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Special REPORT

ACES Software Write Block Tool Test Report: Writeblocker Windows 2000 V5.02.00

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NCJ 220221

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ACES Software Write Block Tool Test Report: Writeblocker Windows 2000 V5.02.00

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Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the National Institute of Justice, the research and development organization of the U.S. Department of Justice, and the National Institute of Standards and Technology's (NIST's) Office of Law Enforcement Standards and Information Technology Laboratory. CFTT is supported by other organizations, including the Federal Bureau of Investigation, the Department of Defense Cyber Crime Center, and the Department of Homeland Security's Bureau of Immigration and Customs Enforcement and U.S. Secret Service. The objective of the CFTT project is to provide measurable assurance to practitioners, researchers, and other applicable users that the tools used in computer forensics investigations provide accurate results. Accomplishing this requires the development of specifications and test methods for computer forensics tools and subsequent testing of specific tools against those specifications.

Test results provide the information necessary for developers to improve tools, users to make informed choices, and the legal community and others to understand the tools' capabilities. The approach for testing computer forensic tools is based on well-recognized methodologies for conformance and quality testing. The specifications and test methods are posted on the CFTT web site (http://www.cftt.nist.gov/) for both comment and review by the computer forensics community.

This document reports test results for **Writeblocker Windows 2000, Version 5.02.00**. All testing was conducted in accordance with the *ACES Software Write Block Tool Specification & Test Plan Version 1.0* that may be found on the CFTT web site.

1. Results Summary by Base Requirements

Product ID:	Writeblocker Windows 2000 V5.02.00
Producer:	Booz, Allen, Hamilton, Inc.
Operating Environment:	Microsoft Windows 2000, Intel x86

The tool shall not allow a protected drive to be changed.

The tool failed to block some test commands from the protected categories that were sent to protected drives but no changes to the protected drives were observed.

The tool shall not prevent obtaining any information from or about any drive.

The tool did not alter or block test commands from any nonprotected category that were sent to protected or unprotected drives.

The tool shall not prevent any operations to a drive that is not protected.

The tool did not alter or block any test commands sent to unprotected drives.

2. Anomalies

The tool blocked all SCSI–2 commands from the WRITE category but failed to block most of the SCSI–3 commands in that category. The tool also failed to block four internal IRP functions from the WRITE category. The tool did not block any of the commands from the VENDOR_SPECIFIC and UNDEFINED categories. See Sections 9.3.5, 9.4.5, and 9.5.5 for a complete list of the commands allowed.

Test cases: SWB–03, SWB–05, SWB–06 through SWB–23

3. Observations

The tested tool, Writeblocker Windows 2000 V5.02.00, consists of two kernel mode device drivers, NTWBFS and NTWBPM, and a user mode GUI control application. The NTWBFS driver is a file system filter driver that filters file system calls and the NTWBPM driver is a physical device filter that filters hardware I/O requests. Of the two kernel mode drivers, the NTWBPM driver was tested directly by test cases SWB–01 through SWB–24. Test cases SWB–25 through SWB–30 tested the ability of both components, working together, to protect a hard drive. The decision to test the physical device driver directly is predicated on the assumption that all file system functions are ultimately manifested as physical I/O requests. Filtering at the file system level is often necessary to simulate successful completion of logical file system I/O activity that would cause the operating system to crash or hang should the physical I/O operation return a failure status.

Test cases SWB–25 through SWB–30 demonstrate that Writeblocker W2K blocked all attempts to write to a protected drive by commands issued from common operating system tools and from the widely used forensic tools FTK™ and EnCase®. While for test cases SWB–01 through SWB–24, some commands that could write to a drive are not blocked by the NTWBPM component, these commands are not likely to reach the NTWBPM component because the commands not blocked by NTWBPM are either blocked by the file system component (NTWBFS) or the commands are not issued by software typically used for acquiring or previewing digital data as part of a sound forensic examination.

4. Test Case Selection

The test cases were selected from *ACES Software Write Block Tool Specification and Test Plan Version 1.0*. All 30 test cases from that specification were run.

5. Test Results by Assertion

Product ID:	Writeblocker W2K V5.02.00
Producer:	Booze, Allen, Hamilton, Inc.
Product Checksum:	SHA1:
Operating Environment:	Microsoft Windows W2K, Intel x86

5.1 Mandatory Assertions

SWB–AM–01 If a drive is unprotected then the tool shall not block any command.

The tool 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 the tool shall not block the command.

The tool 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 the tool shall block the command.

The tool failed to block 12 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 the tool shall block the command.

The tool failed to block any of the of the 34 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 the tool shall block the command.

The tool failed to block any of the of the 80 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 the tool shall not block the command.

The tool did not block or alter any test command from the OTHER category sent to a protected drive.

SWB–AM–07 If the tool is executed then the tool shall issue a message indicating the tool is active.

Not applicable.

SWB–AM–08 **If the tool is executed the tool shall issue a message indicating all drives accessible by the covered interfaces.**

The management GUI application displays a list of all drives connected to covered interfaces.

SWB–AM–09 **If the tool is executed then the tool shall issue a message indicating the protection status of each drive connected to a covered interface.**

The management GUI application displays the protection status of all drives 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.**

5.2 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.**

The tool failed to block 12 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.**

The tool failed to block 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.**

The tool failed to block 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.**

The tool 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.**

The tool did not block any test commands from the OTHER category sent to the drives.

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

The tool did not block any commands sent to unprotected drives.

SWB–AO–07 **If the tool is active and the tool is deactivated, then no commands to any drive shall be blocked.**

No commands to any drive were blocked after the tool was deinstalled.

SWB–AO–08 **If the tool blocks a command, then the tool shall issue either an audio or visual signal.**

The tool displays a visual indication of blocked commands in the event log window of the control program.

6. Testing Environment

The tests were run in the NIST CFTT laboratory. This section describes the hardware (host computer and hard drives) and software used for the tests.

6.1 Test Computer

The hardware configuration of test computer FRANK is:

Intel® D865GBF Motherboard
BIOS: Intel/AMI BF86510A.86A.0053.P13
Intel Dual Pentium® 4 CPU 3.4hz
3072M Memory
Adaptec® 29160 SCSI Adapter card Ultra 160
Sony DVD RW DRU-530A
Two slots for removable IDE hard disk drives
Two slots for removable SCSI hard disk drives
Two slots for removable SATA hard disk drives

6.2 Hard Disk Drives

The hard disk drives that were used in the testing are shown in the table below. These hard drives were mounted in removable storage modules and installed/deinstalled as needed for the individual test being run. The label column indicates an external identification label affixed to the housing in which the drive was installed. Each drive was formatted with an NTFS or FAT partition and a Windows volume was created on that partition. The volumes were assigned volume labels that correspond to the external label on the physical device. The volume labels allow easy identification of which physical drives are associated with which physical device objects while the Windows operating system is running.

Label	Model	Interface	Usable Sectors	Size
25	Seagate ST373405LC	SCSI	143374741	73408 MB
27	Quantum ATLAS-10K3-18-SCA_	SCSI	35916548	18389 MB
70	IC35L040AVER07-0	IDE	80418240	41174 MB
119	WDC WD1200JD-00GBB0	SATA	234441648	120034 MB

6.3 Test Software

The following table describes the software packages installed on the test system.

Package	Description
`Writeblocker Windows 2000` V5.02.00	Writeblocker Windows 2000 V5.02.00 • NTWBPM—a kernel mode device filter driver that implements write blocking at the physical device level. • NTWBFS—a kernel node file system filter driver that implements write blocking at the file system level. • Writeblocker.exe—a user mode GUI for configuring and monitoring the kernel mode filters.
SWBTS V1.2	The NIST Software Writeblocker Test Suite V1.2 • PITCHER—a kernel filter driver that implements a custom IOCTL interface for generating kernel mode IRPs. • CATCHER—a kernel filter driver that monitors IRP traffic on a device driver stack and catches and completes test generated IRPs. • DEVCTL—a user mode console application for controlling the tests. It generates test IRPs and logs the results.
BusTrace 2003	A third party kernel mode software package for monitoring IRP traffic within the Windows device driver stacks.

The NIST Software Write Blocker Test Suite V1.2 software was used to conduct the testing. This software consists of two kernel mode device drivers and a user mode control program. The kernel mode drivers monitor the flow of I/O requests within the device driver stacks being tested. The user mode application initiates test I/O requests and tallies the outcome of the tests.

The tested tool, Writeblocker Windows 2000 V5.02.00, consists of two kernel mode device drivers, NTWBFS and NTWBPM, and a user mode GUI control application. The NTWBFS driver is a file system filter driver that filters file system calls and the NTWBPM driver is a physical device filter that filters hardware I/O requests. Of the two kernel mode drivers, the NTWBPM driver was tested directly by test cases SWB–01 through SWB–24. Test cases SWB–25 through SWB–30 tested the ability of both components, working together, to protect a hard drive. The decision to test the physical device driver directly is predicated on the assumption that all file system functions are ultimately manifested as physical I/O requests. Filtering at the file system level is often necessary to simulate successful completion of logical file system I/O activity that would cause the operating system to crash or hang should the physical I/O operation return a failure status.

The BusTrace 2003 package is a commercial software package for monitoring the movement of IRP traffic on Windows device driver stacks. The Filter Load Order utility from this package was used to confirm the test suite and write blocker kernel drivers were properly installed prior to running the tests. Appendix B contains screen captures from that utility showing the load order of the driver modules.

6.4 Run Protocol Selection

The run protocols define the actual procedures to follow for running the test cases. They are described in the test plan document.

- Test cases SWB–01 through SWB–22 and SWB–26 through SWB–30 were conducted using the RUN protocol.
- Test case SWB–23 was conducted using the BOOT protocol.
- Test case SWB–24 was conducted using the UNINSTALL protocol.

7. Interpretation of Test Results

The primary item of interest when interpreting the test results is a determination of the conformance of the tool to the test assertions. This section lists each assertion and identifies the information in the test output files relevant to evaluating the tools conformance to the assertions. Conformance to each assertion tested by a test case is evaluated by examination of the commands issued by the test application and the command results returned by the test application. This document contains only a representative subset of the total output file information collected and is sufficient to illustrate the basis for the test interpretations. The information ommited contains basically redundant results and are omitted for the sake of limiting the size of this document. A complete archive of all test result data may be downloaded from the www.cftt.nist.gov website.

7.1 Test Assertion Verification

The protection status of each drive tested is identified in the output summary immediately prior to the start of each test. The status shown is either "software WRITE PROTECTED" or "software WRITE ENABLED." The summary also contains a tally of the commands in each category sent to the drive. For each command category the tally countains the TOTAL number of commands in the category issued and subtotals for the number of commands in that category that were ALLOWED and the number BLOCKED. These tallies indicate test assertion conformance as follows:

SWB–AM–01 **If a drive is unprotected then the tool shall not block any command.**

The tool conforms to this assertion if all tallies of BLOCKED commands from all categories sent to a "software WRITE ENABLED" drive are 0.

SWB–AM–02 **If a drive is protected and a command from the READ category is issued to the protected drive then the tool shall not block the command.**

The tool conforms to this assertion if the tally of BLOCKED commands from the READ category sent to a "software WRITE PROTECTED" drive is 0.

SWB–AM–03 **If a drive is protected and a command from the VENDOR_SPECIFIC category is issued to the protected drive then the tool shall block the command.**

The tool conforms to this assertion if the tally of ALLOWED commands from the VENDOR_SPECIFIC category sent to a "software WRITE PROTECTED" drive is 0.

SWB–AM–04 **If a drive is protected and a command from the UNDEFINED category is issued to the protected drive then the tool shall block the command.**

The tool conforms to this assertion if the tally of ALLOWED commands from the UNDEFINED category sent to a "software WRITE PROTECTED" drive is 0.

SWB–AM–05 **If a drive is protected and a command from the READ category is issued to the protected drive then the tool shall not block the command.**

The tool conforms to this assertion if the tally of BLOCKED commands from the READ category sent to a "software WRITE PROTECTED" drive is 0.

SWB–AM–06 **If a drive is protected and a command from the OTHER category is issued to the drive then the tool shall not block the command.**

The tool conforms to this assertion if the tally of BLOCKED commands from the OTHER category sent to a “software WRITE PROTECTED” drive is 0.

