61         1         62
Vendor SPecific CDB's .....  0         0         0
Undefined CDB's.....        0         0         0
```

SWB-06 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, SAFE Block Win7 V1.0 allowed all OTHER commands issued by the test application.

8.7 Test Case SWB-07

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PUU. The expected result of this test is SAFE Block Win7 V1.0 will:

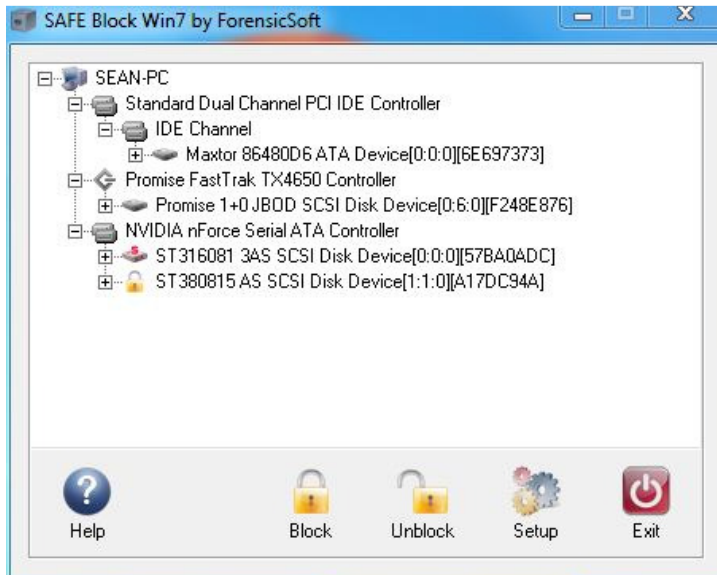
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 14: SWB-07 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Fr
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	58.06 GB	79 %
PATA (F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84 %
SAS (E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100 %
SATA (D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100 %
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72 %

- System Disk
- Blocked SATA Drive
- Unblocked SAS Drive
- Unblocked PATA Disk

Figure 15: SWB-07 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 14: SWB-07 MD5 Hash Values

Before SATA (Disk 1)	83cad49376689a38d63b8675e5f8d264
After SATA (Disk 1)	83cad49376689a38d63b8675e5f8d264
Before SAS (Disk 2)	6aee27eb7896a55dcd8fa4a844653c31
After SAS (Disk 2)	9ef75918e6653363c5d41e685c3eebb8
Before PATA (Disk 3)	cf09438a7eac1a1bc1b46fabe818396f
After PATA (Disk 3)	2495d0a5e08fce6ff4c846f9c30a152

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 15: SWB-07 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 0         8        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 0         34       34
Other CDB's ..... 61        1       62
Vendor SPecific CDB's ..... 0         80       80
Undefined CDB's..... 0         53       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53
```

SWB-07 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.8 Test Case SWB-08

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UPU. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 16: SWB-08 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	58.06 GB	79 %
PATA (F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84 %
SAS (E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100 %
SATA (D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100 %
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72 %

- System Disk
- Unblocked SATA Drive
- Blocked SAS Drive
- Unlocked PATA Disk

Figure 17: SWB-08 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 16: SWB-08 MD5 Hash Values

Before SATA (Disk 1)	6ef1e77f8528d2237d10c3825dde0baa
After SATA (Disk 1)	e08a80bebae45efcccae0482a43922dc
Before SAS (Disk 2)	1100e42523512b2e707456f5c2d8b8bc
After SAS (Disk 2)	1100e42523512b2e707456f5c2d8b8bc
Before PATA (Disk 3)	2495d0a5e08fcef6ff4c846f9c30a152
After PATA (Disk 3)	d49744f275558360542742814ec10aaf

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 17: SWB-08 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 0         8        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 0         34       34
Other CDB's ..... 61        1       62
Vendor SPecific CDB's ..... 0         80       80
Undefined CDB's..... 0         53       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53
```

SWB-08 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.9 Test Case SWB-09

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UUP. The expected result of this test is SAFE Block Win7 V1.0 will:

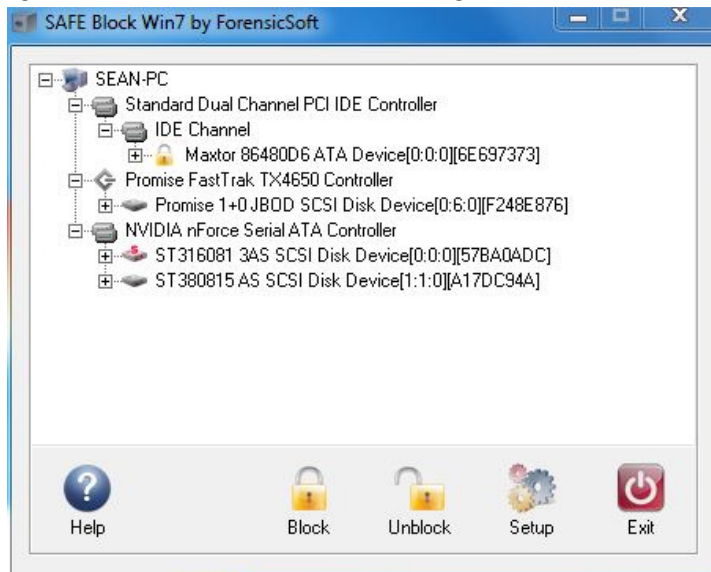
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 18: SWB-09 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	58.06 GB	79 %
(F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84 %
(E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100 %
(D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100 %
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72 %

- System Disk
- Unblocked SATA Drive
- Unblocked SAS Drive
- Blocked PATA Disk

Figure 19: SWB-09 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 18: SWB-09 MD5 Hash Values

Before SATA (Disk 1)	8f3e382c2ab70b6c37d87b7cf1cc5361
After SATA (Disk 1)	9e470705af69c8d3cd7de03b254b1ef6
Before SAS(Disk 2)	2f9d7ea6da998db74054dc7da9422bba
After SAS (Disk 2)	7655a570cd58fe6c2f7175a3a9bbc773
Before PATA (Disk 3)	2d5c9fae6429a027d408fed7a7ba1ac5
After PATA (Disk 3)	2d5c9fae6429a027d408fed7a7ba1ac5

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 19: SWB-09 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      8         0         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....     34         0        34
Other CDB's .....     62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....  53         0        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      8         0         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....     34         0        34
Other CDB's .....     62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....  53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      0         8         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....      0        34        34
Other CDB's .....     61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....  0         53        53
```

SWB-09 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.10 Test Case SWB-10

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UPP. The expected result of this test is SAFE Block Win7 V1.0 will:

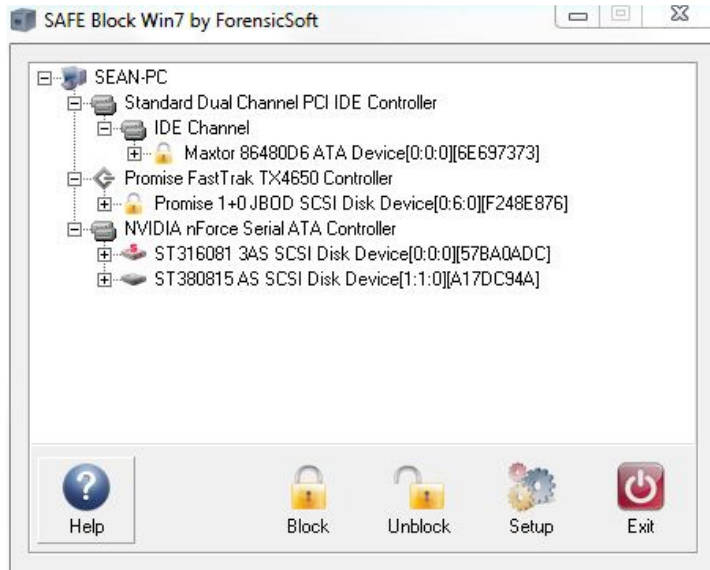
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 20: SWB-10 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	38.06 GB	79 %
PATA (F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84 %
SAS (E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100 %
SATA (D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.33 GB	74.44 GB	100 %
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72 %

- System Disk
- Unblocked SATA Drive
- Blocked SAS Drive
- Blocked PATA Disk

Figure 21: SWB-10 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 20: SWB-10 MD5 Hash Values

Before SATA (Disk 1)	9e470705af69c8d3cd7de03b254b1ef6
After SATA (Disk 1)	ff3590f843d959bed88c7e03112f15d0
Before SAS (Disk 2)	1fc8e2376856704d69dabb1d9bc508ef
After SAS (Disk 2)	1fc8e2376856704d69dabb1d9bc508ef
Before PATA (Disk 3)	2d5c9fae6429a027d408fed7a7ba1ac5
After PATA (Disk 3)	2d5c9fae6429a027d408fed7a7ba1ac5

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 21: SWB-10 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      8         0         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....     34         0        34
Other CDB's .....     62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....  53         0        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      0         8         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....      0        34        34
Other CDB's .....     61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....  0         53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      0         8         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....      0        34        34
Other CDB's .....     61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....  0         53        53
```

SWB-010 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.11 Test Case SWB-11

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PUP. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 22: SWB-11 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	58.06 GB	79 %
(F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84 %
(E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100 %
(D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100 %
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72 %

- System Disk
- Blocked SATA Drive
- Unblocked SAS Drive
- Blocked PATA Disk

Figure 23: SWB-11 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 22: SWB-11 MD5 Hash Values

Before SATA (Disk 1)	0df62f9603fd5d9438bcd3aab5d0b7a6
After SATA (Disk 1)	0df62f9603fd5d9438bcd3aab5d0b7a6
Before SAS (Disk 2)	b579ae756904274e983327cb034ee151
After SAS (Disk 2)	f6b065e486137f4c95a05adc9f7822a5
Before PATA (Disk 3)	2d5c9fae6429a027d408fed7a7ba1ac5
After PATA (Disk 3)	2d5c9fae6429a027d408fed7a7ba1ac5

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 23: SWB-11 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      0         8         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....      0        34        34
Other CDB's .....     61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....  0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      8         0         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....     34         0        34
Other CDB's .....     62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....  53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed   Blocked   Total
-----
Read IRP's .....      4         0         4
Write IRP's .....      0         8         8
Other IRP's .....     15         0        15

Read CDB's .....     27         0        27
Write CDB's .....      0        34        34
Other CDB's .....     61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....  0         53        53
```

SWB-011 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.12 Test Case SWB-12

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PPU. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 24: SWB-12 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	58.06 GB	79 %
(F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84 %
(E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100 %
(D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100 %
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72 %

- System Disk
- Blocked SATA Drive
- Blocked SAS Drive
- Unblocked PATA Disk

Figure 25: SWB-12 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 24: SWB-12 MD5 Hash Values

Before SATA (Disk 1)	0df62f9603fd5d9438bcd3aab5d0b7a6
After SATA (Disk 1)	0df62f9603fd5d9438bcd3aab5d0b7a6
Before SAS (Disk 2)	f6b065e486137f4c95a05adc9f7822a5
After SAS (Disk 2)	f6b065e486137f4c95a05adc9f7822a5
Before PATA (Disk 3)	2987d2a2702715f48ce1426f50225647
After PATA (Disk 3)	f5777b80453809e36f60a51779912398

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 25: SWB-12 NIST Software Write Blocker Test Suite V1.2 Output Summary

```
Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0         4
Write IRP's ..... 0         8         8
Other IRP's ..... 15        0         15

Read CDB's ..... 27        0         27
Write CDB's ..... 0         34        34
Other CDB's ..... 61        1         62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's..... 0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0         4
Write IRP's ..... 0         8         8
Other IRP's ..... 15        0         15

Read CDB's ..... 27        0         27
Write CDB's ..... 0         34        34
Other CDB's ..... 61        1         62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's..... 0         53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0         4
Write IRP's ..... 8         0         8
Other IRP's ..... 15        0         15

Read CDB's ..... 27        0         27
Write CDB's ..... 34        0         34
Other CDB's ..... 62        0         62
Vendor SPecific CDB's ..... 80        0         80
Undefined CDB's..... 53        0         53
```

SWB-012 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1 Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked on the unblocked disks.

8.13 Test Case SWB-13

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PUUP. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 26: SWB-13 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	%F
\\.\C:	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	57.01 GB	79.1
\\.\PATA (F):	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	61 MB	84.1
\\.\SAS (E):	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.27 GB	100
\\.\SATA (D):	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100
\\.\System Reserved:	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72.1
\\.\USB (J):	Simple	Basic	NTFS	Healthy (Active, Primary Partition)	940 MB	883 MB	93.1

Disk	Type	File System	Status	Capacity	Free Space
Disk 0	Basic	System Reserve	IC3	73.14 GB NTFS	75.81 GB
Disk 1	Basic	SATA (D)	IC3	74.53 GB NTFS	Unallocated
Disk 2	Basic	SAS (E)	IC3	68.36 GB NTFS	Unallocated
Disk 3	Basic	PATA (F)	IC3	73 MB NTFS	Unallocated
Disk 4	Removable	USB (J)	IC3	940 MB NTFS	Unallocated

- System Disk
- Blocked SATA Disk
- Unblocked SAS Drive
- Unblocked PATA Drive
- Blocked USB Drive

Figure 27: SWB-13 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 26: SWB-13 MD5 Hash Values

Before SATA (Disk 1)	0df62f9603fd5d9438bcd3aab5d0b7a6
After SATA (Disk 1)	0df62f9603fd5d9438bcd3aab5d0b7a6
Before SAS (Disk 2)	2e16235f9d9416766a6836ef1f2599e0
After SAS (Disk 2)	b63f723d089fe552ce8413edf033a349
Before PATA (Disk 3)	9276e8493ead632820f4d7ce02a6a499
After PATA (Disk 3)	0dc9a5cd0f8829fadf3eee6e2606c7a3
Before USB (Disk 4)	25d207edf06182349e5fd64082af2c10
After USB (Disk 4)	25d207edf06182349e5fd64082af2c10

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 27: SWB-13 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53
    
```

SWB-013 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unblocked disks.

8.14 Test Case SWB-14

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UUPP. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

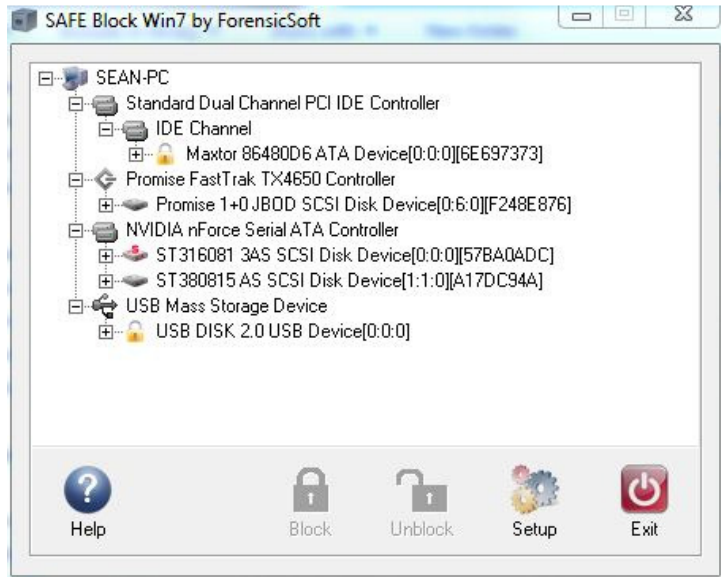
Figure 28: SWB-14 Drive Configuration

Volume	Layout	Type	File System	Status	Capacity	Free Space	%F
Ⓜ (C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	73.14 GB	57.91 GB	79%
Ⓜ (D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	73 MB	63 MB	84%
Ⓜ (E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.37 GB	100%
Ⓜ (F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100%
Ⓜ (G:)	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	72 MB	72%
Ⓜ (H:)	Simple	Basic	NTFS	Healthy (Active, Primary Partition)	940 MB	883 MB	93%

Disk	Layout	Type	File System	Status	Capacity	Free Space	%F
Ⓜ Disk 0	System Reserve	Basic	ICD	Healthy (System)	100 MB	73.14 GB	NTFS
Ⓜ Disk 1	SATA (D3)	Basic	NTFS	Healthy (Primary Partition)	74.53 GB	74.44 GB	100%
Ⓜ Disk 2	SAS (E3)	Basic	NTFS	Healthy (Primary Partition)	68.36 GB	68.37 GB	100%
Ⓜ Disk 3	PATA (F3)	Basic	NTFS	Healthy (Primary Partition)	73 MB	73 MB	100%
Ⓜ Disk 4	USB (H3)	Removable	NTFS	Healthy (Active, Primary Partition)	940 MB	883 MB	93%

- System Disk
- Unblocked SATA Disk
- Unblocked SAS Drive
- Blocked PATA Drive
- Blocked USB Drive

Figure 29: SWB-14 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 28: SWB-14 MD5 Hash Values

Before SATA (Disk 1)	23dcf789a4ded841939184d046e9d7a4
After SATA (Disk 1)	701082f7e32288ebf7acaa850a784eed
Before SAS (Disk 2)	b63f723d089fe552ce8413edf033a349
After SAS (Disk 2)	8170c85da753aa3e720f3b3ed2d8f5f5
Before PATA (Disk 3)	13dc3feafe9a19739fcc0f11583713aa
After PATA (Disk 3)	13dc3feafe9a19739fcc0f11583713aa
Before USB (Disk 4)	25d207edf06182349e5fd64082af2c10
After USB (Disk 4)	25d207edf06182349e5fd64082af2c10

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 29: SWB-14 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's .....   0         80        80
Undefined CDB's.....         0         53        53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's .....   0         80        80
Undefined CDB's.....         0         53        53
    
```

SWB-014 Test result analysis

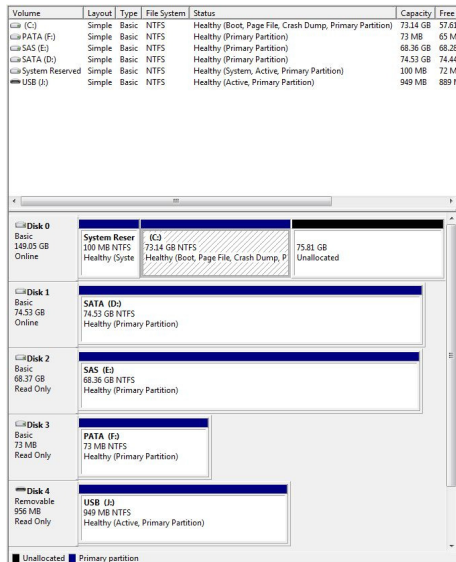
SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unprotected disk.

8.15 Test Case SWB-15

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UPPP. The expected result of this test is SAFE Block Win7 V1.0 will:

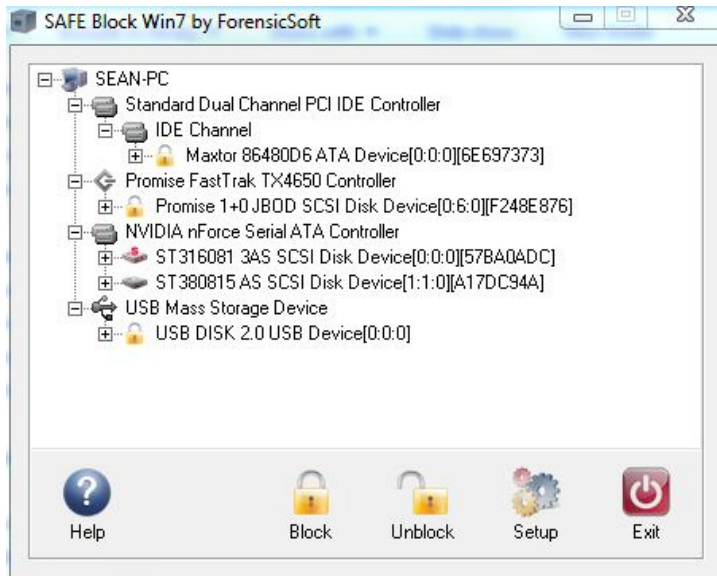
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 30: SWB-15 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Blocked SAS Drive
- Blocked PATA Drive
- Blocked USB Drive

Figure 31: SWB-15 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 30: SWB-15 MD5 Hash Values

Before SATA (Disk 1)	9c2648f22a862ce25ae1482f2a8f3c63
After SATA (Disk 1)	6a30fd95dca10475a39a7d18b1ee179e
Before SAS (Disk 2)	152cd396792e09ae37ff8ace07d7650d
After SAS (Disk 2)	152cd396792e09ae37ff8ace07d7650d
Before PATA (Disk 3)	13dc3feafe9a19739fcc0f11583713aa
After PATA (Disk 3)	13dc3feafe9a19739fcc0f11583713aa
Before USB (Disk 4)	25d207edf06182349e5fd64082af2c10
After USB (Disk 4)	25d207edf06182349e5fd64082af2c10

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 31: SWB-15 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device ¥¥.¥PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor Specific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device ¥¥.¥PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor Specific CDB's .....   0         80        80
Undefined CDB's.....         0         53        53

Testing device ¥¥.¥PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor Specific CDB's .....   0         80        80
Undefined CDB's.....         0         53        53

Testing device ¥¥.¥PhysicalDrive4
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor Specific CDB's .....   0         80        80
Undefined CDB's.....         0         53        53
    
```

SWB-015 Test result analysis

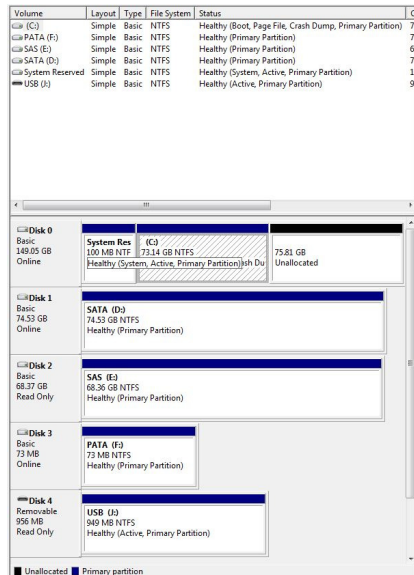
SAFE Block Win7 Version 1.0 had one unexpected result three times in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unprotected disk.

8.16 Test Case SWB-16

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UPUP. The expected result of this test is SAFE Block Win7 V1.0 will:

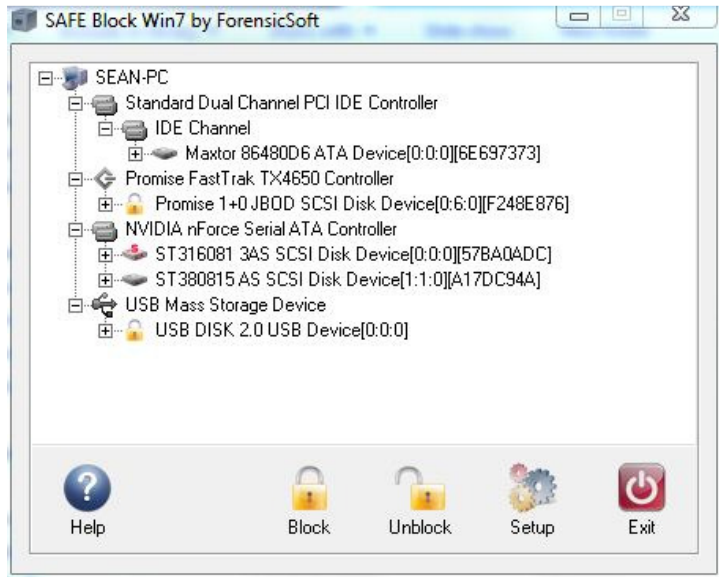
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 32: SWB-16 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Blocked SAS Drive
- Unblocked PATA Drive
- Blocked USB Drive

Figure 33: SWB-16 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 32: SWB-16 MD5 Hash Values

Before SATA (Disk 1)	6a30fd95dca10475a39a7d18b1ee179e
After SATA (Disk 1)	adbe84ae988d0afbb05c623f641b11d9
Before SAS (Disk 2)	152cd396792e09ae37ff8ace07d7650d
After SAS (Disk 2)	152cd396792e09ae37ff8ace07d7650d
Before PATA (Disk 3)	69f64dcd6e6928f8faaaa658661d95a4
After PATA (Disk 3)	d9213c607e5c695b16e6ea46e2900599
Before USB (Disk 4)	25d207edf06182349e5fd64082af2c10
After USB (Disk 4)	25d207edf06182349e5fd64082af2c10

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 33: SWB-16 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....        53         0        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's .....   0        80        80
Undefined CDB's.....         0        53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....        53         0        53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's .....   0        80        80
Undefined CDB's.....         0        53        53
    
```

SWB-016 Test result analysis

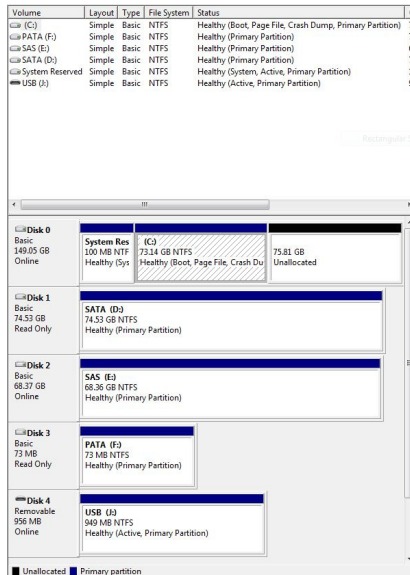
SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.17 Test Case SWB-17

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PUPU. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 34: SWB-17 Drive Configuration



- System Disk
- Blocked SATA Disk
- Unblocked SAS Drive
- Blocked PATA Drive
- Unblocked USB Drive

Figure 35: SWB-17 SAFE Block Win7 v1.0 Configuration

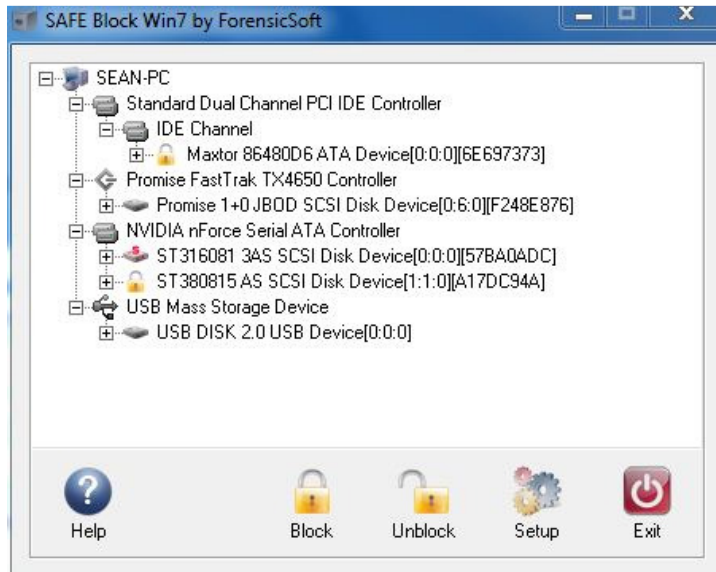


Table 34: SWB-17 MD5 Hash Values

Before SATA (Disk 1)	96ef347150ccc94cff63156afeaee636
After SATA (Disk 1)	96ef347150ccc94cff63156afeaee636
Before SAS (Disk 2)	80471981319c4cd323045f5e54722483
After SAS (Disk 2)	387ad19ea6cd9c87b82ee2a5fc8907d6
Before PATA (Disk 3)	9b8b7831599f29751cc3253b5106347e
After PATA (Disk 3)	9b8b7831599f29751cc3253b5106347e
Before USB (Disk 4)	4d80409ff1839a482e75af378eb0bd8d
After USB (Disk 4)	a2c21832dd0617f3961a3f07528307bf

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 35: SWB-17 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....      53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....      53         0        53
    
```

SWB-017 Test result analysis

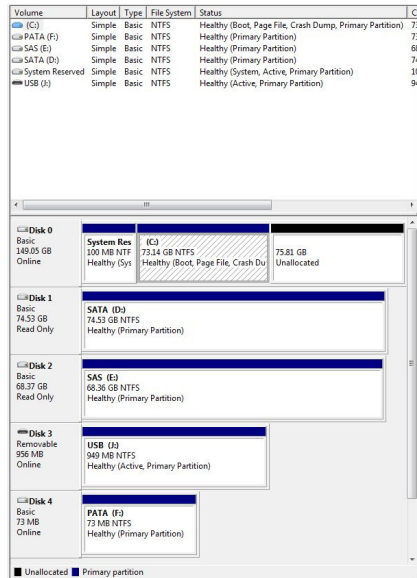
SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.18 Test Case SWB-18

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PPUU. The expected result of this test is SAFE Block Win7 V1.0 will:

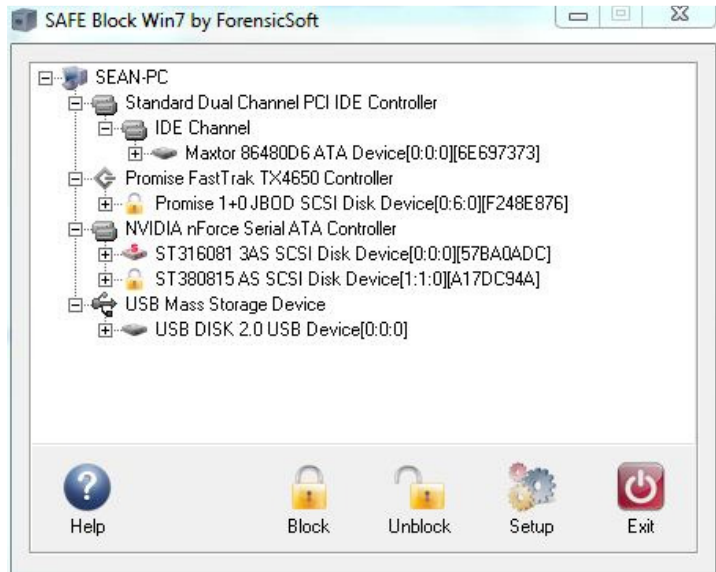
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 36: SWB-18 Drive Configuration



- System Disk
- Blocked SATA Disk
- Blocked SAS Drive
- Unblocked USB Drive
- Unblocked PATA Drive

Figure 37: SWB-18 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 36: SWB-18 MD5 Hash Values

Before SATA (Disk 1)	96ef347150ccc94cff63156afeaee636
After SATA (Disk 1)	96ef347150ccc94cff63156afeaee636
Before SAS (Disk 2)	5daa12dcefbe388806509231a698172b
After SAS (Disk 2)	5daa12dcefbe388806509231a698172b
Before USB (Disk 3)	993f3e07678bdc3d68a51454c982f03e
After USB (Disk 3)	24ae16169801115f34ac591303c93a99
Before PATA (Disk 4)	967720f6b1e42fe64c30ecf57d08dded
After PATA (Disk 4)	c477900b8495d505edfe2be4beddd79d

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 37: SWB-18 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....      53         0        53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....      53         0        53
    
```

SWB-018 Test result analysis

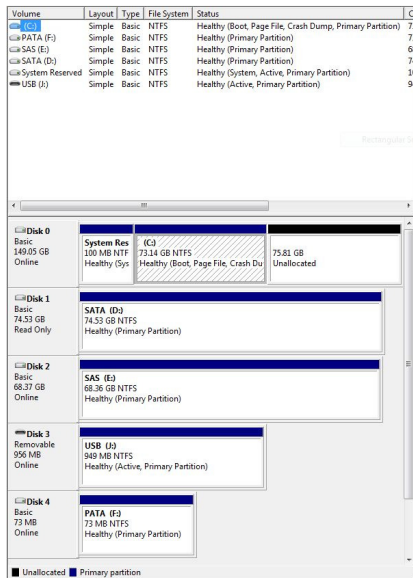
SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.19 Test Case SWB-19

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PUUU. The expected result of this test is SAFE Block Win7 V1.0 will:

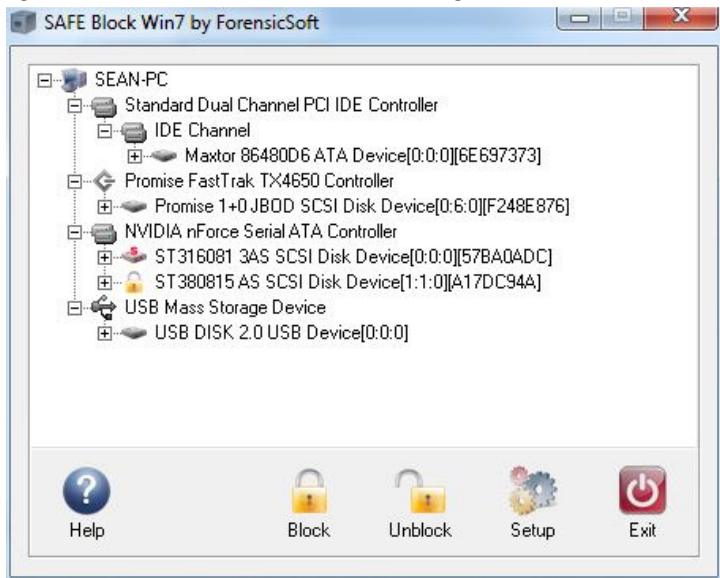
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 38: SWB-19 Drive Configuration



- System Disk
- Blocked SATA Disk
- Unblocked SAS Drive
- Unblocked USB Drive
- Unblocked PATA Drive

Figure 39: SWB-19 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 38: SWB-19 MD5 Hash Values

Before SATA (Disk 1)	96ef347150ccc94cff63156afeaee636
After SATA (Disk 1)	96ef347150ccc94cff63156afeaee636
Before SAS (Disk 2)	2277d1cf1fd6736832ab737a4f52ebfc
After SAS (Disk 2)	ca3a1ebc5c19a07ec83e07db19353d43
Before USB (Disk 3)	3ff88a4f3fd95136478f911dc784d4a5
After USB (Disk 3)	03d0fd3e81cb718b860912550732604f
Before PATA (Disk 4)	97452346c0ccfb38714cca266f2624d6
After PATA (Disk 4)	d406f72b5883694e0219579ec7fbaa40