SWB–AM–07 **If the tool is executed then the tool shall issue a message indicating the tool is active.**

Not applicable—the tool is activated by the operating system boot process.

SWB–AM–08 **If the tool is executed then the tool shall issue a message indicating all drives accessible by the covered interfaces.**

The tool tested provides a management GUI used to control the configuration of protected drives. Captured images of the management screen used to setup the tool prior to running each test case are included in test output of each test run. The tool conforms to this assertion if all drives configured for a test are shown in the captured image.

SWB–AM–09 **If the tool is executed then the tool shall issue a message indicating the protection status of all drives accessible by the covered interface.**

The tool tested provides a management GUI used to control the configuration of protected drives. Captured images of the management screen used to setup the tool prior to running each test case are included in test output of each test run. The tool conforms to this assertion if the protection status all drives configured for each test is shown in the captured image.

7.2 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.**

The tool conforms to this assertion if the ALLOWED tally for commands in the WRITE category is 0 for all “software WRITE PROTECTED” drives tested.

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

The tool conforms to this assertion if the ALLOWED tally for commands in the VENDOR_SPECIFIC category is 0 for all “software WRITE PROTECTED” drives tested.

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

The tool conforms to this assertion if the ALLOWED tally for commands in the UNDIFINED category is 0 for all “software WRITE PROTECTED” drives tested.

SWB–AO–04 **If a subset of all covered drives is specified for protection, then commands from the OTHER category shall not be blocked for drives in the selected subset.**

The tool conforms to this assertion if the BLOCKED tally for commands in the OTHER category is 0 for all “software WRITE PROTECTED” drives tested.

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

The tool conforms to this assertion if the BLOCKED tally for commands in the OTHER category is 0 for all “software WRITE PROTECTED” drives tested.

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

The tool conforms to this assertion if the BLOCKED tally for all commands in all categories is 0 for all “software WRITE ENABLED” drives tested.

SWB–AO–07 **If the tool is active and the tool is deactivated then no commands to any drive shall be blocked.**

Not applicable—this tool is activated by the operating system boot process and cannot be deactivated by user command.

SWB–AO–08 **If the tool blocks a command then the tool shall issue either an audio or visual signal.**

The management GUI includes an event log window. The tool conforms to this assertion if an event log entry is displayed in that window when a command is blocked.

SWB–AO–09 **If the tool is configured to be active during the operating system boot process then no changes shall be made to protected drives.**

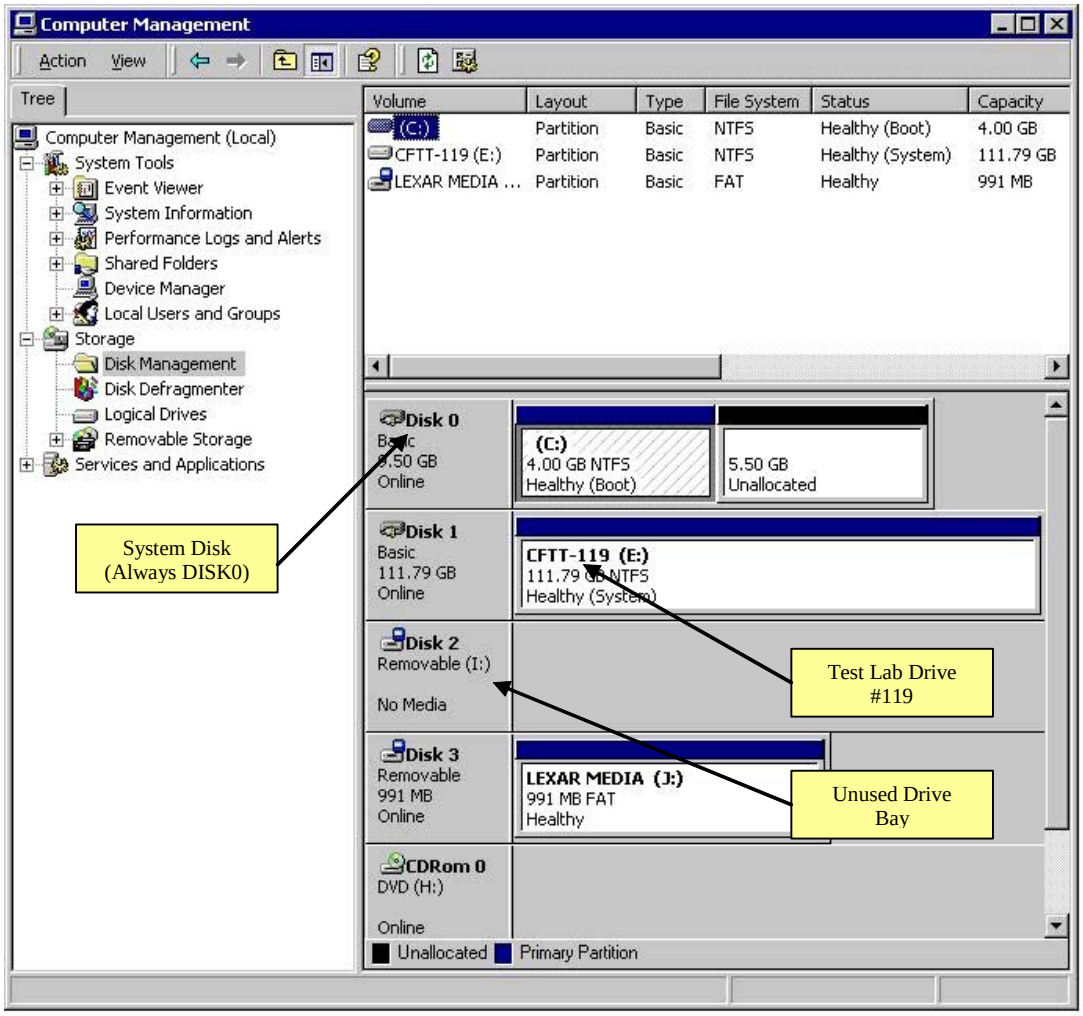
The tool conforms to this assertion if the SHA1 hashes of all protected drives are unchanged across an operating system boot.

8. Key to reading test results

The test summary sections each contain the following subsections.

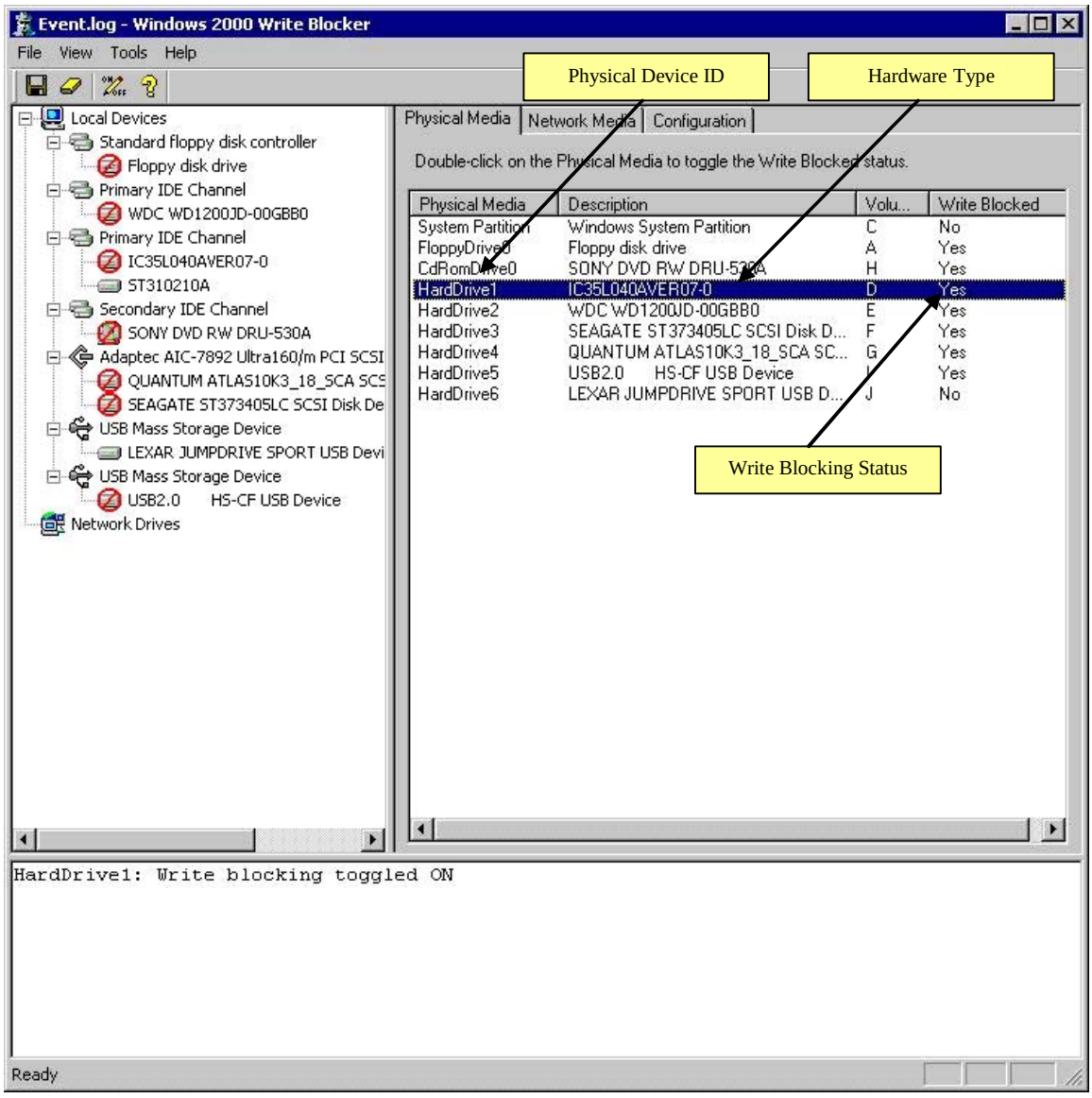
8.1 Hard disk configuration

This section contains a screen capture of the Disk Manager window on the test system similar to the ones shown in the test summary sections. The fields in this window of primary interest with regard to the test cases are highlighted in the example. To assist in identifying which Window's device corresponds to which physical drive installed into the machine, the software volume label written on each drive is of the form CFTT-*nnn* where *nnn* represents the external physical label affixed to drives used in the CFTT test laboratory.



8.2 Write blocker configuration

This section contains a screen capture of the Writeblocker GUI configuration window. The fields relevant to interpretation of the test results are highlighted in the example below.



8.3 Test output summary

The test application prints a summary of the test results to the console output device from which the test was run. The Test Output Summary section contains a listing of this information as shown below.

```
1  NIST Software Write Blocker Test Suite V1.2
2  Thu Aug 25 10:06:24 2005
3
4  Test case:              SWB-01
5  Command set:            RWOVU
6  Number of drives:       1
7  Protection pattern:     U
8  Test administered by:   DPA
9  Details logged to file: SWB-01.log
10
11 **** Test results summary (see logfile for details) *****
12
13 Testing device \\.\PhysicalDrive1
14 Device is software WRITE ENABLED
15
16 Test Category               Allowed    Blocked    Total
17 ---------------------------------------------------------
18 Read IRP's ................      4          0        4
19 Write IRP's ...............      8          0        8
20 Other IRP's ...............     15          0       15
21
22 Read CDB's  ...............     27          0       27
23 Write CDB's ...............     34          0       34
24 Other CDB's ...............     62          0       62
25 Vendor SPecific CDB's .....     80          0       80
26 Undefined CDB's............     53          0       53
```

Line 1 - test suite identification
Line 2 - date and time of test
Line 4 - test case run
Line 5 - command set to be tested
Line 6 - number of hard drives to be tested
Line 7 - protection pattern of hard drives
Line 8 - individual conducting the test
Line 9 - file name of detailed output file
Line 13 - full pathname of hard drive under test
Line 14 - write protection status of hard drive under test
Line 18 - count of kernel IRPs from the READ command category that were issued
Line 19 - count of kernel IRPs from the WRITE command category that were issued
Line 20 - count of kernel IRPs from the OTHER command category that were issued
Line 22 - count of SCSI CDBs from the READ command category that were issued
Line 23 - count of SCSI CDBs from the WRITE command category that were issued
Line 24 - count of SCSI CDBs from the OTHER command category that were issued
Line 25 - count of SCSI CDBs from the VENDOR_SPECIFIC command category that were issued
Line 26 - count of SCSI CDBs from the UNDEFINED command category that were issued

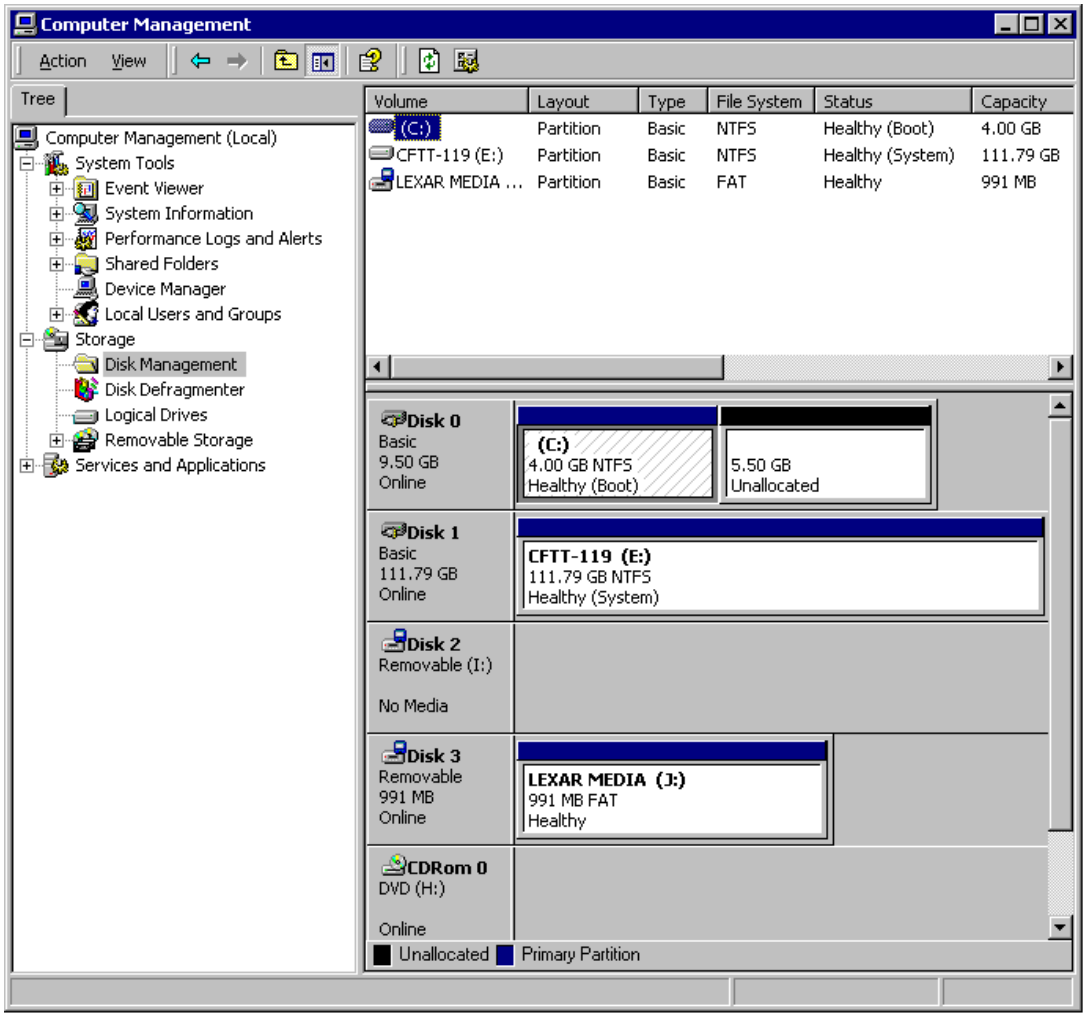
9. Test Result Summaries

9.1 Test case SWB-01

This test case's primary purpose is to test the tool's compliance with SWB-AM-01. It issues all possible I/O commands to a single unprotected disk drive.

9.1.1 Hard disk configuration

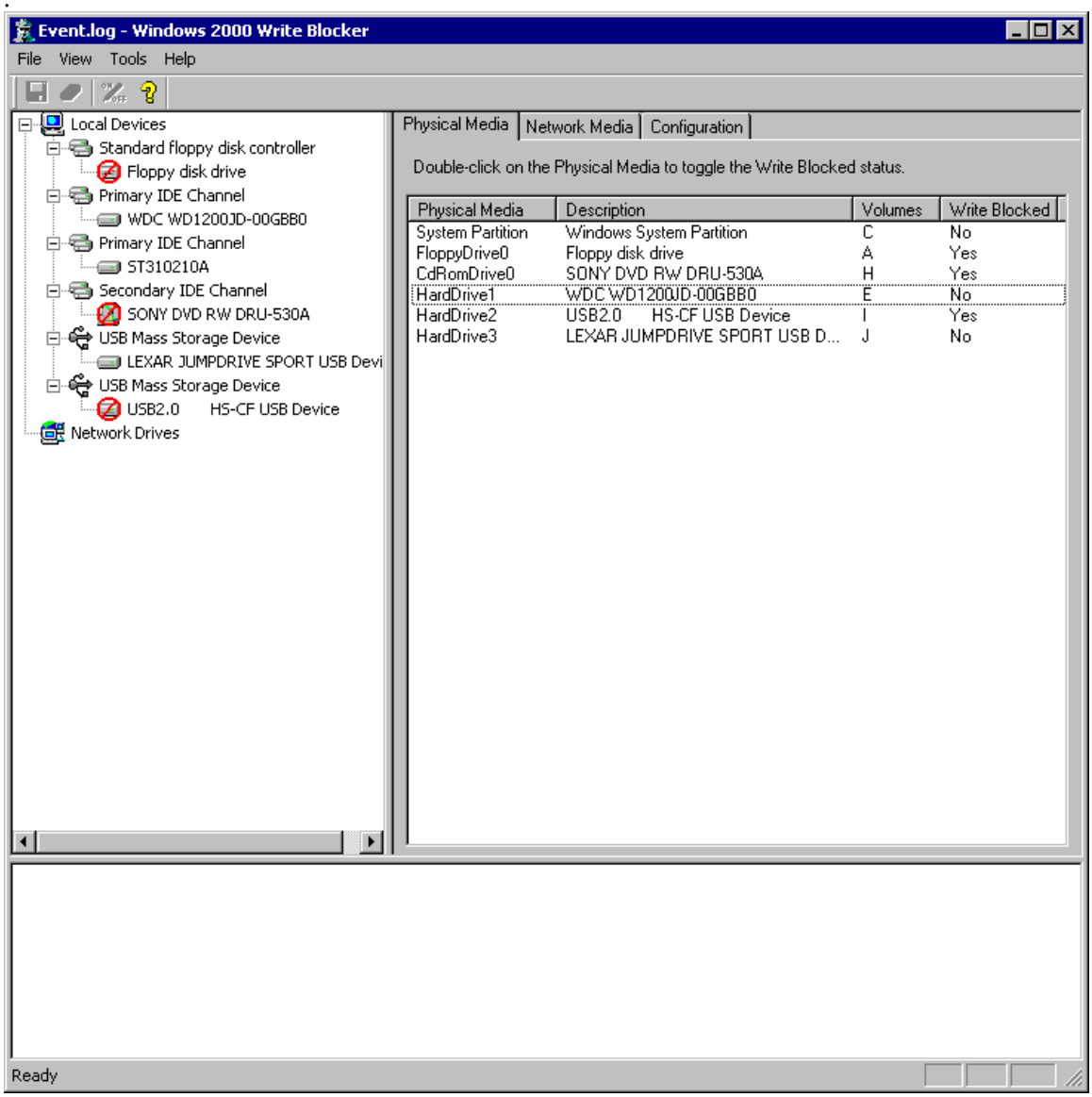
The hard disk configuration used for this test is shown below.



9.1.2 Write blocker configuration

The Writeblocker W2K configuration used in this test is shown below.

.



9.1.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Tue Mar 28 15:32:28 2006

Test case:              SWB-01
Command set:            RWOVU
Number of drives:       1
Protection pattern:     U
Test administered by:   DPA
Details logged to file: SWB-01.log

 **** Test results summary (see logfile for details) *****

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

       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
```

9.1.4 Hard disk hash results

Drive Identification	Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-119)	Before	0EA083FC760A011547BE6817A6238401FF76AEF1
	After	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A

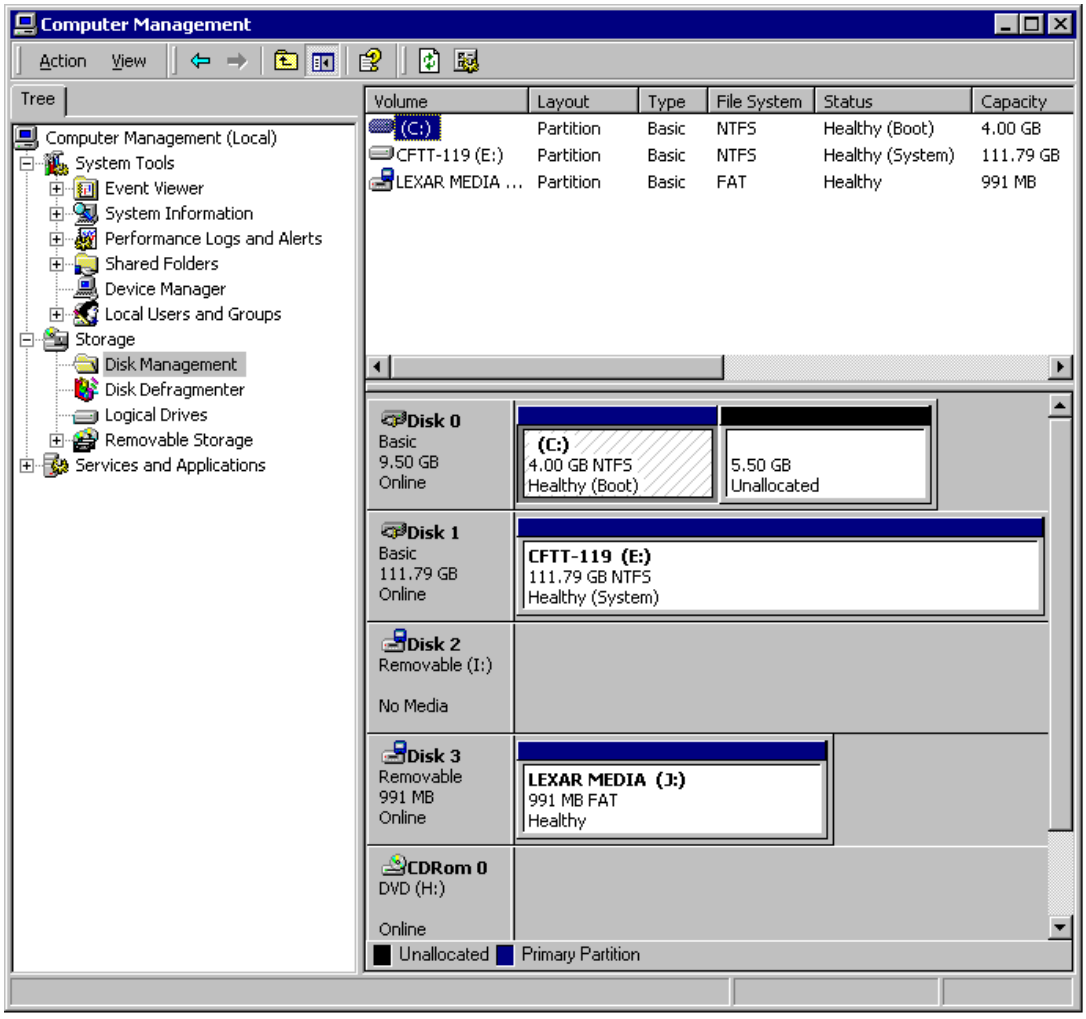
9.1.5 Test result analysis

The expected result for this test was that all command functions issued would be passed by the tool. That result was observed.

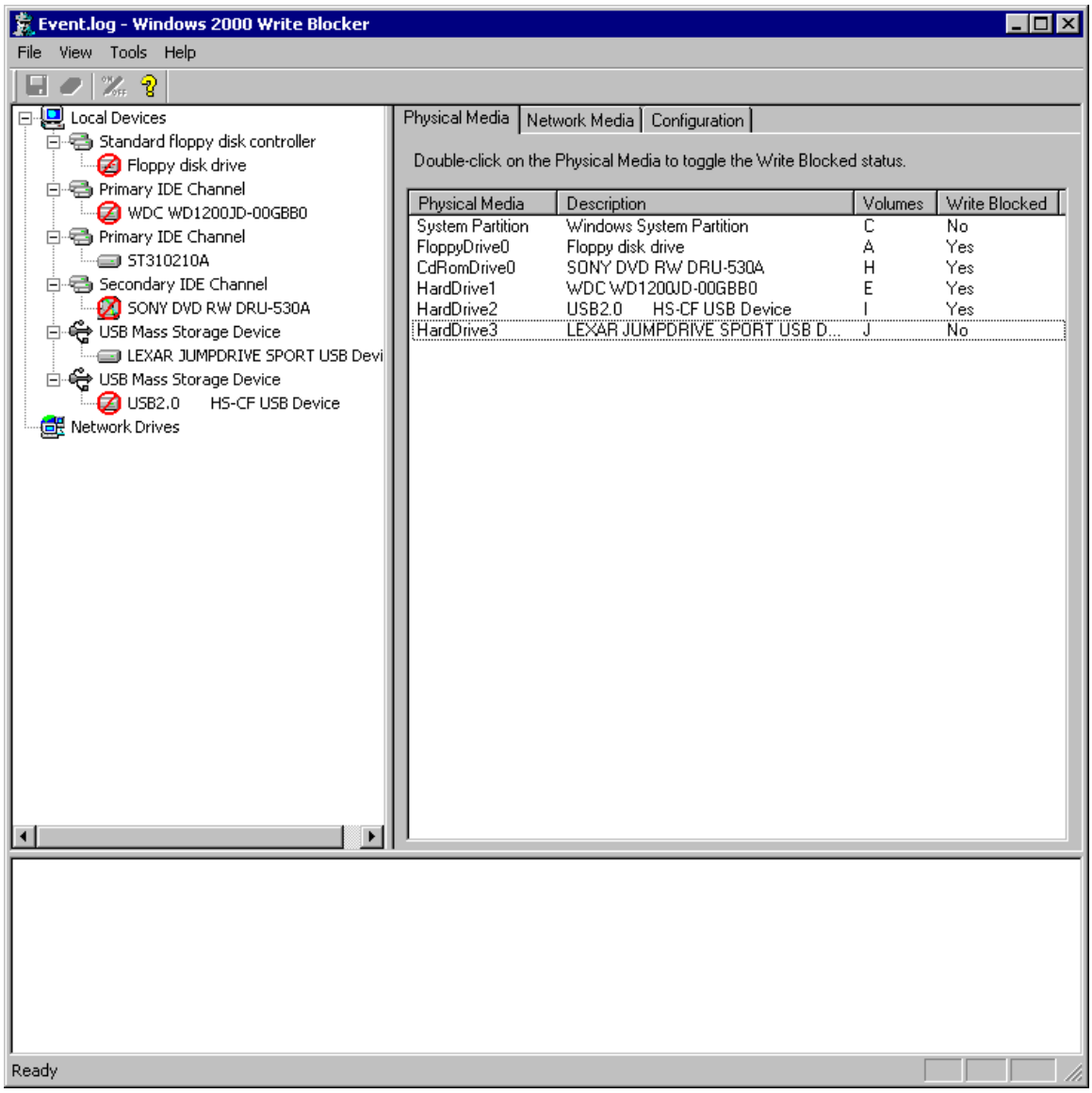
9.2 Test case SWB-02

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

9.2.1 Hard disk configuration



9.2.2 Write blocker configuration



9.2.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Mar 29 11:20:34 2006

Test case:              SWB-02
Command set:            R
Number of drives:       1
Protection pattern:     P
Test administered by:   DPA
Details logged to file: SWB-02.log

 **** Test results summary (see logfile for details) *****

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

       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
```