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 39: SWB-19 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's ..... 80         0        80
Undefined CDB's.....         53         0        53

```

SWB-019 Test result analysis

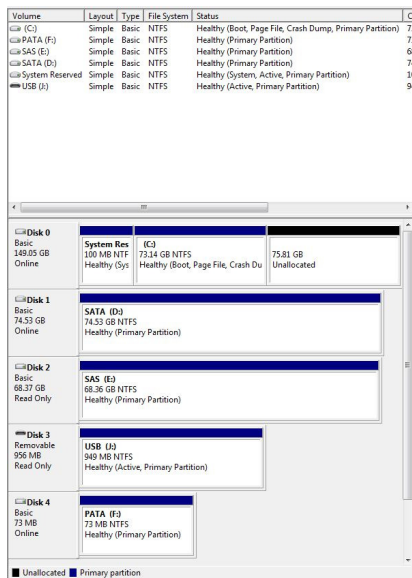
SAFE Block Win7 Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disk.

8.20 Test Case SWB-20

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UPPU. The expected result of this test is SAFE Block Win7 V1.0 will:

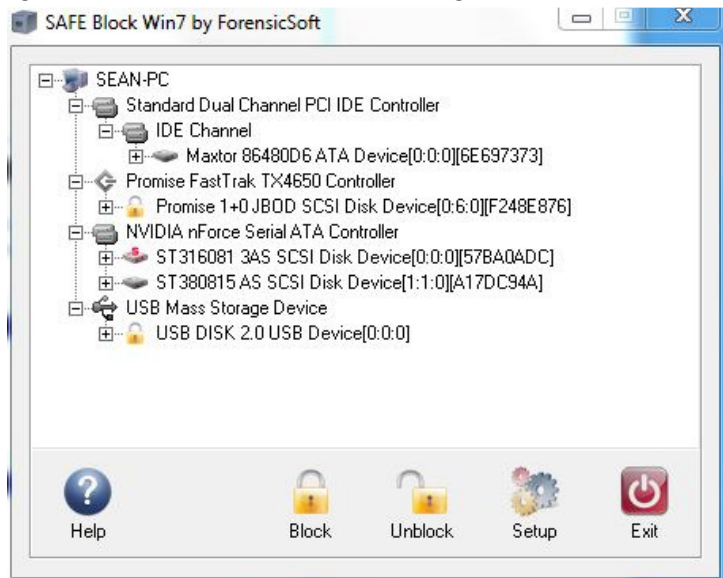
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 40: SWB-20 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Blocked SAS Drive
- Blocked USB Drive
- Unblocked PATA Drive

Figure 41: SWB-20 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 40: SWB-20 MD5 Hash Values

Before SATA (Disk 1)	032081138c0218d8fbe2991814e13330
After SATA (Disk 1)	14311bd2f985de0861a3575ee472e2e4
Before SAS (Disk 2)	3cd941bcf192277e1baefaf7ac848cc9
After SAS (Disk 2)	3cd941bcf192277e1baefaf7ac848cc9
Before USB (Disk 3)	f91dc6162ad3777d021f700bda53a40f
After USB (Disk 3)	f91dc6162ad3777d021f700bda53a40f
Before PATA (Disk 4)	3cd941bcf192277e1baefaf7ac848cc9
After PATA (Disk 4)	d858d8f9df6ff883c210d5b2f483545f

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 41: SWB-20 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

      Test Category          Allowed   Blocked   Total
-----
Read IRP's .....           4         0         4
Write IRP's .....           8         0         8
Other IRP's .....          15         0        15

Read CDB's .....           27         0        27
Write CDB's .....           34         0        34
Other CDB's .....           62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

      Test Category          Allowed   Blocked   Total
-----
Read IRP's .....           4         0         4
Write IRP's .....           0         8         8
Other IRP's .....          15         0        15

Read CDB's .....           27         0        27
Write CDB's .....           0        34        34
Other CDB's .....           61         1        62
Vendor SPecific CDB's .....   0        80        80
Undefined CDB's.....           0        53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

      Test Category          Allowed   Blocked   Total
-----
Read IRP's .....           4         0         4
Write IRP's .....           0         8         8
Other IRP's .....          15         0        15

Read CDB's .....           27         0        27
Write CDB's .....           0        34        34
Other CDB's .....           61         1        62
Vendor SPecific CDB's .....   0        80        80
Undefined CDB's.....           0        53        53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

      Test Category          Allowed   Blocked   Total
-----
Read IRP's .....           4         0         4
Write IRP's .....           8         0         8
Other IRP's .....          15         0        15

Read CDB's .....           27         0        27
Write CDB's .....           34         0        34
Other CDB's .....           62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53
    
```

SWB-020 Test result analysis

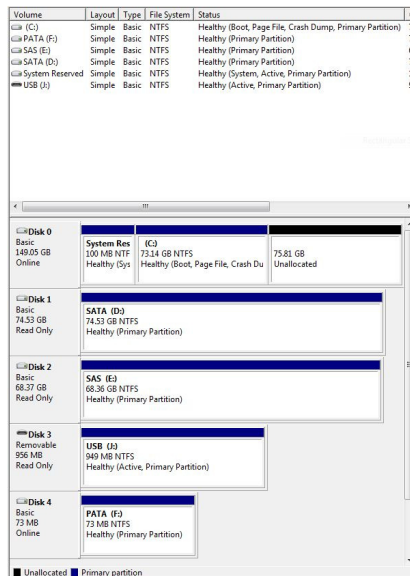
SAFE Block Win7 Version 1.0 had one unexpected result twice in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disks.

8.21 Test Case SWB-21

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern PPPU. The expected result of this test is SAFE Block Win7 V1.0 will:

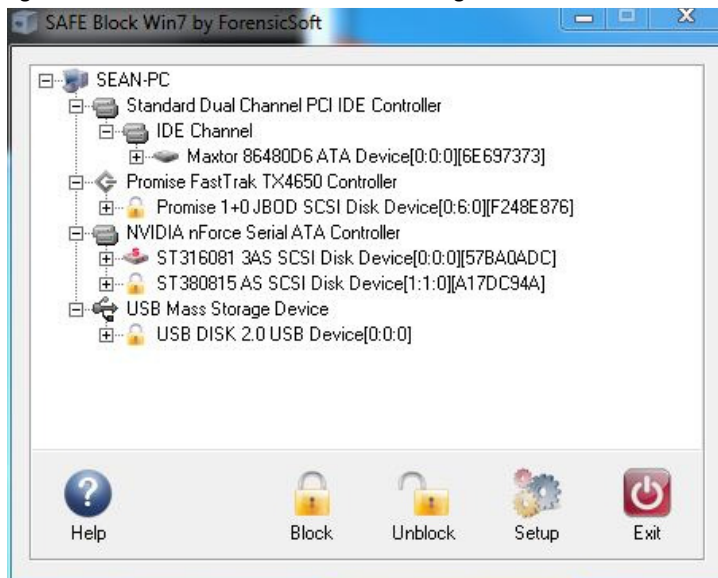
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 42: SWB-21 Drive Configuration



- System Disk
- Blocked SATA Disk
- Blocked SAS Drive
- Blocked USB Drive
- Unblocked PATA Drive

Figure 43: SWB-21 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 42: SWB-21 MD5 Hash Values

Before SATA (Disk 1)	78c8a51e023858f783e4f48c7b8cdc76
After SATA (Disk 1)	78c8a51e023858f783e4f48c7b8cdc76
Before SAS (Disk 2)	c3dec07f60c56ba59bafc84854bb2d0c
After SAS (Disk 2)	c3dec07f60c56ba59bafc84854bb2d0c
Before USB (Disk 3)	f91dc6162ad3777d021f700bda53a40f
After USB (Disk 3)	f91dc6162ad3777d021f700bda53a40f
Before PATA (Disk 4)	68e23e5fcd87ffb6ee95a7e301bc8a80
After PATA (Disk 4)	ebe63108df800cea1841e6e5a22c11da

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 43: SWB-21 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's .....  0         80        80
Undefined CDB's.....      0         53        53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....        34         0        34
Other CDB's .....        62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....      53         0        53
    
```

SWB-021 Test result analysis

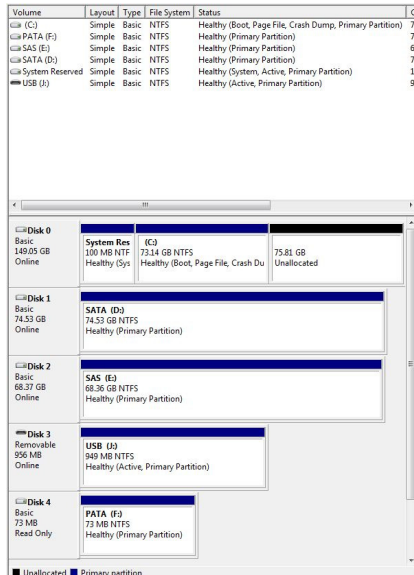
SAFE Block Win7 Version 1.0 had one unexpected result three times in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks and no commands were blocked to the unprotected disk.

8.22 Test Case SWB-22

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern UUUP. The expected result of this test is SAFE Block Win7 V1.0 will:

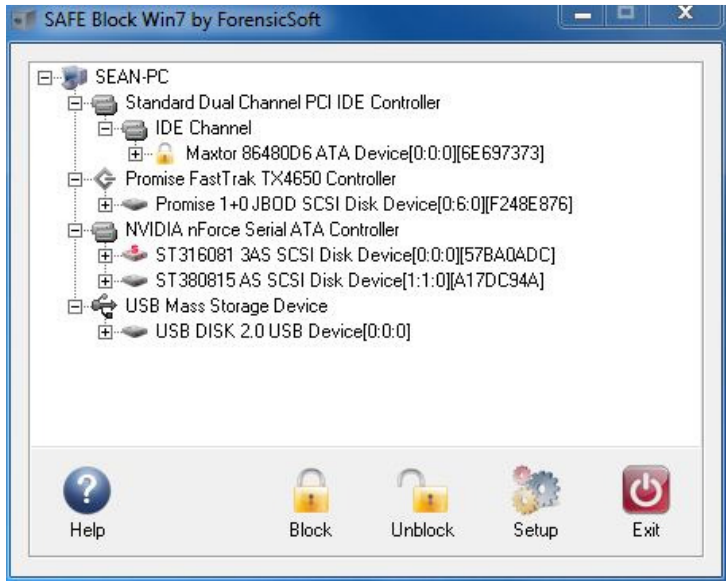
- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives

Figure 44: SWB-22 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Unblocked SAS Drive
- Unblocked USB Drive
- Blocked PATA Drive

Figure 45: SWB-22 SAFE Block Win7 v1.0 Configuration



Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 44: SWB-22 MD5 Hash Values

Before SATA (Disk 1)	d175b25574cedea41916ba6e2b8ccaf4
After SATA (Disk 1)	9b9d12b7bf755300f2963e5b0a3ae6ae
Before SAS (Disk 2)	850eb01ff383d2242534db6705d7605e
After SAS (Disk 2)	4c69e0ca316def6d54cc3d7ce5f2bf63
Before USB (Disk 3)	f91dc6162ad3777d021f700bda53a40f
After USB (Disk 3)	36042d29ed02d44070d7e83667e60113
Before PATA (Disk 4)	9fe4600db166cee3d9646b09aeab5129
After PATA (Disk 4)	9fe4600db166cee3d9646b09aeab5129

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 45: SWB-22 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         8         0         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         34         0        34
Other CDB's .....         62         0        62
Vendor SPecific CDB's .....  80         0        80
Undefined CDB's.....         53         0        53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0         34        34
Other CDB's .....         61         1        62
Vendor SPecific CDB's .....   0         80        80
Undefined CDB's.....         0         53        53
    
```

SWB-022 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disk and no commands were blocked to the unprotected disks.

8.23 Test Case SWB-23

This case tests SAFE Block Win7 V1.0's compliance with optional assertions SWB-AO-01 through SWB-AO-08. It is run using the BOOT protocol, in which all configured drives are protected, the system is rebooted and all possible commands issued to all drives. The expected result of this test is SAFE Block Win7 V1.0 will:

- Block all commands from the WRITE, VENDOR_SPECIFIC, and UNDEFINED categories issued to protected drives
- Pass all commands from the READ and OTHER categories issued to protected drives
- Pass all commands from all categories issued to unprotected drives
- Display a message indicating each command blocked

Figure 46: SWB-23 Drive Configuration

Volume	Layout	Type	File System	Status	C
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	7:
(F:)	Simple	Basic	NTFS	Healthy (Primary Partition)	7:
(E:)	Simple	Basic	NTFS	Healthy (Primary Partition)	6:
(D:)	Simple	Basic	NTFS	Healthy (Primary Partition)	7:
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	11
(U:)	Simple	Basic	NTFS	Healthy (Active, Primary Partition)	9:

Disk	Capacity	File System	Status
Disk 0	149.05 GB	System Res 100 MB NTF, 73.14 GB NTFS	Healthy (Sys)
Disk 1	74.53 GB	SATA (D:) 74.53 GB NTFS	Healthy (Primary Partition)
Disk 2	68.37 GB	SAS (E:) 68.36 GB NTFS	Healthy (Primary Partition)
Disk 3	950 MB	USB (U:) 949 MB NTFS	Healthy (Active, Primary Partition)
Disk 4	73 MB	PATA (F:) 73 MB NTFS	Healthy (Primary Partition)

- System Disk
- Blocked SATA Disk
- Blocked SAS Drive
- Blocked USB Drive
- Blocked PATA Drive

Figure 47: SWB-23 SAFE Block Win7 v1.0 Configuration

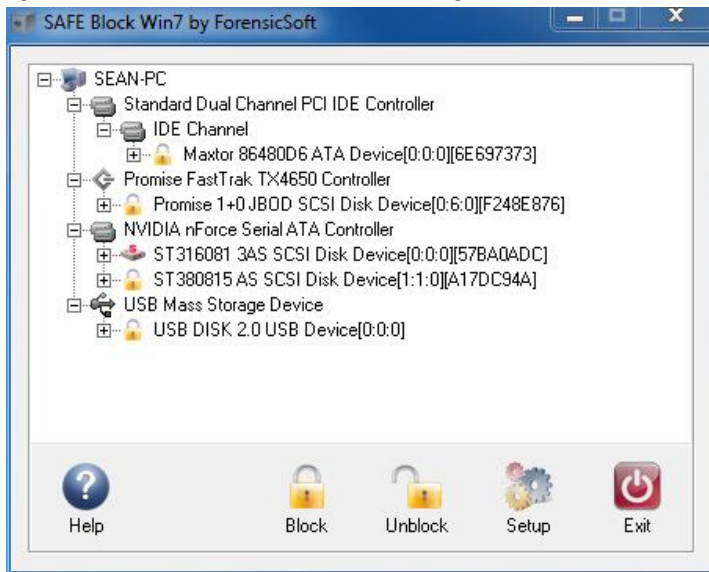


Table 46: SWB-23 MD5 Hash Values

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Before SATA (Disk 1)	e68395bf2c8afdf927980b4263eec33e
After SATA (Disk 1)	e68395bf2c8afdf927980b4263eec33e
Before SAS (Disk 2)	ba212f394153e2d950d54c87dc1b2db8
After SAS (Disk 2)	ba212f394153e2d950d54c87dc1b2db8
Before USB (Disk 3)	7b5cb46cd74238c434d76f49237b0916
After USB (Disk 3)	7b5cb46cd74238c434d76f49237b0916
Before PATA (Disk 4)	9fe4600db166cee3d9646b09aeab5129
After PATA (Disk 4)	9fe4600db166cee3d9646b09aeab5129

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 47: SWB-23 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53

Testing device \\.\PhysicalDrive2
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53

Testing device \\.\PhysicalDrive3
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53

Testing device \\.\PhysicalDrive4
Device is software WRITE PROTECTED

***** TEST RESULTS SUMMARY *****

Test Category           Allowed   Blocked   Total
-----
Read IRP's .....         4         0         4
Write IRP's .....         0         8         8
Other IRP's .....        15         0        15

Read CDB's .....         27         0        27
Write CDB's .....         0        34        34
Other CDB's .....        61         1        62
Vendor SPecific CDB's ..... 0         80        80
Undefined CDB's.....         0         53        53
    
```

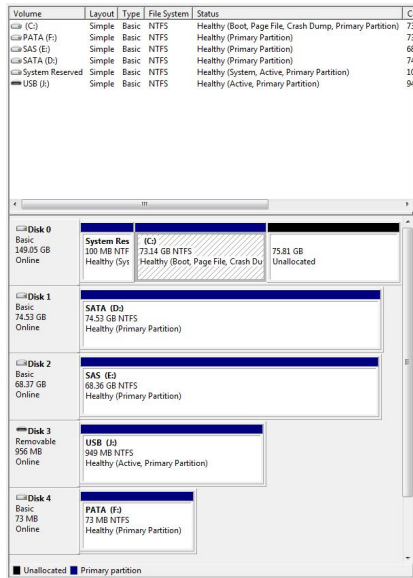
SWB-023 Test result analysis

SAFE Block Win7 Version 1.0 had one unexpected result four times in this test – Variation 1 described in Section 2.1. Note that this is conservative write blocking, which is considered good practice in digital forensics. Otherwise, all write commands were blocked to the protected disks.

8.24 Test Case SWB-24

This case tests SAFE Block Win7 V1.0's compliance with mandatory assertions SWB-MO-03 through SWB-MO-09 and optional assertion SWB-AO-07. It is run using the UNINSTALL protocol, in which SAFE Block Win7 V1.0 is de-installed, the system is rebooted and all possible commands are issued to all drives. The expected result of this test is that commands from any category will not be blocked for any drive.

Figure 48: SWB-24 Drive Configuration



- System Disk
- Unblocked SATA Disk
- Unblocked SAS Drive
- Unblocked USB Drive
- Unblocked PATA Drive

Table 48: SWB-24 MD5 Hash Values

Before SATA (Disk 1)	e68395bf2c8afdf927980b4263eec33e
After SATA (Disk 1)	e5772b96cc3660694810172ad4d8f2ef
Before SAS (Disk 2)	ba212f394153e2d950d54c87dc1b2db8
After SAS (Disk 2)	845759590bd453f96622a03f56f98441
Before USB (Disk 3)	7b5cb46cd74238c434d76f49237b0916
After USB (Disk 3)	5b7418da07805c732f45c684a9f7ad60
Before PATA (Disk 4)	9fe4600db166cee3d9646b09aeab5129
After PATA (Disk 4)	44f434594451c541dfc57a93d1bedad9

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Table 49: SWB-24 NIST Software Write Blocker Test Suite V1.2 Output Summary

```

Testing device \\.\PhysicalDrive1
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53

Testing device \\.\PhysicalDrive2
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53

Testing device \\.\PhysicalDrive3
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53