9.2.4 Hard disk hash results

Drive Identification	Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-119)	Before	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A
	After	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A

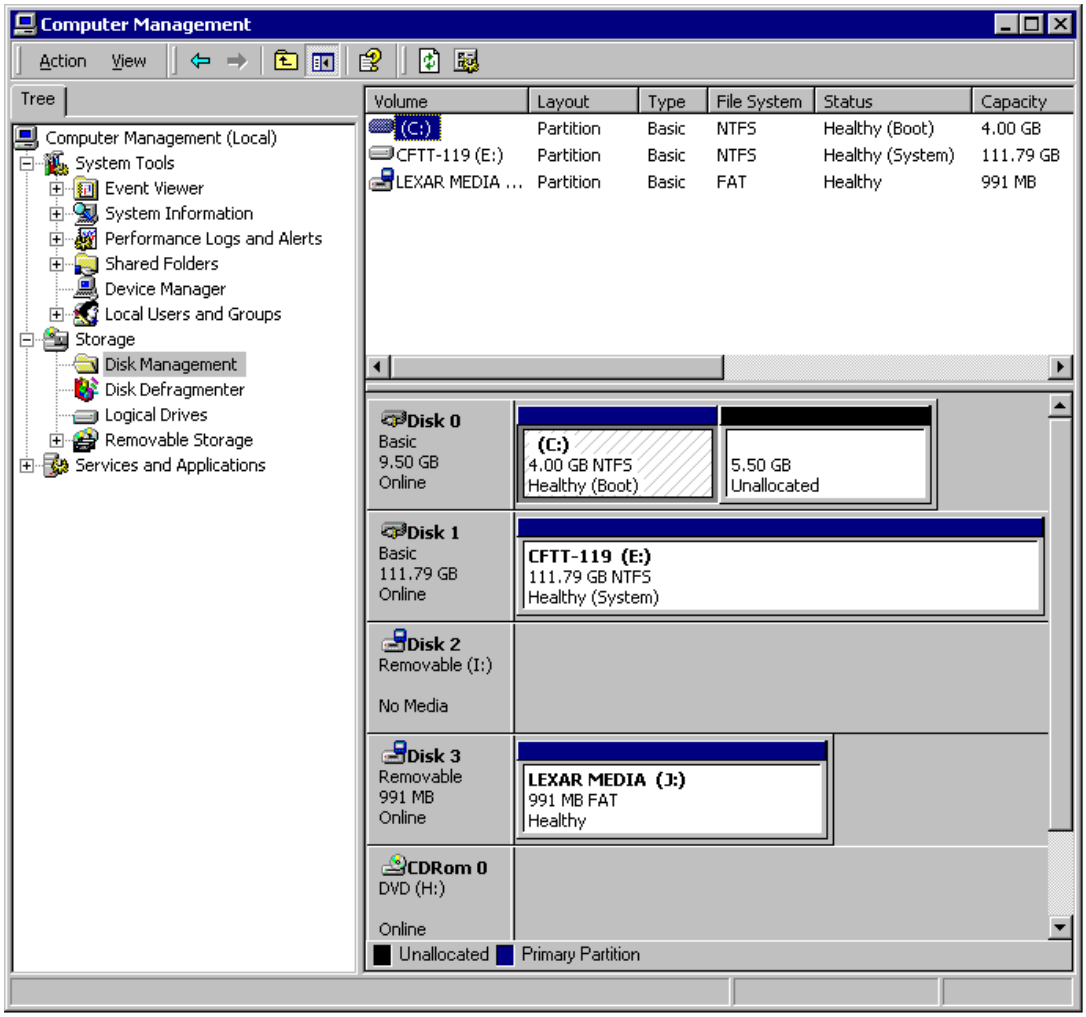
9.2.5 Test result analysis

The expected result for this test was that all READ functions issued would be passed by the tool. That result was observed.

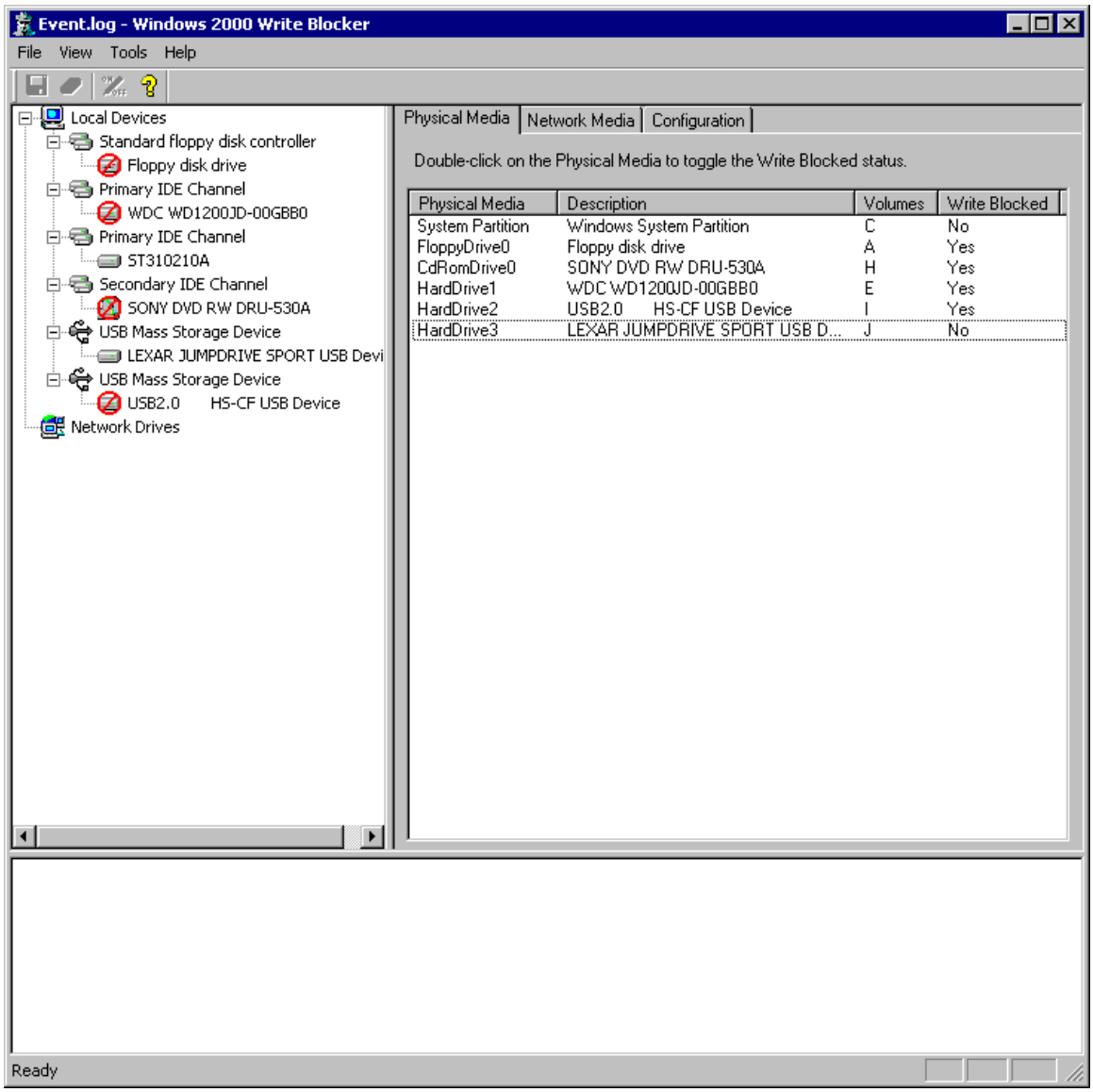
9.3 Test case SWB-03

This test case tests the tool'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 the tool will block all commands issued by the test application.