Testing device \\.\PhysicalDrive4
Device is software WRITE ENABLED

***** TEST RESULTS SUMMARY *****

Test Category      Allowed  Blocked  Total
-----
Read IRP's ..... 4         0        4
Write IRP's ..... 8         0        8
Other IRP's ..... 15        0       15

Read CDB's ..... 27        0       27
Write CDB's ..... 34        0       34
Other CDB's ..... 62        0       62
Vendor SPecific CDB's ..... 80        0       80
Undefined CDB's..... 53        0       53
    
```

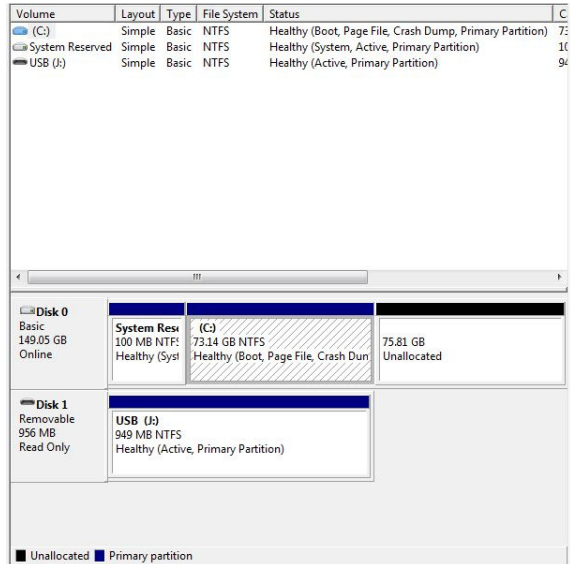
SWB-024 Test result analysis

The de-installation of SAFE Block Win7 Version 1.0 performed correctly - all commands were issued and allowed on the unprotected disks.

8.25 Test Case SWB-25

This case tests SAFE Block Win7 V1.0's compliance with mandatory assertion SWB-AM-10. The expected result of this test is that the IMAGE operation will fail with an I/O error and the disk hash of the test disk will be unchanged by the test. The IMAGE operation was attempted using AccessData FTK Imager 2.7.0 [4].

Figure 49: SWB-25 Drive Configuration



- System Disk
- Blocked USB Disk

Figure 50: SWB-25 SAFE Block Win7 v1.0 Configuration



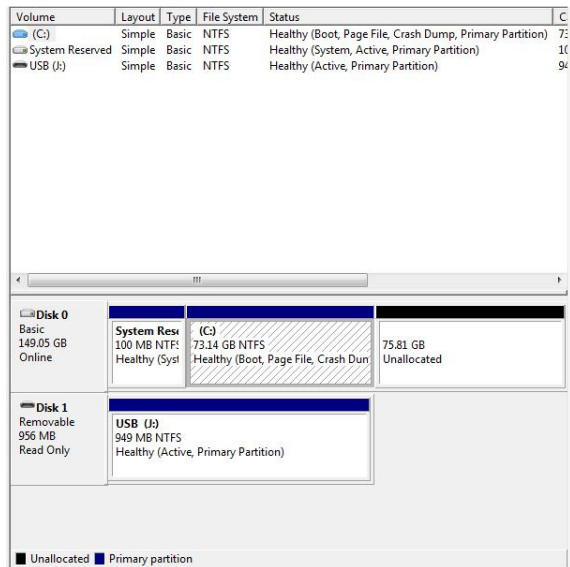
Table 50: SWB-25 MD5 Hash Values

Before USB Disk	0e7a3e041653b210d14bf97601b7288d
After USB Disk	0e7a3e041653b210d14bf97601b7288d

8.26 Test Case SWB-26

This case tests SAFE Block Win7 V1.0's compliance with mandatory assertion SWB-AM-10 and optional assertion SWB-AO-08. The expected result of this test is that the ACQUIRE operation will fail with an I/O error, and the disk hash of the test disk will be unchanged by the test. The ACQUIRE operation was attempted using Guidance Software EnCase Forensic Version 6 [7].

Figure 52: SWB-26 Drive Configuration



- System Disk
- Blocked USB Disk

Figure 53: SWB-26 SAFE Block Win7 v1.0 Configuration

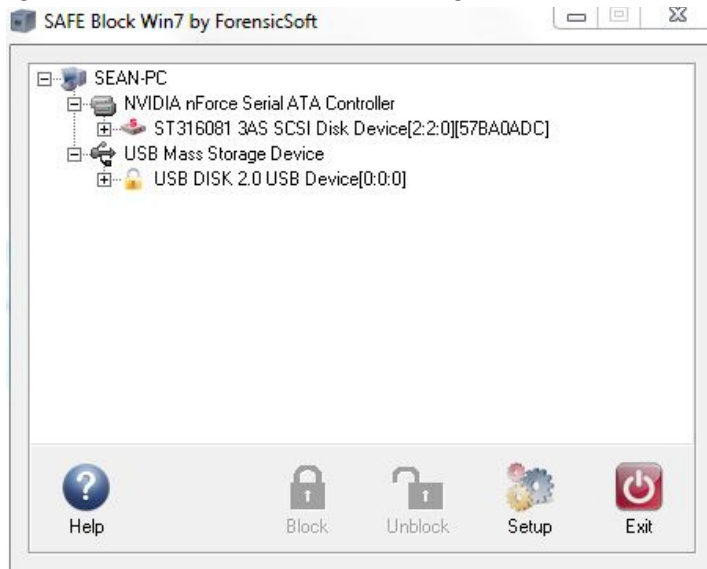
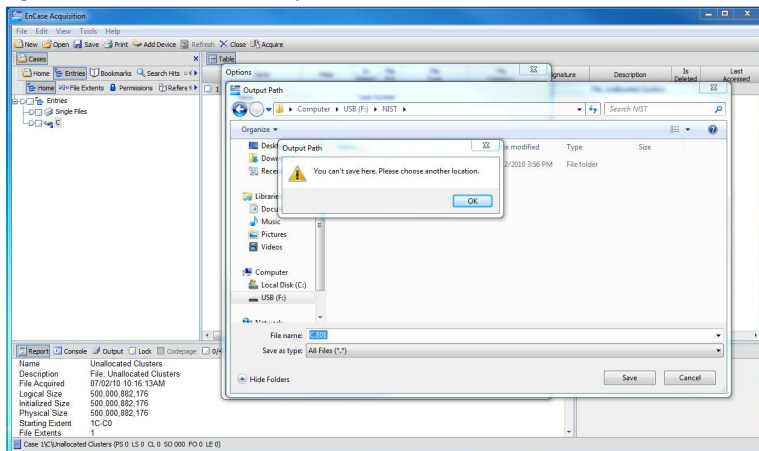


Table 51: SWB-26 MD5 Hash Values

Before USB Disk	0e7a3e041653b210d14bf97601b7288d
After USB Disk	0e7a3e041653b210d14bf97601b7288d

Figure 54: SWB-26 ACQUIRE operation result



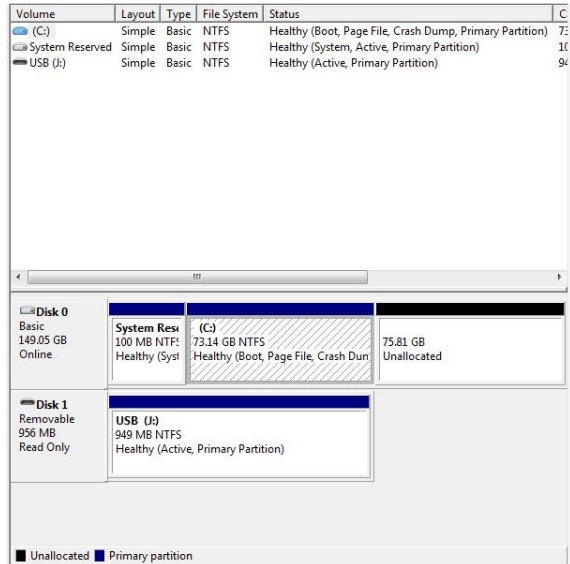
SWB-026 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.27 Test Case SWB-27

This case tests SAFE Block Win7 V1.0's compliance with assertion SWB-AM-10. It is run using the typical protocol. The expected result of this test is that the COPY command will fail with an error message, and the hash value of the target disk will be unchanged after the test. The COPY operation was attempted using a standard Windows® Command Prompt.

Figure 55: SWB-27 Drive Configuration



- System Disk
- Blocked USB Disk

Figure 56: SWB-27 SAFE Block Win7 v1.0 Configuration

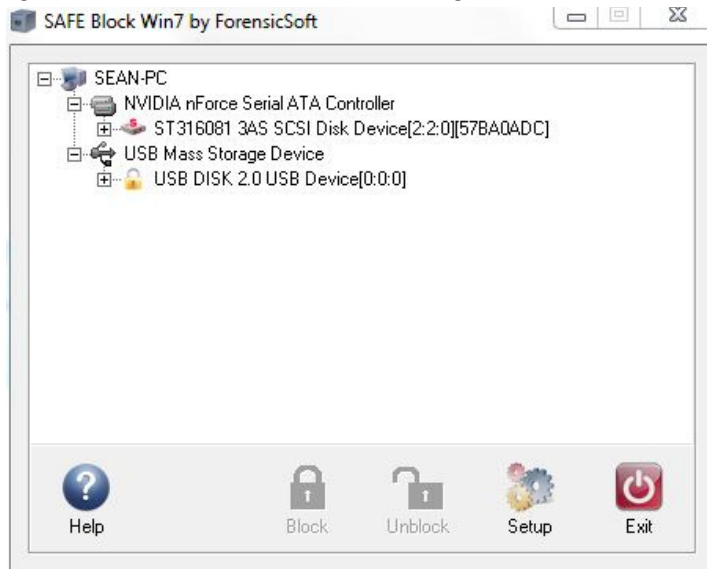


Table 52: SWB-27 MD5 Hash Values

Before USB Disk	0e7a3e041653b210d14bf97601b7288d
After USB Disk	0e7a3e041653b210d14bf97601b7288d

Figure 57: SWB-27 COPY operation result



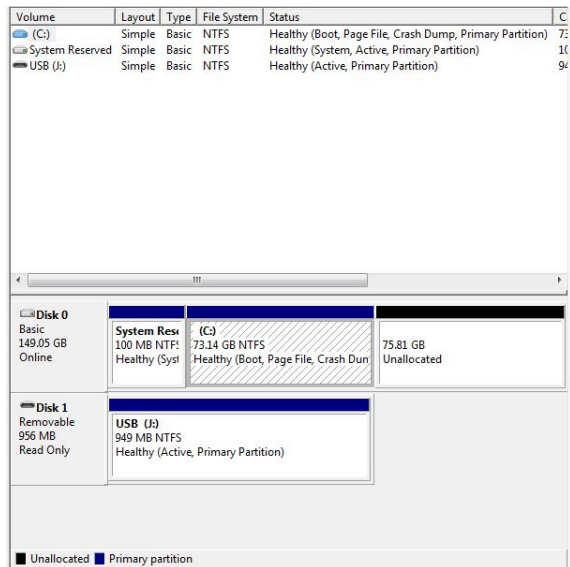
SWB-027 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.28 Test Case SWB-28

This case tests SAFE Block Win7 V1.0's compliance with assertion SWB-AM-10. It is run using the typical protocol. The expected result of this test is that the DROP operation will fail with an error message and the hash value of the target disk will be unchanged after the test. The DROP operation was attempted using a Drag-and-Drop operation in Windows® Explorer.

Figure 58: SWB-28 Drive Configuration



- System Disk
- Blocked USB Disk

Figure 59: SWB-28 SAFE Block Win7 v1.0 Configuration

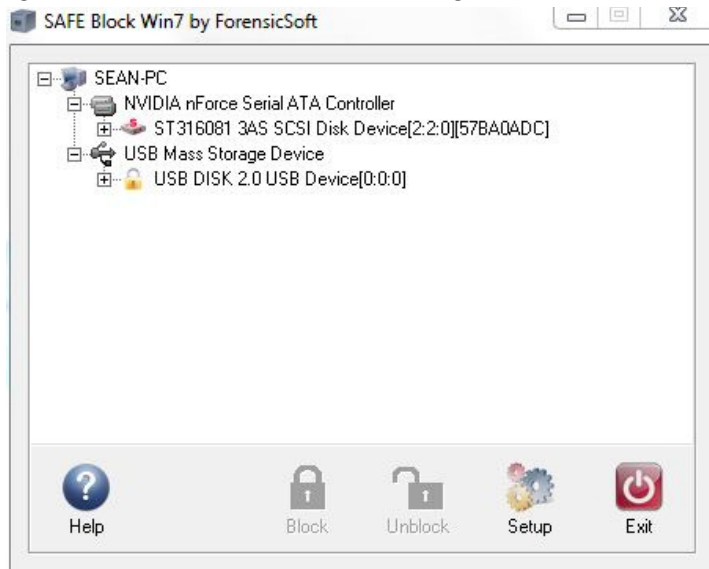
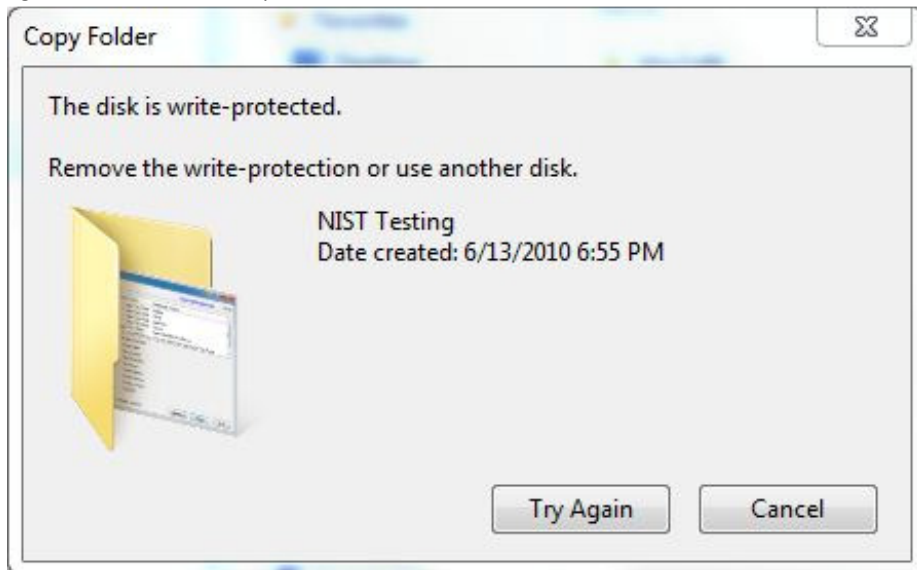


Table 53: SWB-28 MD5 Hash Values

Before USB Disk	0e7a3e041653b210d14bf97601b7288d
After USB Disk	0e7a3e041653b210d14bf97601b7288d

Figure 60: SWB-28 DROP operation result



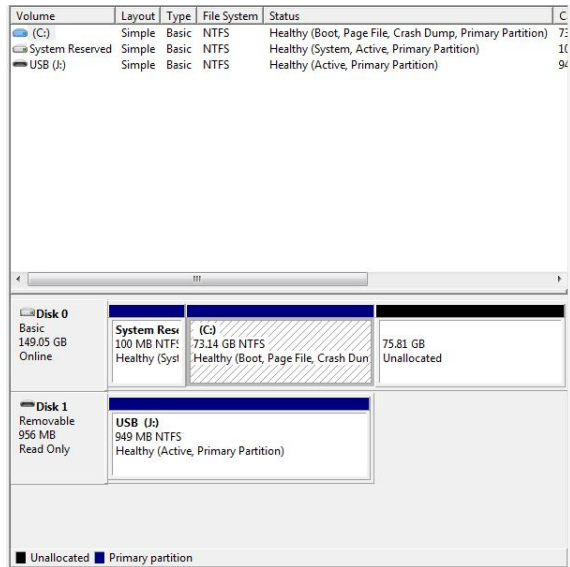
SWB-028 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.29 Test Case SWB-29

This case tests SAFE Block Win7 V1.0's compliance with assertions SWB-AM-10 and SWB-AO-08. The expected result of this test is that the PASTE operation will fail with an error message, and the hash value of the target disk will be unchanged after the test. The PASTE operation was attempted using a Copy-Paste operation in Windows® Explorer.

Figure 61: SWB-29 Drive Configuration



- System Disk
- Blocked USB Disk

Figure 62: SWB-29 SAFE Block Win7 v1.0 Configuration

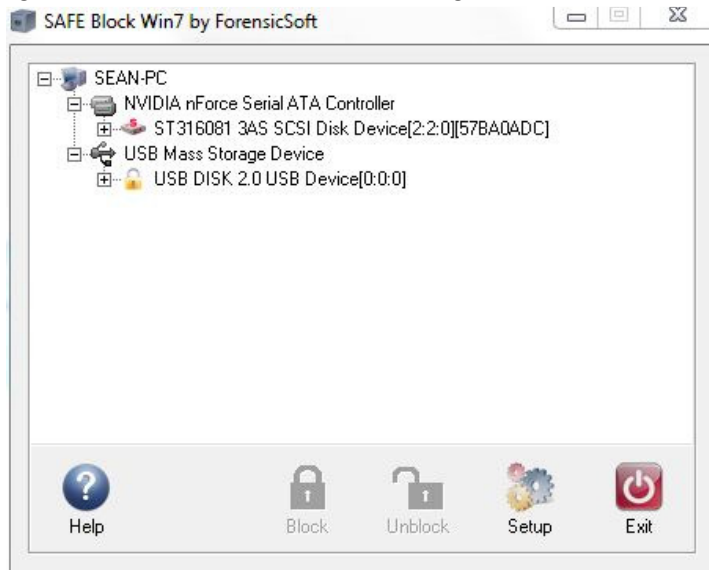
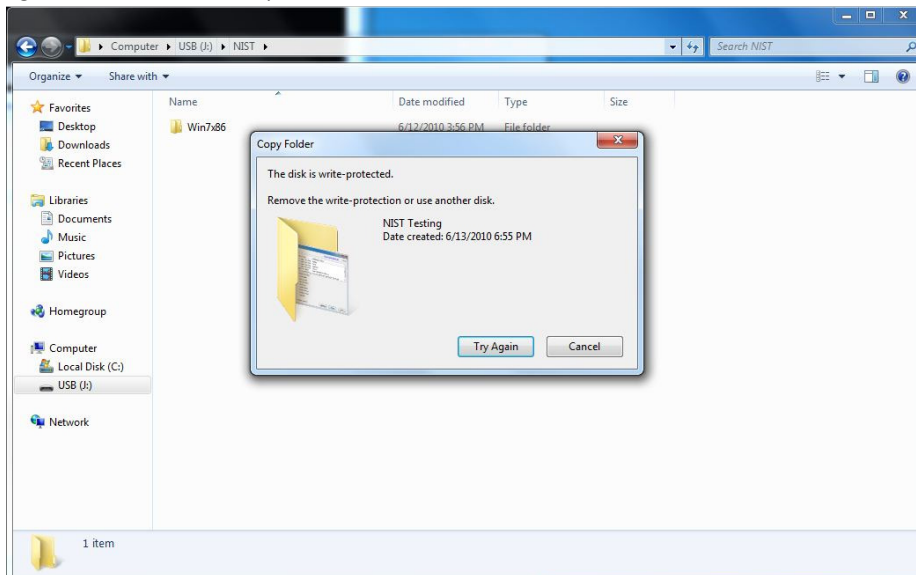


Table 54: SWB-29 MD5 Hash Values

Before USB Disk	0e7a3e041653b210d14bf97601b7288d
After USB Disk	0e7a3e041653b210d14bf97601b7288d

Figure 63: SWB-29 PASTE operation result



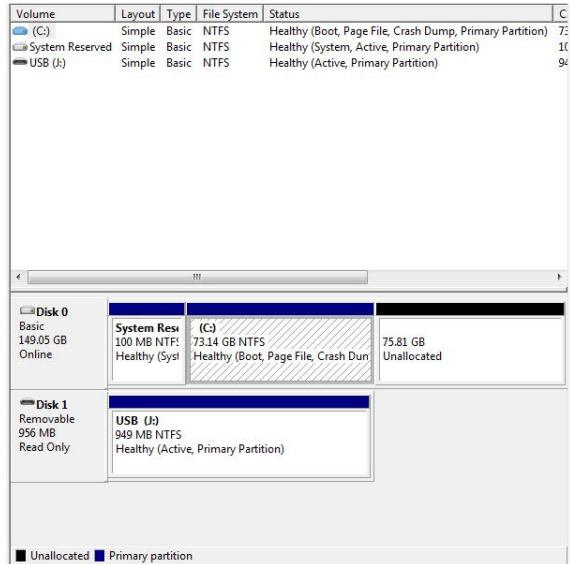
SWB-029 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly - the operation failed and the hashes did not change.

8.30 Test Case SWB-30

This case tests SAFE Block Win7 V1.0's compliance with mandatory assertion SWB-AM-10 and optional assertion SWB-AO-08. The expected result of this test is that the SAVE AS operation will fail with an I/O error and the hash value of the test disk will be unchanged by the test. The SAVE AS operation was attempted using Windows® Notepad.

Figure 64: SWB-30 Drive Configuration



- System Disk
- Blocked USB Disk

Figure 65: SWB-30 SAFE Block Win7 v1.0 Configuration

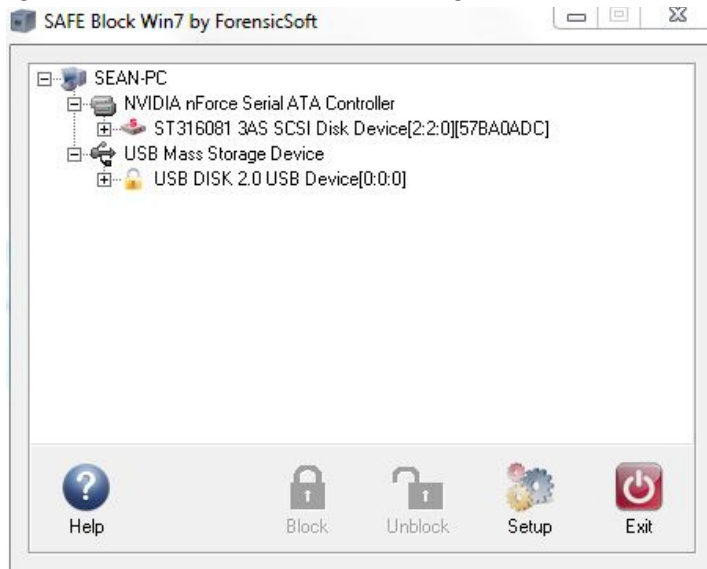
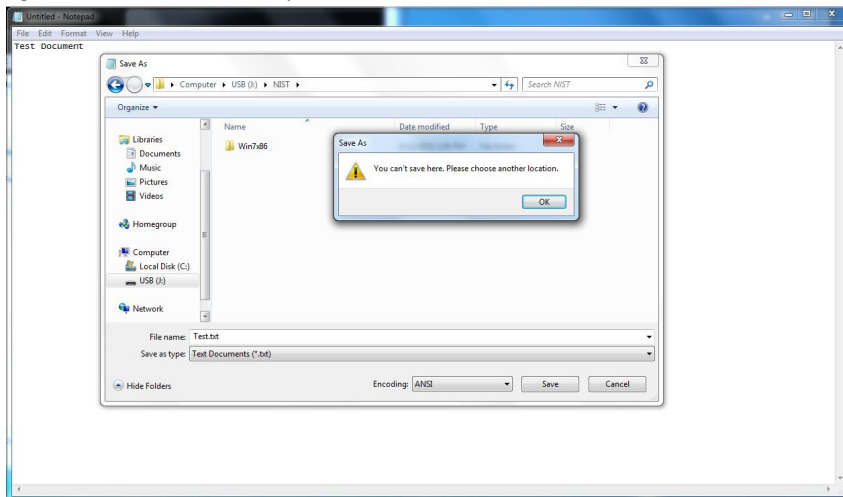


Table 55: SWB-30 MD5 Hash Values

Before USB Disk	0e7a3e041653b210d14bf97601b7288d
After USB Disk	0e7a3e041653b210d14bf97601b7288d

Figure 66: SWB-30 SAVE AS operation result



SWB-030 Test result analysis

SAFE Block Win7 Version 1.0 performed correctly -the operation failed and the hashes did not change.

Appendix A - Sample NIST Software Write Blocker Test Suite V1.2 Complete Log File Listing

Log File for test SWB-11