9.3.1 Hard disk configuration



9.3.2 Write blocker configuration



9.3.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Mar 29 11:21:42 2006

Test case:              SWB-03
Command set:            W
Number of drives:       1
Protection pattern:     P
Test administered by:   DPA
Details logged to file: SWB-03.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................       0          0        0
  Write CDB's ................      22         12       34
  Other CDB's ................       0          0        0
  Vendor SPecific CDB's ......       0          0        0
  Undefined CDB's.............       0          0        0
```

9.3.4 Hard disk hash results

Drive Identification	Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-119)	Before	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A
	After	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A

9.3.5 Test result analysis

- The tool failed to produce the expected result
- The hard disk was not modified
- The tool failed to block four of the eight IRP major functions from the WRITE category that were issued. These IRP functions are:

IRP Major Function Name	Opcode	Comment
IRP_MJ_CREATE	0x00	Appears to be blocked at file system level.
IRP_MJ_FLUSH_BUFFERS	0x09	Appears to be blocked at file system level
IRP_MJ_SET_SECURITY	0x15	Appears to be blocked at file sysytem level
IRP_MJ_SET_QUOTA	0x1A	Appears to be blocked at file system level

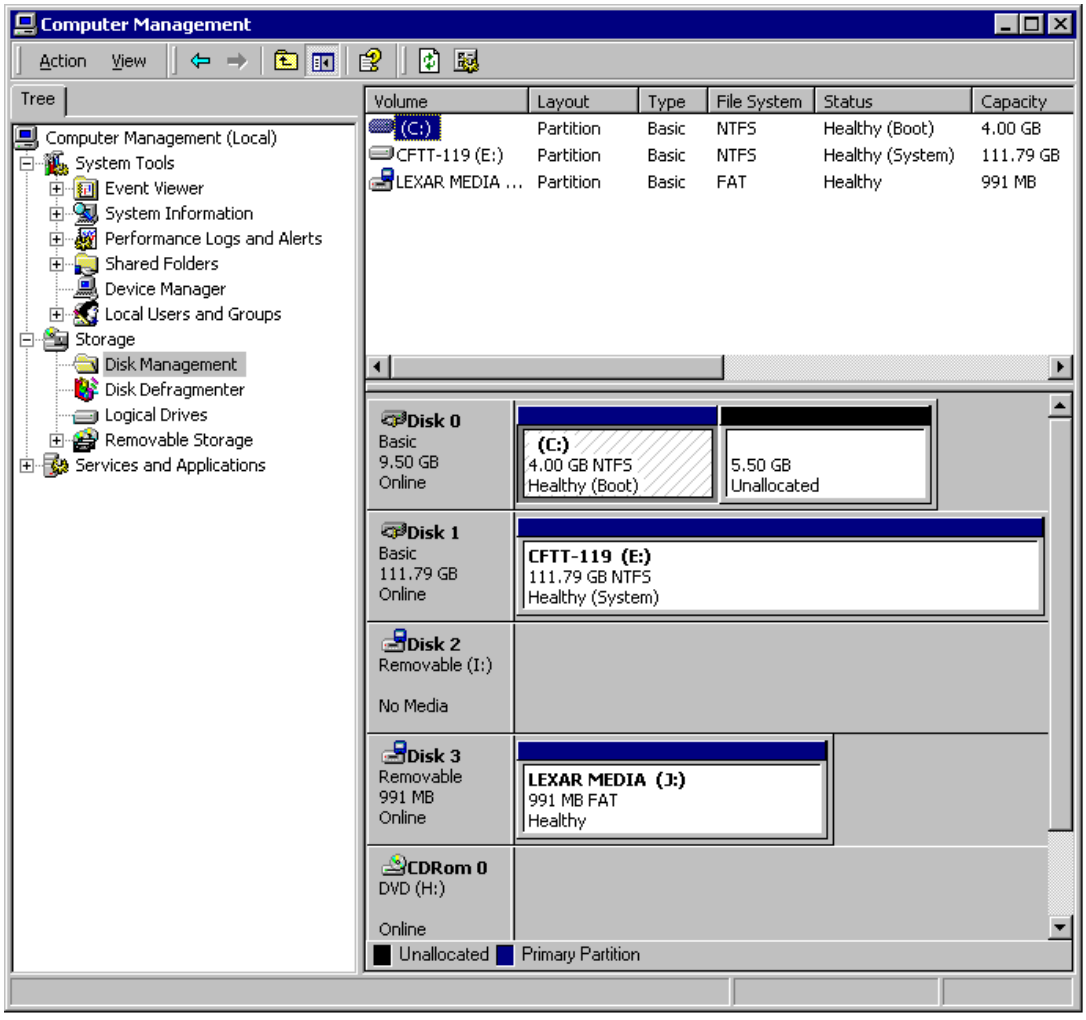
- The tool also failed to block 22 of the 34 SCSI CDB's in the WRITE category issued by the test application. The 22 SCSI commands that were not blocked by the tool are:

SCSI Comamnd Name	Opcode	Comment
REASSIGN_BLOCKS	0x07	Optional for hard drives
WRITE_FILEMARKS	0x10	Vendor specific implementation for hard drives
COPY	0x18	Obsolete command
ERASE	0x19	Vendor specific implementation for hard drives
COPY_COMPARE	0x3A	Optional per SPC3
WRITE_LONG10	0x3F	Optional per SPC3
WRITE_SAME10	0x41	Optional per SPC3
XDWRITE10	0x50	Optional per SPC3
XPWRITE10	0x51	Optional per SPC3
SEND_CUE_SHEET	0x5D	CDROM drives
VARIABLE LENGTH_CDB	0x7F	Encapsulates multiple variable length CDB's
XDWRITE_EXTENDED	0x80	
REBUILD	0x81	
REGENERATE	0x82	
EXTENDED_COPY	0x83	
ATA_PASSTHROUGH16	0x85	SCSI wrapper for any raw ATA command
WRITE16	0x8A	
WRITE_AND_VERIFY16	0x8E	
SYNCHRONIZE_CACHE	0x91	
WRITE_SAME16	0x93	
ATA_PASSTHROUGH12	0xA1	SCSI wrapper for any raw ATA command
ERASE12	0xAC	Vendor specific implementation for hard drives
WRITE_AND_VERIFY12	0xAE	Optional per SPC3

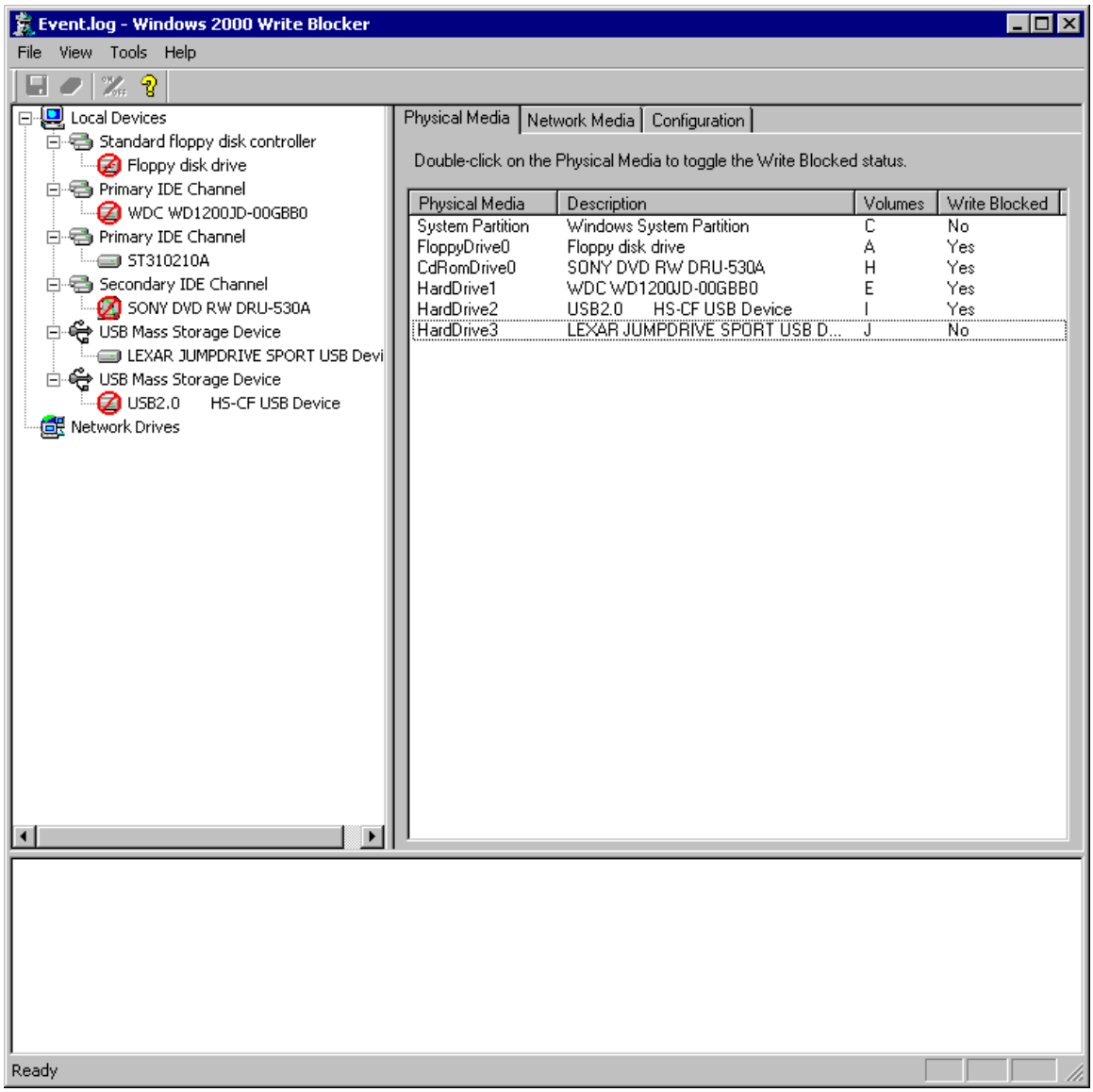
9.4 Test case SWB-04

This test case test's the tools 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 the tool will block all commands issued by the test application.

9.4.1 Hard disk configuration



9.4.2 Write blocker configuration



9.4.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Mar 29 11:22:29 2006

Test case:              SWB-04
Command set:            V
Number of drives:       1
Protection pattern:     P
Test administered by:   DPA
Details logged to file: SWB-04.log

 **** Test results summary (see logfile for details) *****

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

       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 ......      80          0       80
  Undefined CDB's.............       0          0        0
```

9.4.4 Hard disk hash results

Drive Identification	Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-119)	Before	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A
	After	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A

9.4.5 Test results analysis

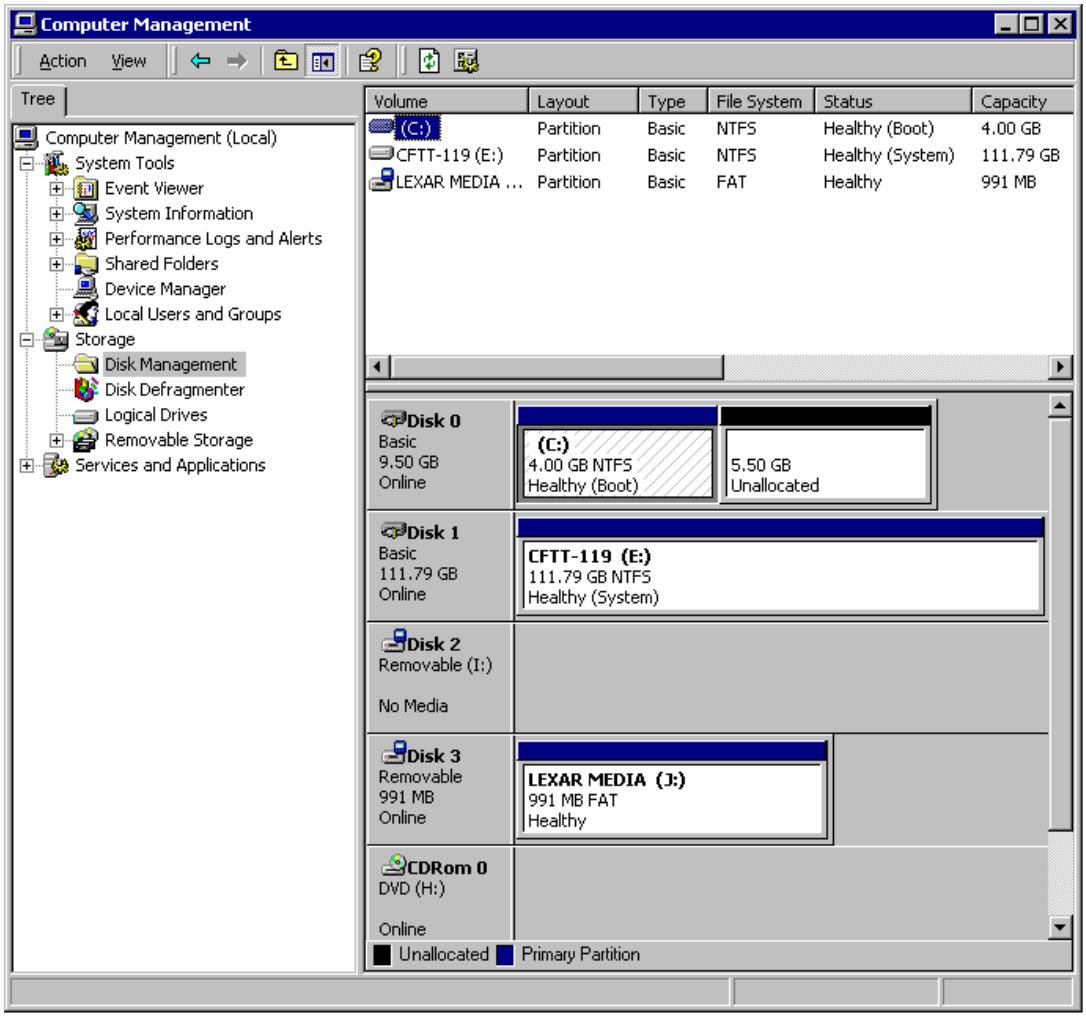
- The tool failed to produce the expected result
- The hard disk was not modified
- The tool failed to block any of the commands issued. The commands passed by the tool are shown below

SCSI Command	OPCODE	Comments
Vendor_Specific	0x02	
Vendor_Specific	0x06	
Vendor_Specific	0x09	
Vendor_Specific	0x0C	
Vendor_Specific	0x0D	
Vendor_Specific	0x0E	
Vendor_Specific	0x0F	
Vendor_Specific	0x11	
Vendor_Specific	0x14	
Vendor_Specific	0x20	
Vendor_Specific	0x21	
Vendor_Specific	0x22	
Vendor_Specific	0x23	
Vendor_Specific	0x26	
Vendor_Specific	0x27	
Vendor_Specific	0x2D	
Vendor_Specific	0xC0-0xFF	All opcodes (inclusive) in this range

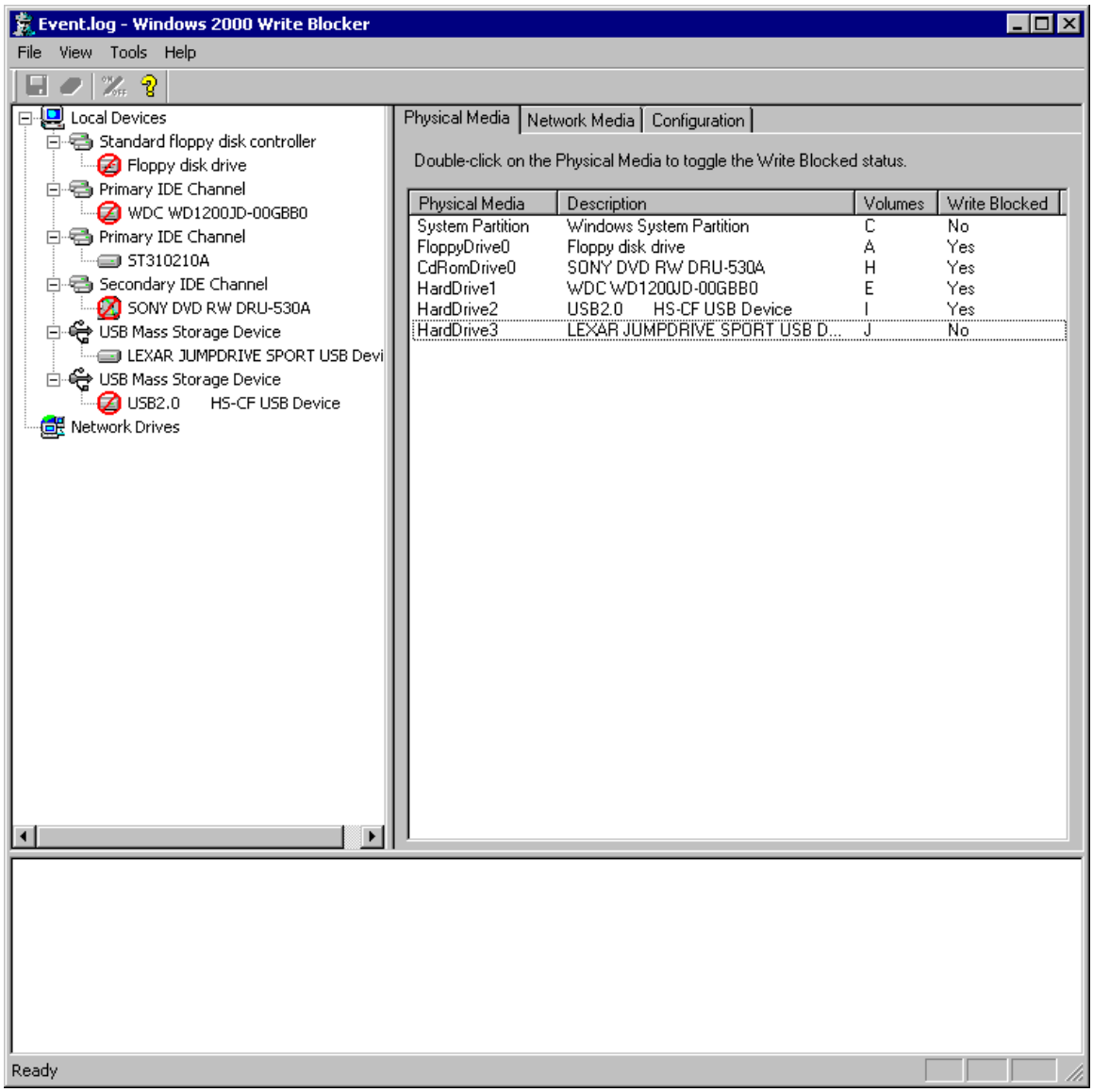
9.5 Test case SWB-05

This test case test's the tools 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 the tool will block all commands issued by the test application.

9.5.1 Hard disk configuration



9.5.2 Write blocker configuration



9.5.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Mar 29 11:22:53 2006

Test case:              SWB-05
Command set:            U
Number of drives:       1
Protection pattern:     P
Test administered by:   DPA
Details logged to file: SWB-05.log

 **** Test results summary (see logfile for details) *****

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

       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.............      53          0       53
```

9.5.4 Hard disk hash results

Drive Identification	Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-119)	Before	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A
	After	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A

9.5.5 Test results analysis

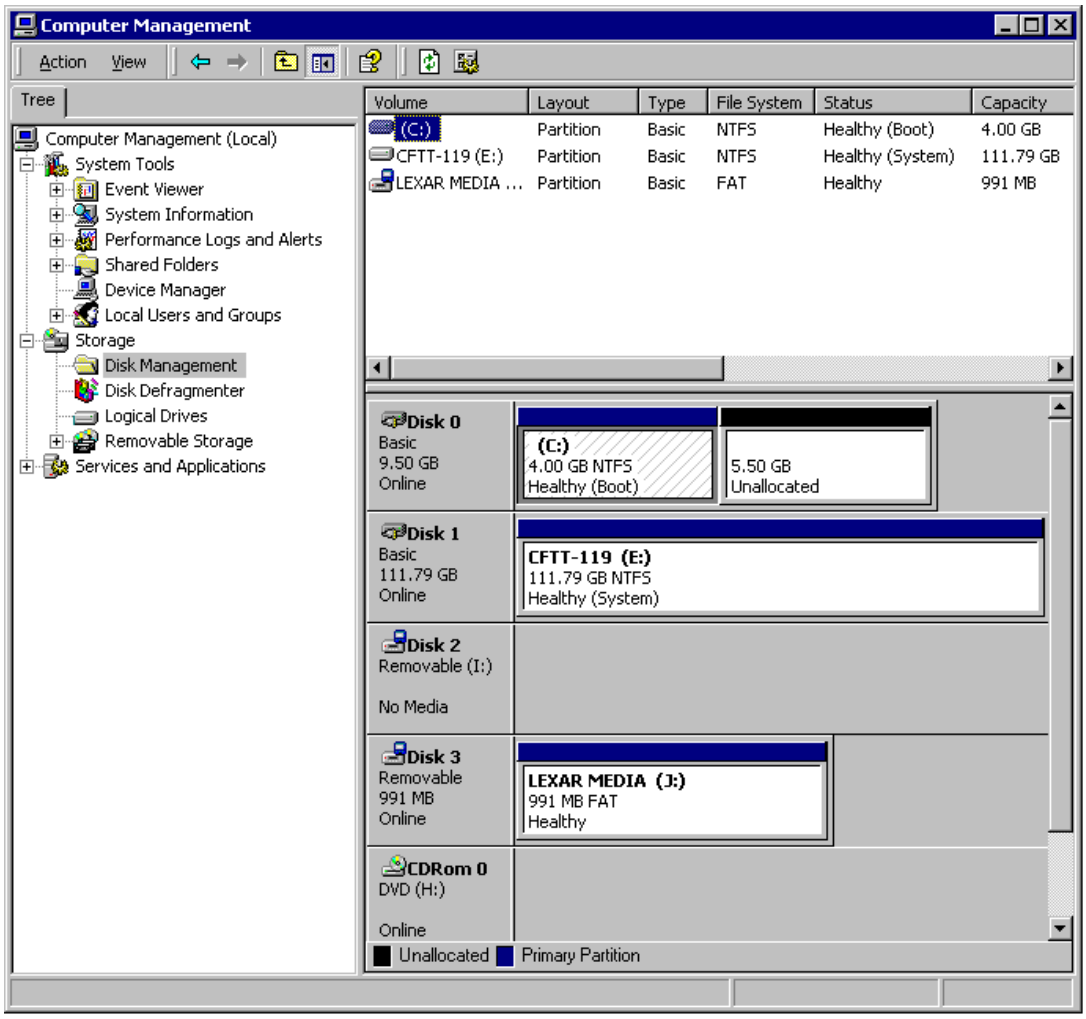
- The tool failed to produce the expected result.
- The hard disk was not modified.
- The tool did not block any of the commands in the UNDEFINED category. The UNDEFINED commands allowed by the tool are shown below.

SCSI Command	OPCODE	Comments
Undefined	0x1F	
Undefined	0x3D	
Undefined	0x59	
Undefined	0x60-0x7E	All opcodes inclusive in this range
Undefined	0x89	
Undefined	0x8B	
Undefined	0x94	
Undefined	0x95	
Undefined	0x96	
Undefined	0x97	
Undefined	0x98	
Undefined	0x99	
Undefined	0x9A	
Undefined	0x9B	
Undefined	0x9C	
Undefined	0x9D	
Undefined	0x9E	
Undefined	0x9F	
Undefined	0xA2	
Undefined	0xA9	
Undefined	0xAB	
Undefined	0xB5	

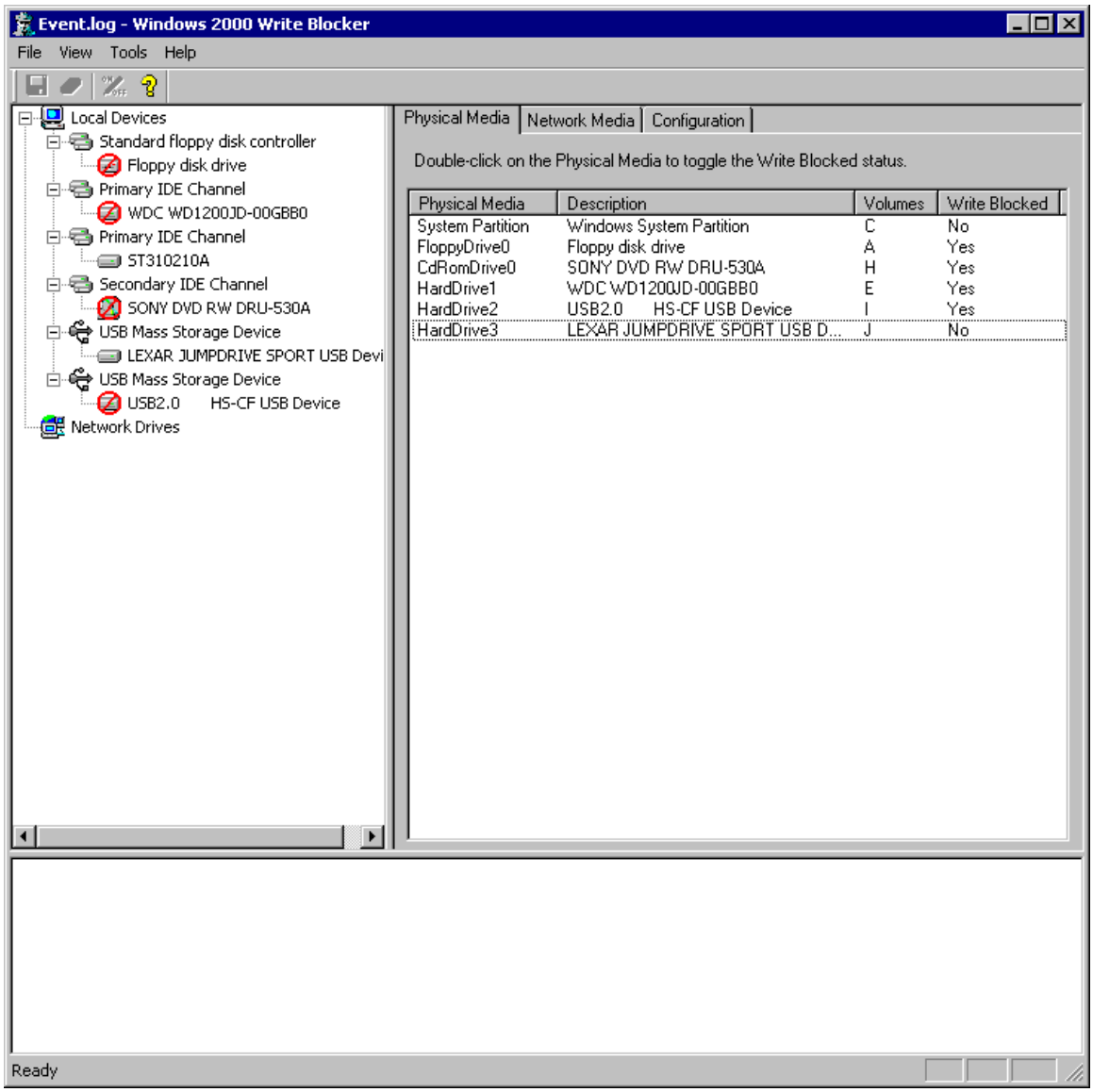
9.6 Test case SWB-06

This test case test's the tools 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 the tool will allow all commands issued by the test application.

9.6.1 Hard disk configuration



9.6.2 Write blocker configuration



9.6.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Mar 29 11:23:14 2006

Test case:              SWB-06
Command set:            O
Number of drives:       1
Protection pattern:     P
Test administered by:   DPA
Details logged to file: SWB-06.log

 **** Test results summary (see logfile for details) *****

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

       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 ................      62          0       62
  Vendor SPecific CDB's ......       0          0        0
  Undefined CDB's.............       0          0        0
```