```
NIST Software Write Blocker Test Suite V1.2
Tue Jun 22 20:29:25 2010

Test case:          SWB-14
Command set:        RWOVU
Number of drives:   4
Protection pattern: UPPP
Test administered by: SA

Testing device ¥¥,¥PhysicalDrive1
Device is software WRITE ENABLED

      IRP Function                               Code   Result
-----
IRP_MJ_CREATE                               (0x00)  ALLOWED
IRP_MJ_CREATE_NAMED_PIPE                    (0x01)  ALLOWED
IRP_MJ_CLOSE                                 (0x02)  ALLOWED
IRP_MJ_READ                                  (0x03)  ALLOWED
IRP_MJ_WRITE                                 (0x04)  ALLOWED
IRP_MJ_QUERY_INFORMATION                     (0x05)  ALLOWED
IRP_MJ_SET_INFORMATION                       (0x06)  ALLOWED
IRP_MJ_QUERY_EA                              (0x07)  ALLOWED
IRP_MJ_SET_EA                                (0x08)  ALLOWED
IRP_MJ_FLUSH_BUFFERS                         (0x09)  ALLOWED
IRP_MJ_QUERY_VOLUME_INFORMATION              (0x0A)  ALLOWED
IRP_MJ_SET_VOLUME_INFORMATION                (0x0B)  ALLOWED
IRP_MJ_DIRECTORY_CONTROL                     (0x0C)  ALLOWED
IRP_MJ_FILE_SYSTEM_CONTROL                   (0x0D)  ALLOWED
IRP_MJ_DEVICE_CONTROL                        (0x0E)  ALLOWED
IRP_MJ SCSI                                   (0x0F)

      SCSI Operation                               Opcode
-----
TEST_UNIT_READY                               (0x00)  ALLOWED
REWIND                                         (0x01)  ALLOWED
VENDOR_SPECIFIC_CDB                           (0x02)  ALLOWED
REQUEST_SENSE                                  (0x03)  ALLOWED
FORMAT_UNIT                                    (0x04)  ALLOWED
READ_BLOCK_LIMITS                             (0x05)  ALLOWED
VENDOR_SPECIFIC_CDB                           (0x06)  ALLOWED
REASSIGN_BLOCKS                               (0x07)  ALLOWED
READ6                                          (0x08)  ALLOWED
VENDOR_SPECIFIC_CDB                           (0x09)  ALLOWED
WRITE6                                         (0x0A)  ALLOWED
SEEK6                                          (0x0B)  ALLOWED
VENDOR_SPECIFIC_CDB                           (0x0C)  ALLOWED
VENDOR_SPECIFIC_CDB                           (0x0D)  ALLOWED
```


Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

VENDOR_SPECIFIC_CDB	(0x0E)	ALLOWED
READ_REVERSE6	(0x0F)	ALLOWED
WRITE_FILEMARKS	(0x10)	ALLOWED
SPACE	(0x11)	ALLOWED
INQUIRY	(0x12)	ALLOWED
VERIFY6	(0x13)	ALLOWED
RECOVER_BUF_DATA	(0x14)	ALLOWED
MODE_SELECT	(0x15)	ALLOWED
RESERVE_UNIT	(0x16)	ALLOWED
RELEASE_UNIT	(0x17)	ALLOWED
COPY	(0x18)	ALLOWED
ERASE	(0x19)	ALLOWED
MODE_SENSE	(0x1A)	ALLOWED
START_STOP_UNIT	(0x1B)	ALLOWED
RECEIVE_DIAGNOSTIC	(0x1C)	ALLOWED
SEND_DIAGNOSTIC	(0x1D)	ALLOWED
MEDIUM_REMOVAL	(0x1E)	ALLOWED
UNDEFINED_CDB	(0x1F)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x20)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x21)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x22)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x23)	ALLOWED
SET_WINDOW	(0x24)	ALLOWED
READ_CAPACITY	(0x25)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x26)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x27)	ALLOWED
READ10	(0x28)	ALLOWED
READ_GENERATION	(0x29)	ALLOWED
WRITE10	(0x2A)	ALLOWED
SEEK10	(0x2B)	ALLOWED
ERASE10	(0x2C)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x2D)	ALLOWED
WRITE_AND_VERIFY10	(0x2E)	ALLOWED
VERIFY	(0x2F)	ALLOWED
SEARCH_DATA_HIGH	(0x30)	ALLOWED
SEARCH_DATA_EQUAL	(0x31)	ALLOWED
SEARCH_DATA_LOW	(0x32)	ALLOWED
SET_LIMITS	(0x33)	ALLOWED
READ_POSITION	(0x34)	ALLOWED
SYNCHRONIZE_CACHE	(0x35)	ALLOWED
LOCK_UNLOCK_CACHE	(0x36)	ALLOWED
READ_DEFECT_DATA	(0x37)	ALLOWED
MEDIUM_SCAN	(0x38)	ALLOWED
COMPARE	(0x39)	ALLOWED
COPY_COMPARE	(0x3A)	ALLOWED
WRITE_DATA_BUFF	(0x3B)	ALLOWED
READ_DATA_BUFF	(0x3C)	ALLOWED
UNDEFINED_CDB	(0x3D)	ALLOWED
READ_LONG10	(0x3E)	ALLOWED
WRITE_LONG10	(0x3F)	ALLOWED
CHANGE_DEFINITION	(0x40)	ALLOWED
WRITE_SAME10	(0x41)	ALLOWED
READ_SUB_CHANNEL	(0x42)	ALLOWED
READ_TOC	(0x43)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

READ_HEADER	(0x44)	ALLOWED
PLAY_AUDIO	(0x45)	ALLOWED
GET_CONFIGURATION	(0x46)	ALLOWED
PLAY_AUDIO_MSF	(0x47)	ALLOWED
PLAY_TRACK_INDEX	(0x48)	ALLOWED
PLAY_TRACK_RELATIVE	(0x49)	ALLOWED
GET_EVENT_STATUS	(0x4A)	ALLOWED
PAUSE_RESUME	(0x4B)	ALLOWED
LOG_SELECT	(0x4C)	ALLOWED
LOG_SENSE	(0x4D)	ALLOWED
STOP_PLAY_SCAN	(0x4E)	ALLOWED
UNDEFINED_CDB	(0x4F)	ALLOWED
XDWRITE10	(0x50)	ALLOWED
XPWRITE10	(0x51)	ALLOWED
XDREAD10	(0x52)	ALLOWED
XDWRITucRead10	(0x53)	ALLOWED
SEND_OPC_INFORMATION	(0x54)	ALLOWED
MODE_SELECT10	(0x55)	ALLOWED
RESERVE_UNIT10	(0x56)	ALLOWED
RELEASE_UNIT10	(0x57)	ALLOWED
REPAIR_TRACK	(0x58)	ALLOWED
UNDEFINED_CDB	(0x59)	ALLOWED
MODE_SENSE10	(0x5A)	ALLOWED
CLOSE_TRACK_SESSION	(0x5B)	ALLOWED
READ_BUFFER_CAPACITY	(0x5C)	ALLOWED
SEND_CUE_SHEET	(0x5D)	ALLOWED
PERSISTENT_RESERVE_IN	(0x5E)	ALLOWED
PERSISTENT_RESERVE_OUT	(0x5F)	ALLOWED
UNDEFINED_CDB	(0x60)	ALLOWED
UNDEFINED_CDB	(0x61)	ALLOWED
UNDEFINED_CDB	(0x62)	ALLOWED
UNDEFINED_CDB	(0x63)	ALLOWED
UNDEFINED_CDB	(0x64)	ALLOWED
UNDEFINED_CDB	(0x65)	ALLOWED
UNDEFINED_CDB	(0x66)	ALLOWED
UNDEFINED_CDB	(0x67)	ALLOWED
UNDEFINED_CDB	(0x68)	ALLOWED
UNDEFINED_CDB	(0x69)	ALLOWED
UNDEFINED_CDB	(0x6A)	ALLOWED
UNDEFINED_CDB	(0x6B)	ALLOWED
UNDEFINED_CDB	(0x6C)	ALLOWED
UNDEFINED_CDB	(0x6D)	ALLOWED
UNDEFINED_CDB	(0x6E)	ALLOWED
UNDEFINED_CDB	(0x6F)	ALLOWED
UNDEFINED_CDB	(0x70)	ALLOWED
UNDEFINED_CDB	(0x71)	ALLOWED
UNDEFINED_CDB	(0x72)	ALLOWED
UNDEFINED_CDB	(0x73)	ALLOWED
UNDEFINED_CDB	(0x74)	ALLOWED
UNDEFINED_CDB	(0x75)	ALLOWED
UNDEFINED_CDB	(0x76)	ALLOWED
UNDEFINED_CDB	(0x77)	ALLOWED
UNDEFINED_CDB	(0x78)	ALLOWED
UNDEFINED_CDB	(0x79)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

UNDEFINED_CDB	(0x7A)	ALLOWED
UNDEFINED_CDB	(0x7B)	ALLOWED
UNDEFINED_CDB	(0x7C)	ALLOWED
UNDEFINED_CDB	(0x7D)	ALLOWED
UNDEFINED_CDB	(0x7E)	ALLOWED
UNDEFINED_CDB	(0x7F)	ALLOWED
XDWRITE_EXTENDED	(0x80)	ALLOWED
REBUILD	(0x81)	ALLOWED
REGENERATE	(0x82)	ALLOWED
EXTENDED_COPY	(0x83)	ALLOWED
RECEIVE_COPY_RESULTS	(0x84)	ALLOWED
ATA_PASSTHROUGH16	(0x85)	ALLOWED
ACCESS_CONTROL_IN	(0x86)	ALLOWED
ACCESS_CONTROL_OUT	(0x87)	ALLOWED
READ16	(0x88)	ALLOWED
UNDEFINED_CDB	(0x89)	ALLOWED
WRITE16	(0x8A)	ALLOWED
UNDEFINED_CDB	(0x8B)	ALLOWED
READ_ATTRIBUTE	(0x8C)	ALLOWED
WRITE_ATTRIBUTE	(0x8D)	ALLOWED
WRITE_AND_VERIFY16	(0x8E)	ALLOWED
VERIFY16	(0x8F)	ALLOWED
PRE-FETCH16	(0x90)	ALLOWED
SYNCHRONIZE_CACHE16	(0x91)	ALLOWED
LOCK-UNLOCK CACHE	(0x92)	ALLOWED
WRITE_SAME16	(0x93)	ALLOWED
UNDEFINED_CDB	(0x94)	ALLOWED
UNDEFINED_CDB	(0x95)	ALLOWED
UNDEFINED_CDB	(0x96)	ALLOWED
UNDEFINED_CDB	(0x97)	ALLOWED
UNDEFINED_CDB	(0x98)	ALLOWED
UNDEFINED_CDB	(0x99)	ALLOWED
UNDEFINED_CDB	(0x9A)	ALLOWED
UNDEFINED_CDB	(0x9B)	ALLOWED
UNDEFINED_CDB	(0x9C)	ALLOWED
UNDEFINED_CDB	(0x9D)	ALLOWED
UNDEFINED_CDB	(0x9E)	ALLOWED
UNDEFINED_CDB	(0x9F)	ALLOWED
REPORT_LUNS	(0xA0)	ALLOWED
ATA_PASSTHROUGH12	(0xA1)	ALLOWED
SEND_EVENT	(0xA2)	ALLOWED
SEND_KEY	(0xA3)	ALLOWED
REPORT_KEY	(0xA4)	ALLOWED
MOVE_MEDIUM	(0xA5)	ALLOWED
LOAD_UNLOAD_SLOT	(0xA6)	ALLOWED
SET_READ_AHEAD	(0xA7)	ALLOWED
READ12	(0xA8)	ALLOWED
UNDEFINED_CDB	(0xA9)	ALLOWED
WRITE12	(0xAA)	ALLOWED
UNDEFINED_CDB	(0xAB)	ALLOWED
ERASE12	(0xAC)	ALLOWED
READ_DVD_STRUCTURE	(0xAD)	ALLOWED
WRITE_AND_VERIFY12	(0xAE)	ALLOWED
VERIFY12	(0xAF)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

SEARCH_DATA_HIGH12	(0xB0)	ALLOWED
SEARCH_DATA_EQUAL12	(0xB1)	ALLOWED
SEARCH_DATA_LOW12	(0xB2)	ALLOWED
SET_LIMITS12	(0xB3)	ALLOWED
READ_ELEMENT_STATUS_AT	(0xB4)	ALLOWED
REQUEST_VOL_ELEMENT	(0xB5)	ALLOWED
SEND_VOLUME_TAG	(0xB6)	ALLOWED
READ_DEFECT_DATA12	(0xB7)	ALLOWED
READ_ELEMENT_STATUS	(0xB8)	ALLOWED
READ_CD_MSF12	(0xB9)	ALLOWED
SCAN12	(0xBA)	ALLOWED
SET_CDROM_SPEED12	(0xBB)	ALLOWED
PLAY_CD12	(0xBC)	ALLOWED
MECHANISM_STATUS	(0xBD)	ALLOWED
READ_CD12	(0xBE)	ALLOWED
SEND_DVD_STRUCTURE	(0xBF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC5)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC6)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC7)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC8)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC9)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCA)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCB)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCC)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCD)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCE)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD5)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD6)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD7)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD8)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD9)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDA)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDB)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDC)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDD)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDE)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE5)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

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VENDOR_SPECIFIC_CDB      (0xE6)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xE7)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xE8)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xE9)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xEA)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xEB)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xEC)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xED)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xEE)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xEF)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF0)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF1)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF2)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF3)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF4)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF5)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF6)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF7)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF8)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xF9)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xFA)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xFB)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xFC)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xFD)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xFE)    ALLOWED
VENDOR_SPECIFIC_CDB      (0xFF)    ALLOWED

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IRP_MJ_SHUTDOWN           (0x10)    ALLOWED
IRP_MJ_LOCK_CONTROL       (0x11)    ALLOWED
IRP_MJ_CLEANUP           (0x12)    ALLOWED
IRP_MJ_CREATE_MAILSLLOT  (0x13)    ALLOWED
IRP_MJ_QUERY_SECURITY     (0x14)    ALLOWED
IRP_MJ_SET_SECURITY      (0x15)    ALLOWED
IRP_MJ_POWER             (0x16)    ALLOWED
IRP_MJ_SYSTEM_CONTROL    (0x17)    ALLOWED
IRP_MJ_DEVICE_CHANGE     (0x18)    ALLOWED
IRP_MJ_QUERY_QUOTA       (0x19)    ALLOWED
IRP_MJ_SET_QUOTA         (0x1A)    ALLOWED
IRP_MJ_PNP                (0x1B)    ALLOWED

```

***** TEST RESULTS SUMMARY *****

Test Category	Allowed	Blocked	Total
<hr style="border-top: 1px dashed black;"/>			
Read IRP's	4	0	4
Write IRP's	8	0	8
Other IRP's	15	0	15
Read CDB's	27	0	27
Write CDB's	34	0	34
Other CDB's	62	0	62
Vendor SPecific CDB's	80	0	80
Undefined CDB's.....	53	0	53

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

Testing device ¥¥.¥PhysicalDrive2
 Device is software WRITE ENABLED

IRP Function	Code	Result
IRP_MJ_CREATE	(0x00)	ALLOWED
IRP_MJ_CREATE_NAMED_PIPE	(0x01)	ALLOWED
IRP_MJ_CLOSE	(0x02)	ALLOWED
IRP_MJ_READ	(0x03)	ALLOWED
IRP_MJ_WRITE	(0x04)	ALLOWED
IRP_MJ_QUERY_INFORMATION	(0x05)	ALLOWED
IRP_MJ_SET_INFORMATION	(0x06)	ALLOWED
IRP_MJ_QUERY_EA	(0x07)	ALLOWED
IRP_MJ_SET_EA	(0x08)	ALLOWED
IRP_MJ_FLUSH_BUFFERS	(0x09)	ALLOWED
IRP_MJ_QUERY_VOLUME_INFORMATION	(0x0A)	ALLOWED
IRP_MJ_SET_VOLUME_INFORMATION	(0x0B)	ALLOWED
IRP_MJ_DIRECTORY_CONTROL	(0x0C)	ALLOWED
IRP_MJ_FILE_SYSTEM_CONTROL	(0x0D)	ALLOWED
IRP_MJ_DEVICE_CONTROL	(0x0E)	ALLOWED
IRP_MJ SCSI	(0x0F)	

SCSI Operation	Opcode	Result
TEST_UNIT_READY	(0x00)	ALLOWED
REWIND	(0x01)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x02)	ALLOWED
REQUEST_SENSE	(0x03)	ALLOWED
FORMAT_UNIT	(0x04)	ALLOWED
READ_BLOCK_LIMITS	(0x05)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x06)	ALLOWED
REASSIGN_BLOCKS	(0x07)	ALLOWED
READ6	(0x08)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x09)	ALLOWED
WRITE6	(0x0A)	ALLOWED
SEEK6	(0x0B)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x0C)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x0D)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x0E)	ALLOWED
READ_REVERSE6	(0x0F)	ALLOWED
WRITE_FILEMARKS	(0x10)	ALLOWED
SPACE	(0x11)	ALLOWED
INQUIRY	(0x12)	ALLOWED
VERIFY6	(0x13)	ALLOWED
RECOVER_BUF_DATA	(0x14)	ALLOWED
MODE_SELECT	(0x15)	ALLOWED
RESERVE_UNIT	(0x16)	ALLOWED
RELEASE_UNIT	(0x17)	ALLOWED
COPY	(0x18)	ALLOWED
ERASE	(0x19)	ALLOWED
MODE_SENSE	(0x1A)	ALLOWED
START_STOP_UNIT	(0x1B)	ALLOWED
RECEIVE_DIAGNOSTIC	(0x1C)	ALLOWED
SEND_DIAGNOSTIC	(0x1D)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

MEDIUM_REMOVAL	(0x1E)	ALLOWED
UNDEFINED_CDB	(0x1F)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x20)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x21)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x22)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x23)	ALLOWED
SET_WINDOW	(0x24)	ALLOWED
READ_CAPACITY	(0x25)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x26)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x27)	ALLOWED
READ10	(0x28)	ALLOWED
READ_GENERATION	(0x29)	ALLOWED
WRITE10	(0x2A)	ALLOWED
SEEK10	(0x2B)	ALLOWED
ERASE10	(0x2C)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x2D)	ALLOWED
WRITE_AND_VERIFY10	(0x2E)	ALLOWED
VERIFY	(0x2F)	ALLOWED
SEARCH_DATA_HIGH	(0x30)	ALLOWED
SEARCH_DATA_EQUAL	(0x31)	ALLOWED
SEARCH_DATA_LOW	(0x32)	ALLOWED
SET_LIMITS	(0x33)	ALLOWED
READ_POSITION	(0x34)	ALLOWED
SYNCHRONIZE_CACHE	(0x35)	ALLOWED
LOCK_UNLOCK_CACHE	(0x36)	ALLOWED
READ_DEFECT_DATA	(0x37)	ALLOWED
MEDIUM_SCAN	(0x38)	ALLOWED
COMPARE	(0x39)	ALLOWED
COPY_COMPARE	(0x3A)	ALLOWED
WRITE_DATA_BUFF	(0x3B)	ALLOWED
READ_DATA_BUFF	(0x3C)	ALLOWED
UNDEFINED_CDB	(0x3D)	ALLOWED
READ_LONG10	(0x3E)	ALLOWED
WRITE_LONG10	(0x3F)	ALLOWED
CHANGE_DEFINITION	(0x40)	ALLOWED
WRITE_SAME10	(0x41)	ALLOWED
READ_SUB_CHANNEL	(0x42)	ALLOWED
READ_TOC	(0x43)	ALLOWED
READ_HEADER	(0x44)	ALLOWED
PLAY_AUDIO	(0x45)	ALLOWED
GET_CONFIGURATION	(0x46)	ALLOWED
PLAY_AUDIO_MSF	(0x47)	ALLOWED
PLAY_TRACK_INDEX	(0x48)	ALLOWED
PLAY_TRACK_RELATIVE	(0x49)	ALLOWED
GET_EVENT_STATUS	(0x4A)	ALLOWED
PAUSE_RESUME	(0x4B)	ALLOWED
LOG_SELECT	(0x4C)	ALLOWED
LOG_SENSE	(0x4D)	ALLOWED
STOP_PLAY_SCAN	(0x4E)	ALLOWED
UNDEFINED_CDB	(0x4F)	ALLOWED
XDWRITE10	(0x50)	ALLOWED
XPWRITE10	(0x51)	ALLOWED
XDREAD10	(0x52)	ALLOWED
XDWRITucRead10	(0x53)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

SEND_OPC_INFORMATION	(0x54)	ALLOWED
MODE_SELECT10	(0x55)	ALLOWED
RESERVE_UNIT10	(0x56)	ALLOWED
RELEASE_UNIT10	(0x57)	ALLOWED
REPAIR_TRACK	(0x58)	ALLOWED
UNDEFINED_CDB	(0x59)	ALLOWED
MODE_SENSE10	(0x5A)	ALLOWED
CLOSE_TRACK_SESSION	(0x5B)	ALLOWED
READ_BUFFER_CAPACITY	(0x5C)	ALLOWED
SEND_CUE_SHEET	(0x5D)	ALLOWED
PERSISTENT_RESERVE_IN	(0x5E)	ALLOWED
PERSISTENT_RESERVE_OUT	(0x5F)	ALLOWED
UNDEFINED_CDB	(0x60)	ALLOWED
UNDEFINED_CDB	(0x61)	ALLOWED
UNDEFINED_CDB	(0x62)	ALLOWED
UNDEFINED_CDB	(0x63)	ALLOWED
UNDEFINED_CDB	(0x64)	ALLOWED
UNDEFINED_CDB	(0x65)	ALLOWED
UNDEFINED_CDB	(0x66)	ALLOWED
UNDEFINED_CDB	(0x67)	ALLOWED
UNDEFINED_CDB	(0x68)	ALLOWED
UNDEFINED_CDB	(0x69)	ALLOWED
UNDEFINED_CDB	(0x6A)	ALLOWED
UNDEFINED_CDB	(0x6B)	ALLOWED
UNDEFINED_CDB	(0x6C)	ALLOWED
UNDEFINED_CDB	(0x6D)	ALLOWED
UNDEFINED_CDB	(0x6E)	ALLOWED
UNDEFINED_CDB	(0x6F)	ALLOWED
UNDEFINED_CDB	(0x70)	ALLOWED
UNDEFINED_CDB	(0x71)	ALLOWED
UNDEFINED_CDB	(0x72)	ALLOWED
UNDEFINED_CDB	(0x73)	ALLOWED
UNDEFINED_CDB	(0x74)	ALLOWED
UNDEFINED_CDB	(0x75)	ALLOWED
UNDEFINED_CDB	(0x76)	ALLOWED
UNDEFINED_CDB	(0x77)	ALLOWED
UNDEFINED_CDB	(0x78)	ALLOWED
UNDEFINED_CDB	(0x79)	ALLOWED
UNDEFINED_CDB	(0x7A)	ALLOWED
UNDEFINED_CDB	(0x7B)	ALLOWED
UNDEFINED_CDB	(0x7C)	ALLOWED
UNDEFINED_CDB	(0x7D)	ALLOWED
UNDEFINED_CDB	(0x7E)	ALLOWED
UNDEFINED_CDB	(0x7F)	ALLOWED
XDWRITE_EXTENDED	(0x80)	ALLOWED
REBUILD	(0x81)	ALLOWED
REGENERATE	(0x82)	ALLOWED
EXTENDED_COPY	(0x83)	ALLOWED
RECEIVE_COPY_RESULTS	(0x84)	ALLOWED
ATA_PASSTHROUGH16	(0x85)	ALLOWED
ACCESS_CONTROL_IN	(0x86)	ALLOWED
ACCESS_CONTROL_OUT	(0x87)	ALLOWED
READ16	(0x88)	ALLOWED
UNDEFINED_CDB	(0x89)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

WRITE16	(0x8A)	ALLOWED
UNDEFINED_CDB	(0x8B)	ALLOWED
READ_ATTRIBUTE	(0x8C)	ALLOWED
WRITE_ATTRIBUTE	(0x8D)	ALLOWED
WRITE_AND_VERIFY16	(0x8E)	ALLOWED
VERIFY16	(0x8F)	ALLOWED
PRE-FETCH16	(0x90)	ALLOWED
SYNCHRONIZE_CACHE16	(0x91)	ALLOWED
LOCK-UNLOCK CACHE	(0x92)	ALLOWED
WRITE_SAME16	(0x93)	ALLOWED
UNDEFINED_CDB	(0x94)	ALLOWED
UNDEFINED_CDB	(0x95)	ALLOWED
UNDEFINED_CDB	(0x96)	ALLOWED
UNDEFINED_CDB	(0x97)	ALLOWED
UNDEFINED_CDB	(0x98)	ALLOWED
UNDEFINED_CDB	(0x99)	ALLOWED
UNDEFINED_CDB	(0x9A)	ALLOWED
UNDEFINED_CDB	(0x9B)	ALLOWED
UNDEFINED_CDB	(0x9C)	ALLOWED
UNDEFINED_CDB	(0x9D)	ALLOWED
UNDEFINED_CDB	(0x9E)	ALLOWED
UNDEFINED_CDB	(0x9F)	ALLOWED
REPORT_LUNS	(0xA0)	ALLOWED
ATA_PASSTHROUGH12	(0xA1)	ALLOWED
SEND_EVENT	(0xA2)	ALLOWED
SEND_KEY	(0xA3)	ALLOWED
REPORT_KEY	(0xA4)	ALLOWED
MOVE_MEDIUM	(0xA5)	ALLOWED
LOAD_UNLOAD_SLOT	(0xA6)	ALLOWED
SET_READ_AHEAD	(0xA7)	ALLOWED
READ12	(0xA8)	ALLOWED
UNDEFINED_CDB	(0xA9)	ALLOWED
WRITE12	(0xAA)	ALLOWED
UNDEFINED_CDB	(0xAB)	ALLOWED
ERASE12	(0xAC)	ALLOWED
READ_DVD_STRUCTURE	(0xAD)	ALLOWED
WRITE_AND_VERIFY12	(0xAE)	ALLOWED
VERIFY12	(0xAF)	ALLOWED
SEARCH_DATA_HIGH12	(0xB0)	ALLOWED
SEARCH_DATA_EQUAL12	(0xB1)	ALLOWED
SEARCH_DATA_LOW12	(0xB2)	ALLOWED
SET_LIMITS12	(0xB3)	ALLOWED
READ_ELEMENT_STATUS_AT	(0xB4)	ALLOWED
REQUEST_VOL_ELEMENT	(0xB5)	ALLOWED
SEND_VOLUME_TAG	(0xB6)	ALLOWED
READ_DEFECT_DATA12	(0xB7)	ALLOWED
READ_ELEMENT_STATUS	(0xB8)	ALLOWED
READ_CD_MSF12	(0xB9)	ALLOWED
SCAN12	(0xBA)	ALLOWED
SET_CDROM_SPEED12	(0xBB)	ALLOWED
PLAY_CD12	(0xBC)	ALLOWED
MECHANISM_STATUS	(0xBD)	ALLOWED
READ_CD12	(0xBE)	ALLOWED
SEND_DVD_STRUCTURE	(0xBF)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

VENDOR_SPECIFIC_CDB	(0xC0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC5)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC6)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC7)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC8)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC9)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCA)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCB)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCC)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCD)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCE)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xCF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD5)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD6)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD7)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD8)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xD9)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDA)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDB)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDC)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDD)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDE)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xDF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE5)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE6)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE7)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE8)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xE9)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xEA)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xEB)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xEC)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xED)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xEE)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xEF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xF0)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xF1)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xF2)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xF3)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xF4)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xF5)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

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VENDOR_SPECIFIC_CDB      (0xF6)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xF7)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xF8)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xF9)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xFA)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xFB)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xFC)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xFD)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xFE)      ALLOWED
VENDOR_SPECIFIC_CDB      (0xFF)      ALLOWED

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IRP_MJ_SHUTDOWN           (0x10)     ALLOWED
IRP_MJ_LOCK_CONTROL       (0x11)     ALLOWED
IRP_MJ_CLEANUP            (0x12)     ALLOWED
IRP_MJ_CREATE_MAILSLLOT   (0x13)     ALLOWED
IRP_MJ_QUERY_SECURITY     (0x14)     ALLOWED
IRP_MJ_SET_SECURITY       (0x15)     ALLOWED
IRP_MJ_POWER              (0x16)     ALLOWED
IRP_MJ_SYSTEM_CONTROL     (0x17)     ALLOWED
IRP_MJ_DEVICE_CHANGE      (0x18)     ALLOWED
IRP_MJ_QUERY_QUOTA        (0x19)     ALLOWED
IRP_MJ_SET_QUOTA          (0x1A)     ALLOWED
IRP_MJ_PNP                (0x1B)     ALLOWED

```

***** TEST RESULTS SUMMARY *****

Test Category	Allowed	Blocked	Total
Read IRP's	4	0	4
Write IRP's	8	0	8
Other IRP's	15	0	15
Read CDB's	27	0	27
Write CDB's	34	0	34
Other CDB's	62	0	62
Vendor SPecific CDB's	80	0	80
Undefined CDB's.....	53	0	53

Testing device ¥¥.¥PhysicalDrive3
Device is software WRITE PROTECTED

IRP Function	Code	Result
IRP_MJ_CREATE	(0x00)	BLOCKED
IRP_MJ_CREATE_NAMED_PIPE	(0x01)	ALLOWED
IRP_MJ_CLOSE	(0x02)	ALLOWED
IRP_MJ_READ	(0x03)	ALLOWED
IRP_MJ_WRITE	(0x04)	BLOCKED
IRP_MJ_QUERY_INFORMATION	(0x05)	ALLOWED
IRP_MJ_SET_INFORMATION	(0x06)	BLOCKED
IRP_MJ_QUERY_EA	(0x07)	ALLOWED
IRP_MJ_SET_EA	(0x08)	BLOCKED
IRP_MJ_FLUSH_BUFFERS	(0x09)	BLOCKED
IRP_MJ_QUERY_VOLUME_INFORMATION	(0x0A)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

IRP_MJ_SET_VOLUME_INFORMATION	(0x0B)	BLOCKED
IRP_MJ_DIRECTORY_CONTROL	(0x0C)	ALLOWED
IRP_MJ_FILE_SYSTEM_CONTROL	(0x0D)	ALLOWED
IRP_MJ_DEVICE_CONTROL	(0x0E)	ALLOWED
IRP_MJ SCSI	(0x0F)	
SCSI Operation	Opcode	

TEST_UNIT_READY	(0x00)	ALLOWED
REWIND	(0x01)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x02)	BLOCKED
REQUEST_SENSE	(0x03)	ALLOWED
FORMAT_UNIT	(0x04)	BLOCKED
READ_BLOCK_LIMITS	(0x05)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x06)	BLOCKED
REASSIGN_BLOCKS	(0x07)	BLOCKED
READ6	(0x08)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x09)	BLOCKED
WRITE6	(0x0A)	BLOCKED
SEEK6	(0x0B)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x0C)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x0D)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x0E)	BLOCKED
READ_REVERSE6	(0x0F)	BLOCKED
WRITE_FILEMARKS	(0x10)	BLOCKED
SPACE	(0x11)	BLOCKED
INQUIRY	(0x12)	ALLOWED
VERIFY6	(0x13)	ALLOWED
RECOVER_BUF_DATA	(0x14)	BLOCKED
MODE_SELECT	(0x15)	ALLOWED
RESERVE_UNIT	(0x16)	ALLOWED
RELEASE_UNIT	(0x17)	ALLOWED
COPY	(0x18)	BLOCKED
ERASE	(0x19)	BLOCKED
MODE_SENSE	(0x1A)	ALLOWED
START_STOP_UNIT	(0x1B)	ALLOWED
RECEIVE_DIAGNOSTIC	(0x1C)	ALLOWED
SEND_DIAGNOSTIC	(0x1D)	ALLOWED
MEDIUM_REMOVAL	(0x1E)	ALLOWED
UNDEFINED_CDB	(0x1F)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x20)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x21)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x22)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x23)	BLOCKED
SET_WINDOW	(0x24)	ALLOWED
READ_CAPACITY	(0x25)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x26)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x27)	BLOCKED
READ10	(0x28)	ALLOWED
READ_GENERATION	(0x29)	ALLOWED
WRITE10	(0x2A)	BLOCKED
SEEK10	(0x2B)	ALLOWED
ERASE10	(0x2C)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x2D)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

WRITE_AND_VERIFY10	(0x2E)	BLOCKED
VERIFY	(0x2F)	ALLOWED
SEARCH_DATA_HIGH	(0x30)	ALLOWED
SEARCH_DATA_EQUAL	(0x31)	ALLOWED
SEARCH_DATA_LOW	(0x32)	ALLOWED
SET_LIMITS	(0x33)	ALLOWED
READ_POSITION	(0x34)	ALLOWED
SYNCHRONIZE_CACHE	(0x35)	BLOCKED
LOCK_UNLOCK_CACHE	(0x36)	ALLOWED
READ_DEFECT_DATA	(0x37)	ALLOWED
MEDIUM_SCAN	(0x38)	ALLOWED
COMPARE	(0x39)	ALLOWED
COPY_COMPARE	(0x3A)	BLOCKED
WRITE_DATA_BUFF	(0x3B)	BLOCKED
READ_DATA_BUFF	(0x3C)	ALLOWED
UNDEFINED_CDB	(0x3D)	BLOCKED
READ_LONG10	(0x3E)	ALLOWED
WRITE_LONG10	(0x3F)	BLOCKED
CHANGE_DEFINITION	(0x40)	ALLOWED
WRITE_SAME10	(0x41)	BLOCKED
READ_SUB_CHANNEL	(0x42)	ALLOWED
READ_TOC	(0x43)	ALLOWED
READ_HEADER	(0x44)	ALLOWED
PLAY_AUDIO	(0x45)	ALLOWED
GET_CONFIGURATION	(0x46)	ALLOWED
PLAY_AUDIO_MSF	(0x47)	ALLOWED
PLAY_TRACK_INDEX	(0x48)	ALLOWED
PLAY_TRACK_RELATIVE	(0x49)	ALLOWED
GET_EVENT_STATUS	(0x4A)	ALLOWED
PAUSE_RESUME	(0x4B)	ALLOWED
LOG_SELECT	(0x4C)	ALLOWED
LOG_SENSE	(0x4D)	ALLOWED
STOP_PLAY_SCAN	(0x4E)	ALLOWED
UNDEFINED_CDB	(0x4F)	BLOCKED
XDWRITE10	(0x50)	BLOCKED
XPWRITE10	(0x51)	BLOCKED
XDREAD10	(0x52)	ALLOWED
XDWRITucRead10	(0x53)	BLOCKED
SEND_OPC_INFORMATION	(0x54)	ALLOWED
MODE_SELECT10	(0x55)	ALLOWED
RESERVE_UNIT10	(0x56)	ALLOWED
RELEASE_UNIT10	(0x57)	ALLOWED
REPAIR_TRACK	(0x58)	BLOCKED
UNDEFINED_CDB	(0x59)	BLOCKED
MODE_SENSE10	(0x5A)	ALLOWED
CLOSE_TRACK_SESSION	(0x5B)	BLOCKED
READ_BUFFER_CAPACITY	(0x5C)	ALLOWED
SEND_CUE_SHEET	(0x5D)	BLOCKED
PERSISTENT_RESERVE_IN	(0x5E)	ALLOWED
PERSISTENT_RESERVE_OUT	(0x5F)	ALLOWED
UNDEFINED_CDB	(0x60)	BLOCKED
UNDEFINED_CDB	(0x61)	BLOCKED
UNDEFINED_CDB	(0x62)	BLOCKED
UNDEFINED_CDB	(0x63)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

UNDEFINED_CDB	(0x64)	BLOCKED
UNDEFINED_CDB	(0x65)	BLOCKED
UNDEFINED_CDB	(0x66)	BLOCKED
UNDEFINED_CDB	(0x67)	BLOCKED
UNDEFINED_CDB	(0x68)	BLOCKED
UNDEFINED_CDB	(0x69)	BLOCKED
UNDEFINED_CDB	(0x6A)	BLOCKED
UNDEFINED_CDB	(0x6B)	BLOCKED
UNDEFINED_CDB	(0x6C)	BLOCKED
UNDEFINED_CDB	(0x6D)	BLOCKED
UNDEFINED_CDB	(0x6E)	BLOCKED
UNDEFINED_CDB	(0x6F)	BLOCKED
UNDEFINED_CDB	(0x70)	BLOCKED
UNDEFINED_CDB	(0x71)	BLOCKED
UNDEFINED_CDB	(0x72)	BLOCKED
UNDEFINED_CDB	(0x73)	BLOCKED
UNDEFINED_CDB	(0x74)	BLOCKED
UNDEFINED_CDB	(0x75)	BLOCKED
UNDEFINED_CDB	(0x76)	BLOCKED
UNDEFINED_CDB	(0x77)	BLOCKED
UNDEFINED_CDB	(0x78)	BLOCKED
UNDEFINED_CDB	(0x79)	BLOCKED
UNDEFINED_CDB	(0x7A)	BLOCKED
UNDEFINED_CDB	(0x7B)	BLOCKED
UNDEFINED_CDB	(0x7C)	BLOCKED
UNDEFINED_CDB	(0x7D)	BLOCKED
UNDEFINED_CDB	(0x7E)	BLOCKED
UNDEFINED_CDB	(0x7F)	BLOCKED
XDWRITE_EXTENDED	(0x80)	BLOCKED
REBUILD	(0x81)	BLOCKED
REGENERATE	(0x82)	BLOCKED
EXTENDED_COPY	(0x83)	BLOCKED
RECEIVE_COPY_RESULTS	(0x84)	ALLOWED
ATA_PASSTHROUGH16	(0x85)	BLOCKED
ACCESS_CONTROL_IN	(0x86)	ALLOWED
ACCESS_CONTROL_OUT	(0x87)	ALLOWED
READ16	(0x88)	ALLOWED
UNDEFINED_CDB	(0x89)	BLOCKED
WRITE16	(0x8A)	BLOCKED
UNDEFINED_CDB	(0x8B)	BLOCKED
READ_ATTRIBUTE	(0x8C)	ALLOWED
WRITE_ATTRIBUTE	(0x8D)	BLOCKED
WRITE_AND_VERIFY16	(0x8E)	BLOCKED
VERIFY16	(0x8F)	ALLOWED
PRE-FETCH16	(0x90)	ALLOWED
SYNCHRONIZE_CACHE16	(0x91)	BLOCKED
LOCK-UNLOCK CACHE	(0x92)	ALLOWED
WRITE_SAME16	(0x93)	BLOCKED
UNDEFINED_CDB	(0x94)	BLOCKED
UNDEFINED_CDB	(0x95)	BLOCKED
UNDEFINED_CDB	(0x96)	BLOCKED
UNDEFINED_CDB	(0x97)	BLOCKED
UNDEFINED_CDB	(0x98)	BLOCKED
UNDEFINED_CDB	(0x99)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

UNDEFINED_CDB	(0x9A)	BLOCKED
UNDEFINED_CDB	(0x9B)	BLOCKED
UNDEFINED_CDB	(0x9C)	BLOCKED
UNDEFINED_CDB	(0x9D)	BLOCKED
UNDEFINED_CDB	(0x9E)	BLOCKED
UNDEFINED_CDB	(0x9F)	BLOCKED
REPORT_LUNS	(0xA0)	ALLOWED
ATA_PASSTHROUGH12	(0xA1)	BLOCKED
SEND_EVENT	(0xA2)	BLOCKED
SEND_KEY	(0xA3)	ALLOWED
REPORT_KEY	(0xA4)	ALLOWED
MOVE_MEDIUM	(0xA5)	ALLOWED
LOAD_UNLOAD_SLOT	(0xA6)	ALLOWED
SET_READ_AHEAD	(0xA7)	ALLOWED
READ12	(0xA8)	ALLOWED
UNDEFINED_CDB	(0xA9)	BLOCKED
WRITE12	(0xAA)	BLOCKED
UNDEFINED_CDB	(0xAB)	BLOCKED
ERASE12	(0xAC)	BLOCKED
READ_DVD_STRUCTURE	(0xAD)	ALLOWED
WRITE_AND_VERIFY12	(0xAE)	BLOCKED
VERIFY12	(0xAF)	ALLOWED
SEARCH_DATA_HIGH12	(0xB0)	ALLOWED
SEARCH_DATA_EQUAL12	(0xB1)	ALLOWED
SEARCH_DATA_LOW12	(0xB2)	ALLOWED
SET_LIMITS12	(0xB3)	ALLOWED
READ_ELEMENT_STATUS_AT	(0xB4)	ALLOWED
REQUEST_VOL_ELEMENT	(0xB5)	BLOCKED
SEND_VOLUME_TAG	(0xB6)	ALLOWED
READ_DEFECT_DATA12	(0xB7)	ALLOWED
READ_ELEMENT_STATUS	(0xB8)	ALLOWED
READ_CD_MSF12	(0xB9)	ALLOWED
SCAN12	(0xBA)	ALLOWED
SET_CDROM_SPEED12	(0xBB)	ALLOWED
PLAY_CD12	(0xBC)	ALLOWED
MECHANISM_STATUS	(0xBD)	ALLOWED
READ_CD12	(0xBE)	ALLOWED
SEND_DVD_STRUCTURE	(0xBF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC0)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC1)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC2)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC3)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC4)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC5)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC6)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC7)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC8)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC9)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCA)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCB)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCC)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCD)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCE)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCF)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

VENDOR_SPECIFIC_CDB	(0xD0)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD1)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD2)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD3)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD4)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD5)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD6)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD7)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD8)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD9)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDA)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDB)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDC)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDD)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDE)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDF)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE0)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE1)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE2)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE3)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE4)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE5)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE6)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE7)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE8)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xE9)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xEA)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xEB)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xEC)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xED)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xEE)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xEF)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF0)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF1)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF2)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF3)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF4)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF5)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF6)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF7)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF8)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xF9)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xFA)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xFB)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xFC)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xFD)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xFE)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xFF)	BLOCKED
IRP_MJ_SHUTDOWN	(0x10)	ALLOWED
IRP_MJ_LOCK_CONTROL	(0x11)	ALLOWED
IRP_MJ_CLEANUP	(0x12)	ALLOWED
IRP_MJ_CREATE_MAILSLOT	(0x13)	ALLOWED
IRP_MJ_QUERY_SECURITY	(0x14)	ALLOWED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

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IRP_MJ_SET_SECURITY          (0x15)  BLOCKED
IRP_MJ_POWER                 (0x16)  ALLOWED
IRP_MJ_SYSTEM_CONTROL       (0x17)  ALLOWED
IRP_MJ_DEVICE_CHANGE        (0x18)  ALLOWED
IRP_MJ_QUERY_QUOTA          (0x19)  ALLOWED
IRP_MJ_SET_QUOTA            (0x1A)  BLOCKED
IRP_MJ_PNP                   (0x1B)  ALLOWED
  
```

***** TEST RESULTS SUMMARY *****

Test Category	Allowed	Blocked	Total
Read IRP's	4	0	4
Write IRP's	0	8	8
Other IRP's	15	0	15
Read CDB's	27	0	27
Write CDB's	0	34	34
Other CDB's	61	1	62
Vendor SPecific CDB's	0	80	80
Undefined CDB's.....	0	53	53

Testing device ¥¥,¥PhysicalDrive4
 Device is software WRITE PROTECTED

IRP Function	Code	Result
IRP_MJ_CREATE	(0x00)	BLOCKED
IRP_MJ_CREATE_NAMED_PIPE	(0x01)	ALLOWED
IRP_MJ_CLOSE	(0x02)	ALLOWED
IRP_MJ_READ	(0x03)	ALLOWED
IRP_MJ_WRITE	(0x04)	BLOCKED
IRP_MJ_QUERY_INFORMATION	(0x05)	ALLOWED
IRP_MJ_SET_INFORMATION	(0x06)	BLOCKED
IRP_MJ_QUERY_EA	(0x07)	ALLOWED
IRP_MJ_SET_EA	(0x08)	BLOCKED
IRP_MJ_FLUSH_BUFFERS	(0x09)	BLOCKED
IRP_MJ_QUERY_VOLUME_INFORMATION	(0x0A)	ALLOWED
IRP_MJ_SET_VOLUME_INFORAMATION	(0x0B)	BLOCKED
IRP_MJ_DIRECTORY_CONTROL	(0x0C)	ALLOWED
IRP_MJ_FILE_SYSTEM_CONTROL	(0x0D)	ALLOWED
IRP_MJ_DEVICE_CONTROL	(0x0E)	ALLOWED
IRP_MJ_SCSI	(0x0F)	

SCSI Operation	Opcode	Result
TEST_UNIT_READY	(0x00)	ALLOWED
REWIND	(0x01)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x02)	BLOCKED
REQUEST_SENSE	(0x03)	ALLOWED
FORMAT_UNIT	(0x04)	BLOCKED
READ_BLOCK_LIMITS	(0x05)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x06)	BLOCKED
REASSIGN_BLOCKS	(0x07)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

READ6	(0x08)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x09)	BLOCKED
WRITE6	(0x0A)	BLOCKED
SEEK6	(0x0B)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x0C)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x0D)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x0E)	BLOCKED
READ_REVERSE6	(0x0F)	BLOCKED
WRITE_FILEMARKS	(0x10)	BLOCKED
SPACE	(0x11)	BLOCKED
INQUIRY	(0x12)	ALLOWED
VERIFY6	(0x13)	ALLOWED
RECOVER_BUF_DATA	(0x14)	BLOCKED
MODE_SELECT	(0x15)	ALLOWED
RESERVE_UNIT	(0x16)	ALLOWED
RELEASE_UNIT	(0x17)	ALLOWED
COPY	(0x18)	BLOCKED
ERASE	(0x19)	BLOCKED
MODE_SENSE	(0x1A)	ALLOWED
START_STOP_UNIT	(0x1B)	ALLOWED
RECEIVE_DIAGNOSTIC	(0x1C)	ALLOWED
SEND_DIAGNOSTIC	(0x1D)	ALLOWED
MEDIUM_REMOVAL	(0x1E)	ALLOWED
UNDEFINED_CDB	(0x1F)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x20)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x21)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x22)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x23)	BLOCKED
SET_WINDOW	(0x24)	ALLOWED
READ_CAPACITY	(0x25)	ALLOWED
VENDOR_SPECIFIC_CDB	(0x26)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x27)	BLOCKED
READ10	(0x28)	ALLOWED
READ_GENERATION	(0x29)	ALLOWED
WRITE10	(0x2A)	BLOCKED
SEEK10	(0x2B)	ALLOWED
ERASE10	(0x2C)	BLOCKED
VENDOR_SPECIFIC_CDB	(0x2D)	BLOCKED
WRITE_AND_VERIFY10	(0x2E)	BLOCKED
VERIFY	(0x2F)	ALLOWED
SEARCH_DATA_HIGH	(0x30)	ALLOWED
SEARCH_DATA_EQUAL	(0x31)	ALLOWED
SEARCH_DATA_LOW	(0x32)	ALLOWED
SET_LIMITS	(0x33)	ALLOWED
READ_POSITION	(0x34)	ALLOWED
SYNCHRONIZE_CACHE	(0x35)	BLOCKED
LOCK_UNLOCK_CACHE	(0x36)	ALLOWED
READ_DEFECT_DATA	(0x37)	ALLOWED
MEDIUM_SCAN	(0x38)	ALLOWED
COMPARE	(0x39)	ALLOWED
COPY_COMPARE	(0x3A)	BLOCKED
WRITE_DATA_BUFFER	(0x3B)	BLOCKED
READ_DATA_BUFFER	(0x3C)	ALLOWED
UNDEFINED_CDB	(0x3D)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

READ_LONG10	(0x3E)	ALLOWED
WRITE_LONG10	(0x3F)	BLOCKED
CHANGE_DEFINITION	(0x40)	ALLOWED
WRITE_SAME10	(0x41)	BLOCKED
READ_SUB_CHANNEL	(0x42)	ALLOWED
READ_TOC	(0x43)	ALLOWED
READ_HEADER	(0x44)	ALLOWED
PLAY_AUDIO	(0x45)	ALLOWED
GET_CONFIGURATION	(0x46)	ALLOWED
PLAY_AUDIO_MSF	(0x47)	ALLOWED
PLAY_TRACK_INDEX	(0x48)	ALLOWED
PLAY_TRACK_RELATIVE	(0x49)	ALLOWED
GET_EVENT_STATUS	(0x4A)	ALLOWED
PAUSE_RESUME	(0x4B)	ALLOWED
LOG_SELECT	(0x4C)	ALLOWED
LOG_SENSE	(0x4D)	ALLOWED
STOP_PLAY_SCAN	(0x4E)	ALLOWED
UNDEFINED_CDB	(0x4F)	BLOCKED
XDWRITE10	(0x50)	BLOCKED
XPWRITE10	(0x51)	BLOCKED
XDREAD10	(0x52)	ALLOWED
XDWRITucRead10	(0x53)	BLOCKED
SEND_OPC_INFORMATION	(0x54)	ALLOWED
MODE_SELECT10	(0x55)	ALLOWED
RESERVE_UNIT10	(0x56)	ALLOWED
RELEASE_UNIT10	(0x57)	ALLOWED
REPAIR_TRACK	(0x58)	BLOCKED
UNDEFINED_CDB	(0x59)	BLOCKED
MODE_SENSE10	(0x5A)	ALLOWED
CLOSE_TRACK_SESSION	(0x5B)	BLOCKED
READ_BUFFER_CAPACITY	(0x5C)	ALLOWED
SEND_CUE_SHEET	(0x5D)	BLOCKED
PERSISTENT_RESERVE_IN	(0x5E)	ALLOWED
PERSISTENT_RESERVE_OUT	(0x5F)	ALLOWED
UNDEFINED_CDB	(0x60)	BLOCKED
UNDEFINED_CDB	(0x61)	BLOCKED
UNDEFINED_CDB	(0x62)	BLOCKED
UNDEFINED_CDB	(0x63)	BLOCKED
UNDEFINED_CDB	(0x64)	BLOCKED
UNDEFINED_CDB	(0x65)	BLOCKED
UNDEFINED_CDB	(0x66)	BLOCKED
UNDEFINED_CDB	(0x67)	BLOCKED
UNDEFINED_CDB	(0x68)	BLOCKED
UNDEFINED_CDB	(0x69)	BLOCKED
UNDEFINED_CDB	(0x6A)	BLOCKED
UNDEFINED_CDB	(0x6B)	BLOCKED
UNDEFINED_CDB	(0x6C)	BLOCKED
UNDEFINED_CDB	(0x6D)	BLOCKED
UNDEFINED_CDB	(0x6E)	BLOCKED
UNDEFINED_CDB	(0x6F)	BLOCKED
UNDEFINED_CDB	(0x70)	BLOCKED
UNDEFINED_CDB	(0x71)	BLOCKED
UNDEFINED_CDB	(0x72)	BLOCKED
UNDEFINED_CDB	(0x73)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

UNDEFINED_CDB	(0x74)	BLOCKED
UNDEFINED_CDB	(0x75)	BLOCKED
UNDEFINED_CDB	(0x76)	BLOCKED
UNDEFINED_CDB	(0x77)	BLOCKED
UNDEFINED_CDB	(0x78)	BLOCKED
UNDEFINED_CDB	(0x79)	BLOCKED
UNDEFINED_CDB	(0x7A)	BLOCKED
UNDEFINED_CDB	(0x7B)	BLOCKED
UNDEFINED_CDB	(0x7C)	BLOCKED
UNDEFINED_CDB	(0x7D)	BLOCKED
UNDEFINED_CDB	(0x7E)	BLOCKED
UNDEFINED_CDB	(0x7F)	BLOCKED
XDWRITE_EXTENDED	(0x80)	BLOCKED
REBUILD	(0x81)	BLOCKED
REGENERATE	(0x82)	BLOCKED
EXTENDED_COPY	(0x83)	BLOCKED
RECEIVE_COPY_RESULTS	(0x84)	ALLOWED
ATA_PASSTHROUGH16	(0x85)	BLOCKED
ACCESS_CONTROL_IN	(0x86)	ALLOWED
ACCESS_CONTROL_OUT	(0x87)	ALLOWED
READ16	(0x88)	ALLOWED
UNDEFINED_CDB	(0x89)	BLOCKED
WRITE16	(0x8A)	BLOCKED
UNDEFINED_CDB	(0x8B)	BLOCKED
READ_ATTRIBUTE	(0x8C)	ALLOWED
WRITE_ATTRIBUTE	(0x8D)	BLOCKED
WRITE_AND_VERIFY16	(0x8E)	BLOCKED
VERIFY16	(0x8F)	ALLOWED
PRE-FETCH16	(0x90)	ALLOWED
SYNCHRONIZE_CACHE16	(0x91)	BLOCKED
LOCK-UNLOCK CACHE	(0x92)	ALLOWED
WRITE_SAME16	(0x93)	BLOCKED
UNDEFINED_CDB	(0x94)	BLOCKED
UNDEFINED_CDB	(0x95)	BLOCKED
UNDEFINED_CDB	(0x96)	BLOCKED
UNDEFINED_CDB	(0x97)	BLOCKED
UNDEFINED_CDB	(0x98)	BLOCKED
UNDEFINED_CDB	(0x99)	BLOCKED
UNDEFINED_CDB	(0x9A)	BLOCKED
UNDEFINED_CDB	(0x9B)	BLOCKED
UNDEFINED_CDB	(0x9C)	BLOCKED
UNDEFINED_CDB	(0x9D)	BLOCKED
UNDEFINED_CDB	(0x9E)	BLOCKED
UNDEFINED_CDB	(0x9F)	BLOCKED
REPORT_LUNS	(0xA0)	ALLOWED
ATA_PASSTHROUGH12	(0xA1)	BLOCKED
SEND_EVENT	(0xA2)	BLOCKED
SEND_KEY	(0xA3)	ALLOWED
REPORT_KEY	(0xA4)	ALLOWED
MOVE_MEDIUM	(0xA5)	ALLOWED
LOAD_UNLOAD_SLOT	(0xA6)	ALLOWED
SET_READ_AHEAD	(0xA7)	ALLOWED
READ12	(0xA8)	ALLOWED
UNDEFINED_CDB	(0xA9)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

WRITE12	(0xAA)	BLOCKED
UNDEFINED_CDB	(0xAB)	BLOCKED
ERASE12	(0xAC)	BLOCKED
READ_DVD_STRUCTURE	(0xAD)	ALLOWED
WRITE_AND_VERIFY12	(0xAE)	BLOCKED
VERIFY12	(0xAF)	ALLOWED
SEARCH_DATA_HIGH12	(0xB0)	ALLOWED
SEARCH_DATA_EQUAL12	(0xB1)	ALLOWED
SEARCH_DATA_LOW12	(0xB2)	ALLOWED
SET_LIMITS12	(0xB3)	ALLOWED
READ_ELEMENT_STATUS_AT	(0xB4)	ALLOWED
REQUEST_VOL_ELEMENT	(0xB5)	BLOCKED
SEND_VOLUME_TAG	(0xB6)	ALLOWED
READ_DEFECT_DATA12	(0xB7)	ALLOWED
READ_ELEMENT_STATUS	(0xB8)	ALLOWED
READ_CD_MSF12	(0xB9)	ALLOWED
SCAN12	(0xBA)	ALLOWED
SET_CDROM_SPEED12	(0xBB)	ALLOWED
PLAY_CD12	(0xBC)	ALLOWED
MECHANISM_STATUS	(0xBD)	ALLOWED
READ_CD12	(0xBE)	ALLOWED
SEND_DVD_STRUCTURE	(0xBF)	ALLOWED
VENDOR_SPECIFIC_CDB	(0xC0)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC1)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC2)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC3)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC4)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC5)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC6)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC7)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC8)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xC9)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCA)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCB)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCC)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCD)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCE)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xCF)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD0)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD1)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD2)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD3)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD4)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD5)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD6)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD7)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD8)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xD9)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDA)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDB)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDC)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDD)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDE)	BLOCKED
VENDOR_SPECIFIC_CDB	(0xDF)	BLOCKED

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

VENDOR_SPECIFIC_CDB	(0xE0)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE1)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE2)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE3)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE4)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE5)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE6)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE7)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE8)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xE9)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xEA)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xEB)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xEC)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xED)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xEE)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xEF)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF0)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF1)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF2)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF3)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF4)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF5)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF6)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF7)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF8)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xF9)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xFA)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xFB)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xFC)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xFD)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xFE)	BLOCKED	
VENDOR_SPECIFIC_CDB	(0xFF)	BLOCKED	
IRP_MJ_SHUTDOWN	(0x10)	ALLOWED	
IRP_MJ_LOCK_CONTROL	(0x11)	ALLOWED	
IRP_MJ_CLEANUP	(0x12)	ALLOWED	
IRP_MJ_CREATE_MAILSLLOT	(0x13)	ALLOWED	
IRP_MJ_QUERY_SECURITY	(0x14)	ALLOWED	
IRP_MJ_SET_SECURITY	(0x15)	BLOCKED	
IRP_MJ_POWER	(0x16)	ALLOWED	
IRP_MJ_SYSTEM_CONTROL	(0x17)	ALLOWED	
IRP_MJ_DEVICE_CHANGE	(0x18)	ALLOWED	
IRP_MJ_QUERY_QUOTA	(0x19)	ALLOWED	
IRP_MJ_SET_QUOTA	(0x1A)	BLOCKED	
IRP_MJ_PNP	(0x1B)	ALLOWED	
***** TEST RESULTS SUMMARY *****			
Test Category	Allowed	Blocked	Total

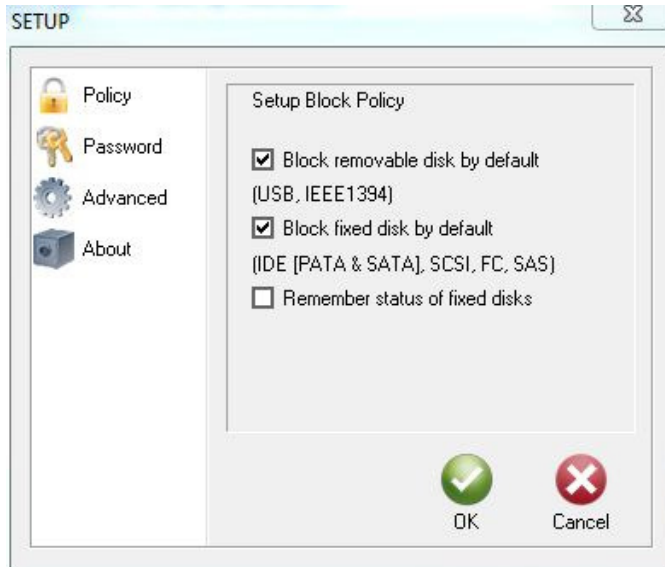
Read IRP's	4	0	4
Write IRP's	0	8	8
Other IRP's	15	0	15

Evaluation of Software Write Blocking In SAFE Block Win7 V1.0

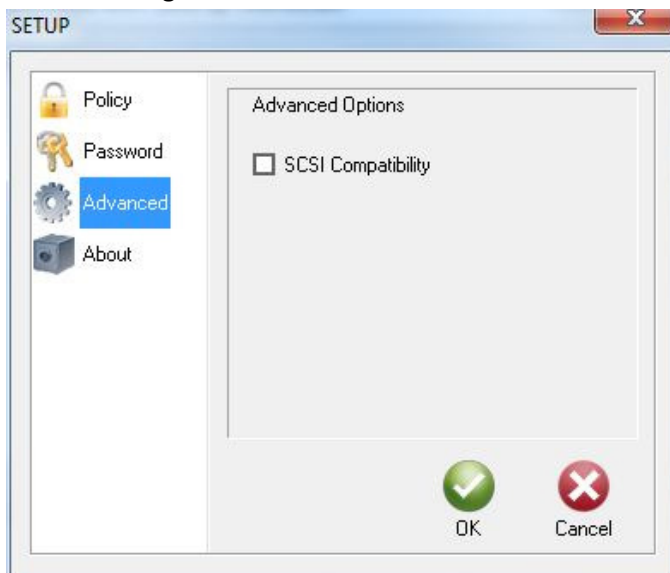
Read CDB's	27	0	27
Write CDB's	0	34	34
Other CDB's	61	1	62
Vendor SPecific CDB's	0	80	80
Undefined CDB's.....	0	53	53

Appendix B – SAFE Block Policy Settings

SAFE Block Win7 V1.0 uses policies to control write-blocking behavior for newly detected disks as well as disks that persist after rebooting the machine. For the purposes of all tests conducted, SAFE Block Win7 V1.0 was set to block all disks by default and to not remember the write-block status of disks. This means that all disks, except the system disk, would be blocked on re-boot or insertion.



SAFE Block Win7 1.0 also has an advanced setting which will cause it to allow uncommonly used vendor specific SCSI commands to pass through to a disk in case the blocking of these commands causes a SCSI disk to malfunction. For the purposes of all tests, this feature was turned off, which is the SAFE Block Win7 V1.0 default setting.



Appendix C - Software modifications made

In order to allow the NIST Software Write Blocker Test Suite V1.2 [1] to run on Windows 7[®], minor modifications to both the NIST Test Suite and SAFE Block Win7 V1.0 [2] needed to be made. These changes in no way affected the operation of either application or the validity of the test. Please contact document authors to obtain the modified software.

NIST Software Write Blocker Test Suite V1.2

The source code for the application “devctl.exe” needed to be modified in order to allow the application to compile for use in Windows 7[®]. These modifications did not affect the drivers *pitcher* or *catcher* used in the test suite as detailed in [3] in any way, and were made solely to the Microsoft Windows[®] 7 DDK [6] header files for syntactical compliance with Windows 7[®]. In order to allow devctl.exe to compile, the following files had some lines redacted: winbase.h, windef.h, windows.h, and winnt.h.

SAFE Block Win7 V1.0

SAFE Block Win7 V1.0 contains a routine that will ensure that no other filter drivers can be installed below SAFE Block in the driver stack to any storage device. This is a safety feature to ensure no other applications can be installed that will allow a disk to be modified. Due to the installation requirements of the NIST Test Suite [3], this feature had to be disabled for testing. Affected file: InstDrv.dll.

References

- [1] National Institute of Standards, *NIST Software Write Blocker Test Suite V1.2*;
<http://www.cftt.nist.gov/ACES-test-support.zip>
- [2] ForensicSoft Inc, *SAFE Block Win7 V1.0*; <http://www.forensicsoft.com>
- [3] National Institute of Standards, *ACES Software Write Block Tool Test Report: Writeblocker Windows 7 Version 6.10.0*; Jan 2008; http://www.nist.gov/cgi-bin/exit_nist.cgi?url=http://www.ojp.usdoj.gov/nij/pubs-sum/220222.htm
- [4] AccessData Inc, *FTK Imager2.9.0*; <http://www.accessdata.com>
- [5] busTRACE, *Filter Driver Load Order v1.0.009*;
<http://www.bustrace.com/products/devfilter.htm>
- [6] Microsoft Inc, *WDK and Developer Tools*;
<http://www.microsoft.com/whdc/Devtools/wdk/default.mspix>
- [7] Guidance Software Inc, *Encase® Forensic v6*;
<http://www.guidancesoftware.com>