9.6.4 Hard disk hash results

Drive Identification	Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-119)	Before	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A
	After	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A

9.6.5 Test results analysis

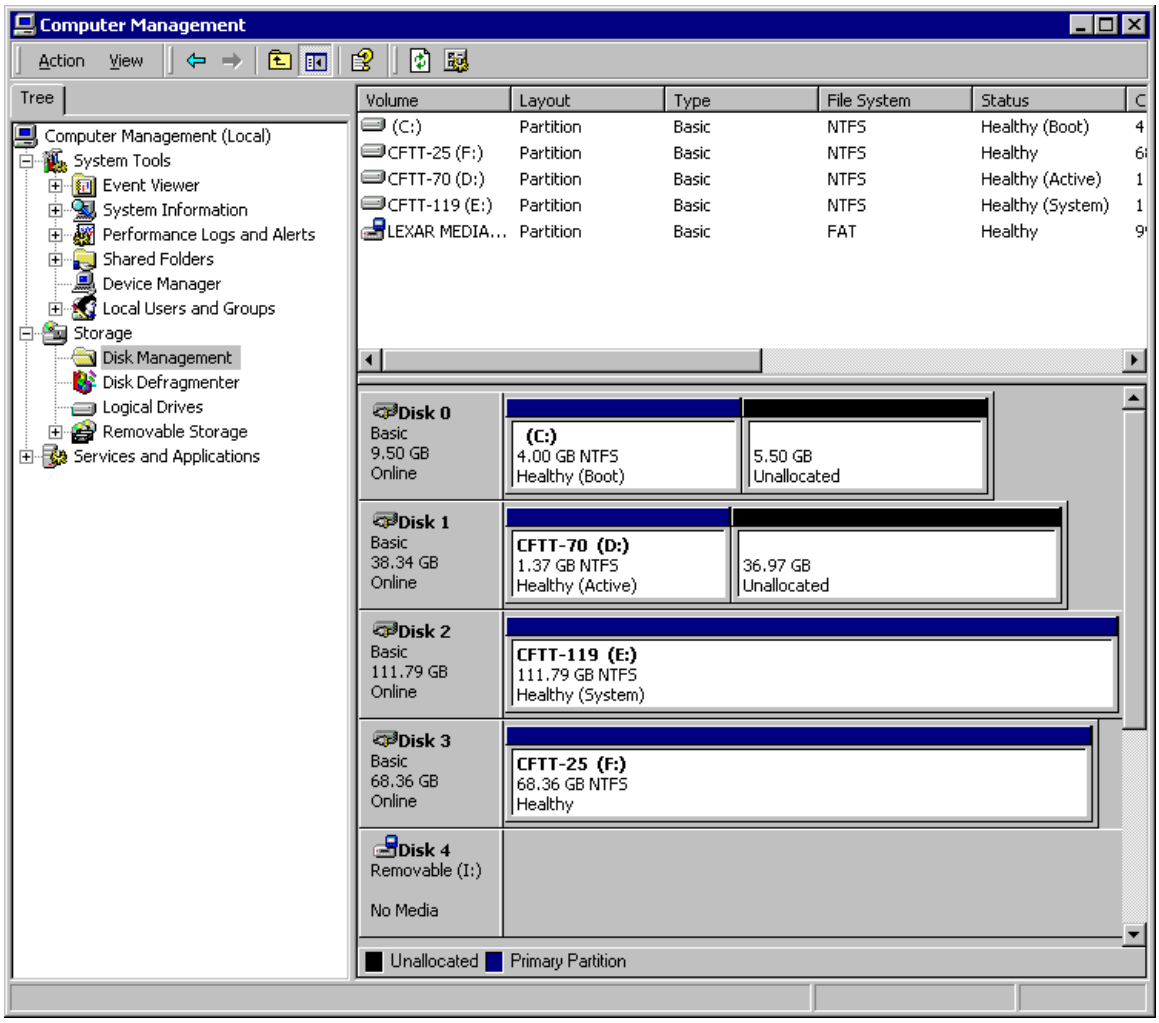
The tool produced the expected result. The tool did not block any of the commands in the OTHER category.

9.7 Test case SWB-07

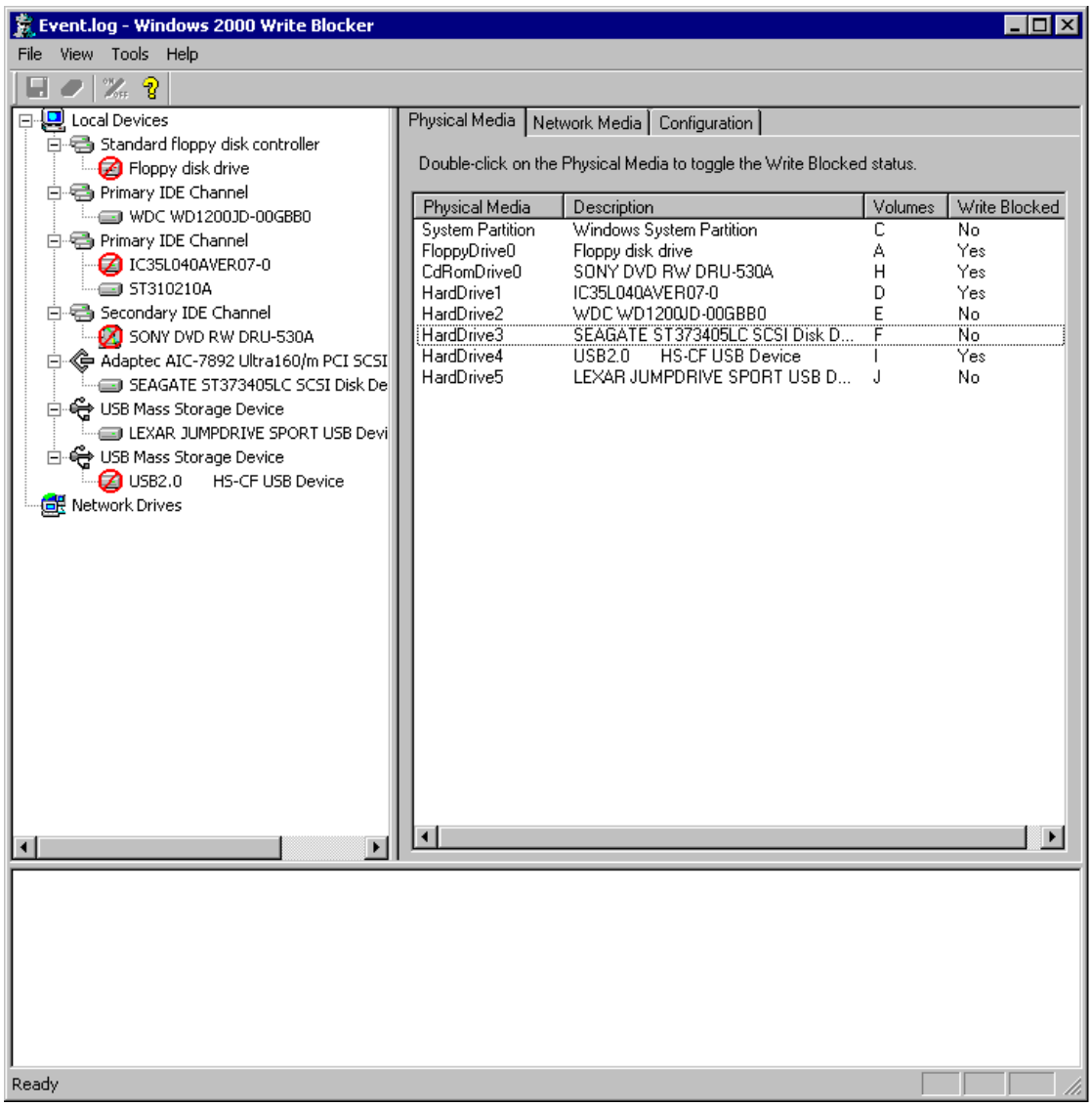
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of three drives protected with the pattern PUU. The expected result of this test is:

- The tool 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

9.7.1 Hard disk configuration



9.7.2 Write blocker configuration



9.7.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Mar 29 15:25:12 2006

Test case:              SWB-07
Command set:            RWOVU
Number of drives:       3
Protection pattern:     PUU
Test administered by:   DPA
Details logged to file: SWB-07.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 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
```

9.7.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	1CF7082C7986BF78F9C6D80336FA73CF95742ED0
		After	1CF7082C7986BF78F9C6D80336FA73CF95742ED0
\\.\PhysicalDrive2 (CFTT-119)	U	Before	9381A9693638EF9BDD2B83ACC7E6B2F94157C83A
		After	183C6516E79819BC6A939438AC5A743C09F2D9F6
\\.\PhysicalDrive3 (CFTT-25)	U	Before	4F7C4571B9E48F9F597B8B74358888227BEC4FAB
		After	EF80683EC71BE95972B369220975D28448287152

9.7.5 Test results analysis

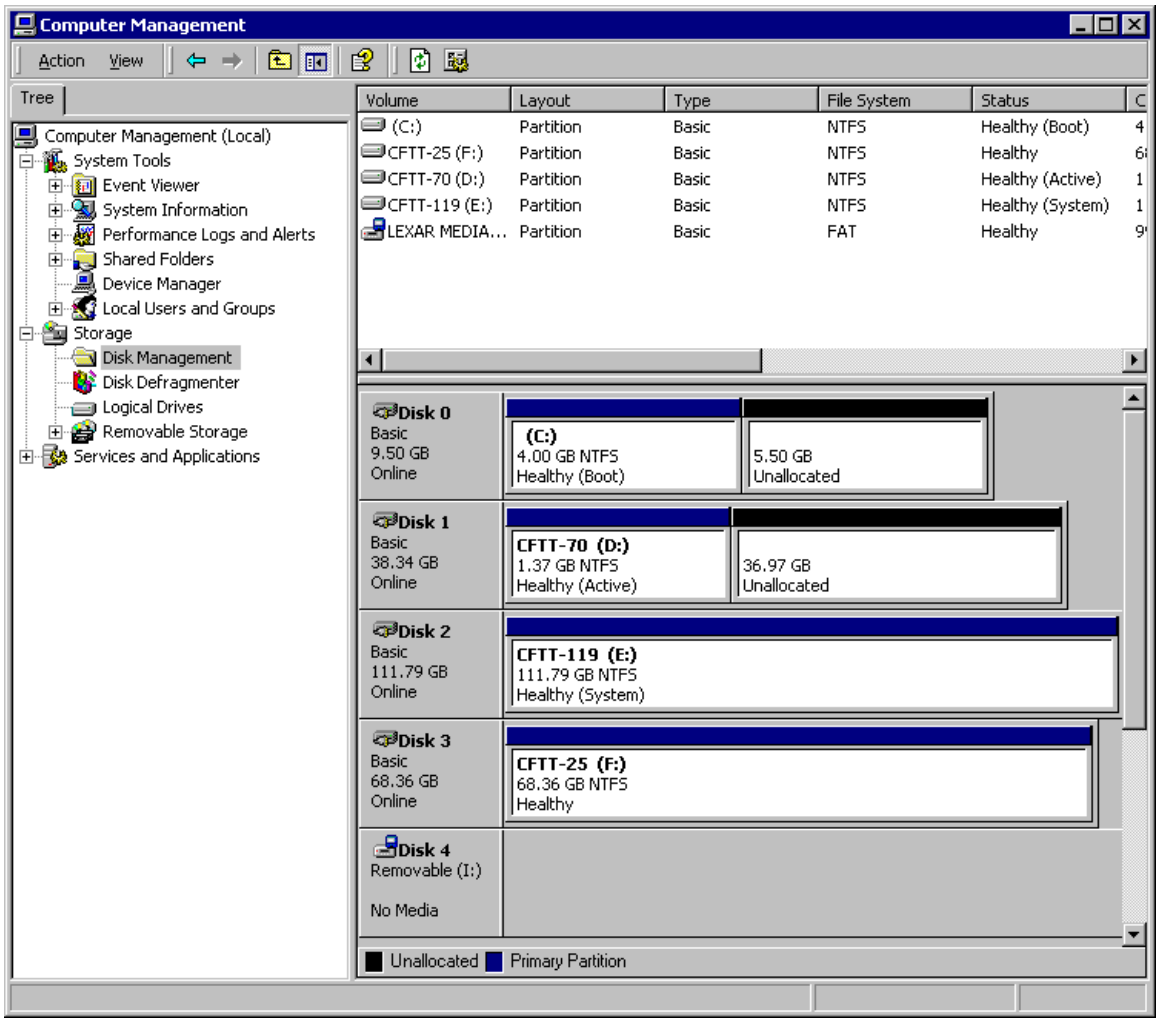
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.8 Test case SWB-08

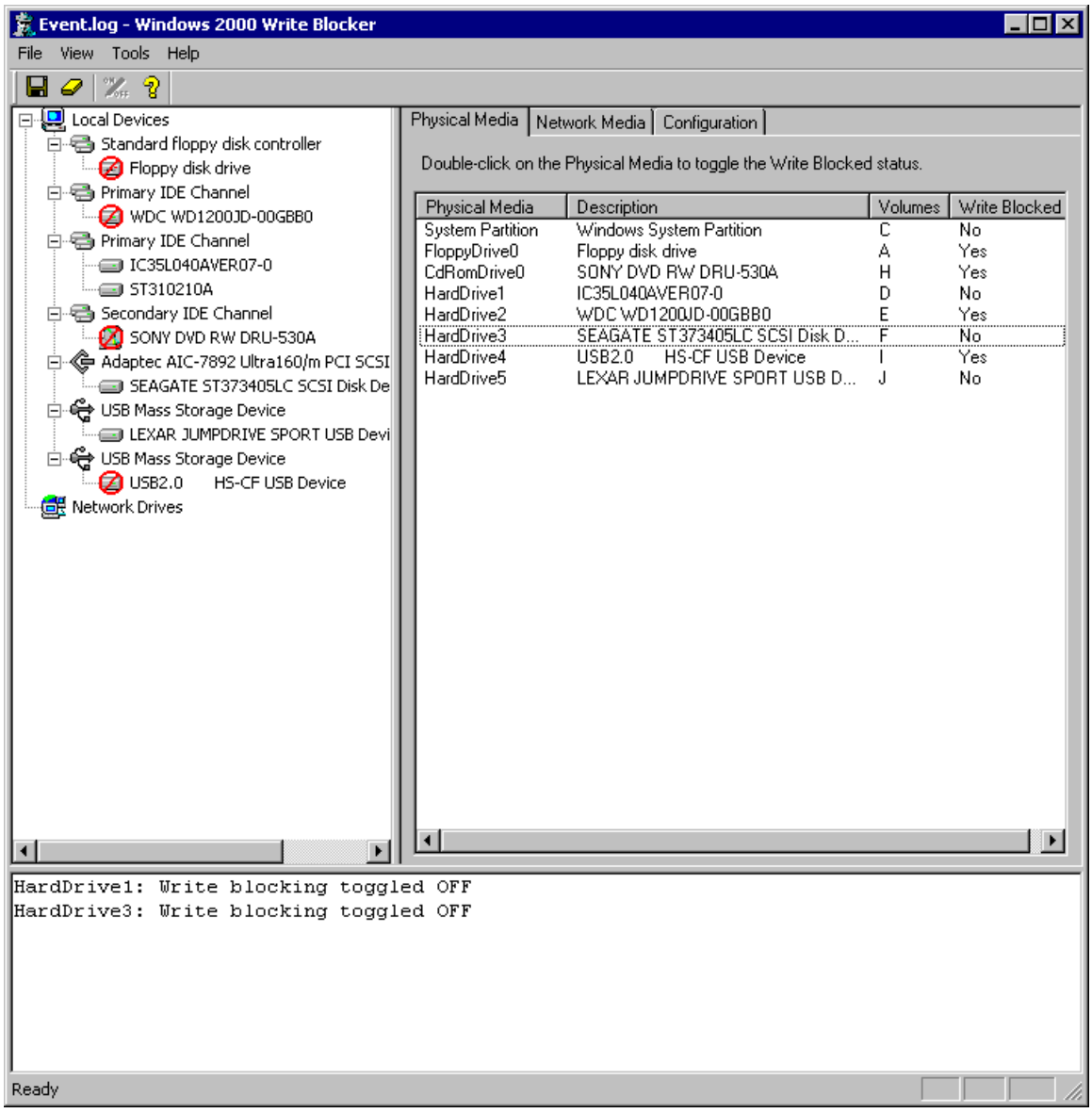
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of three drives protected with the pattern UPU. The expected result of this test is:

- The tool 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

9.8.1 Hard disk configuration



9.8.2 Write blocker configuration



9.8.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Mar 30 10:37:14 2006

Test case:              SWB-08
Command set:            RWOVU
Number of drives:       3
Protection pattern:     UPU
Test administered by:   DPA
Details logged to file: SWB-08.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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
```

9.8.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	1CF7082C7986BF78F9C6D80336FA73CF95742ED0
		After	E26F57A42CCC32489F6BD382FC01A66690719C2F
\\.\PhysicalDrive2 (CFTT-119)	P	Before	183C6516E79819BC6A939438AC5A743C09F2D9F6
		After	183C6516E79819BC6A939438AC5A743C09F2D9F6
\\.\PhysicalDrive3 (CFTT-25)	U	Before	EF80683EC71BE95972B369220975D28448287152
		After	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547

9.8.5 Test results analysis

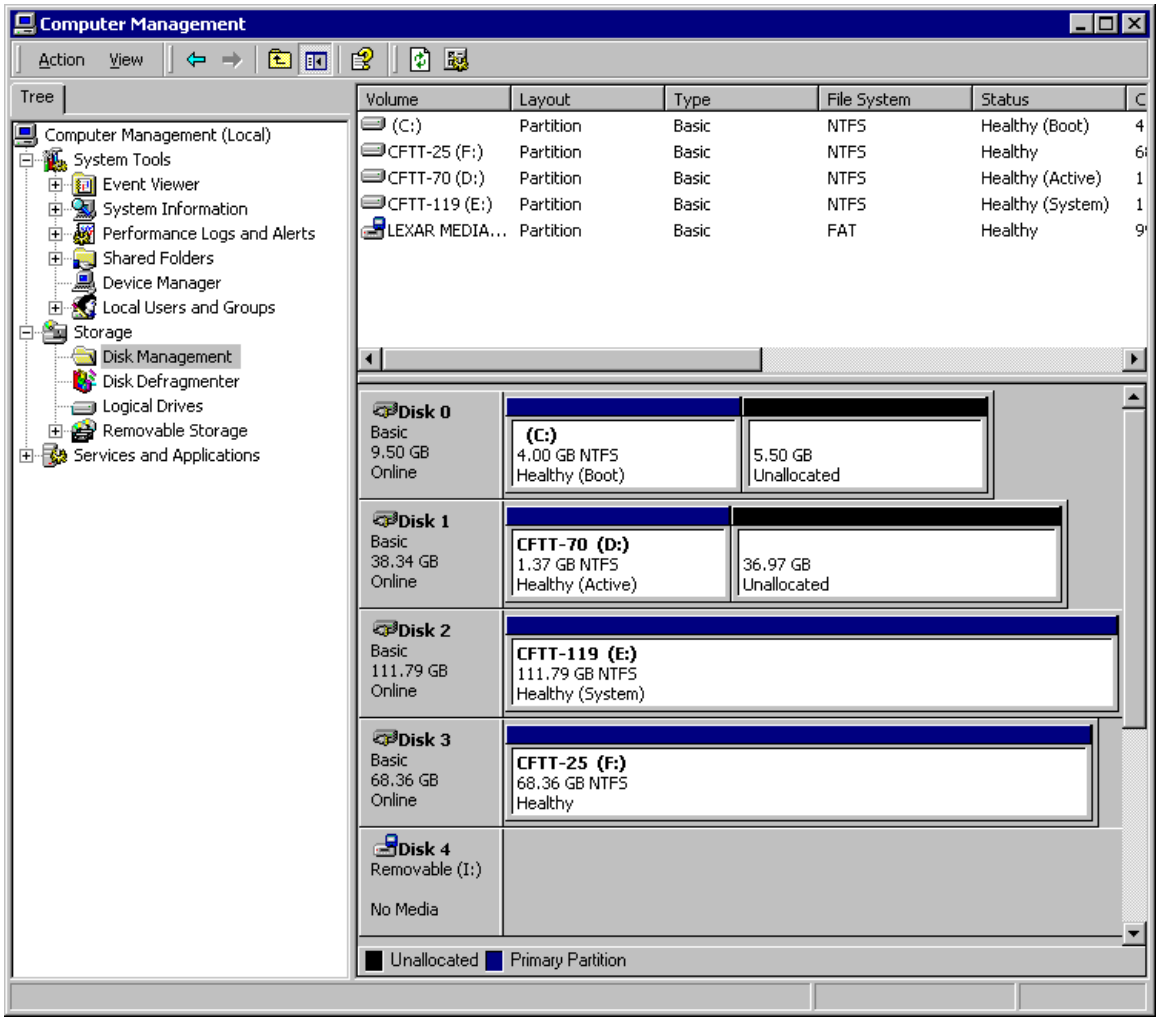
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.9 Test case SWB-09

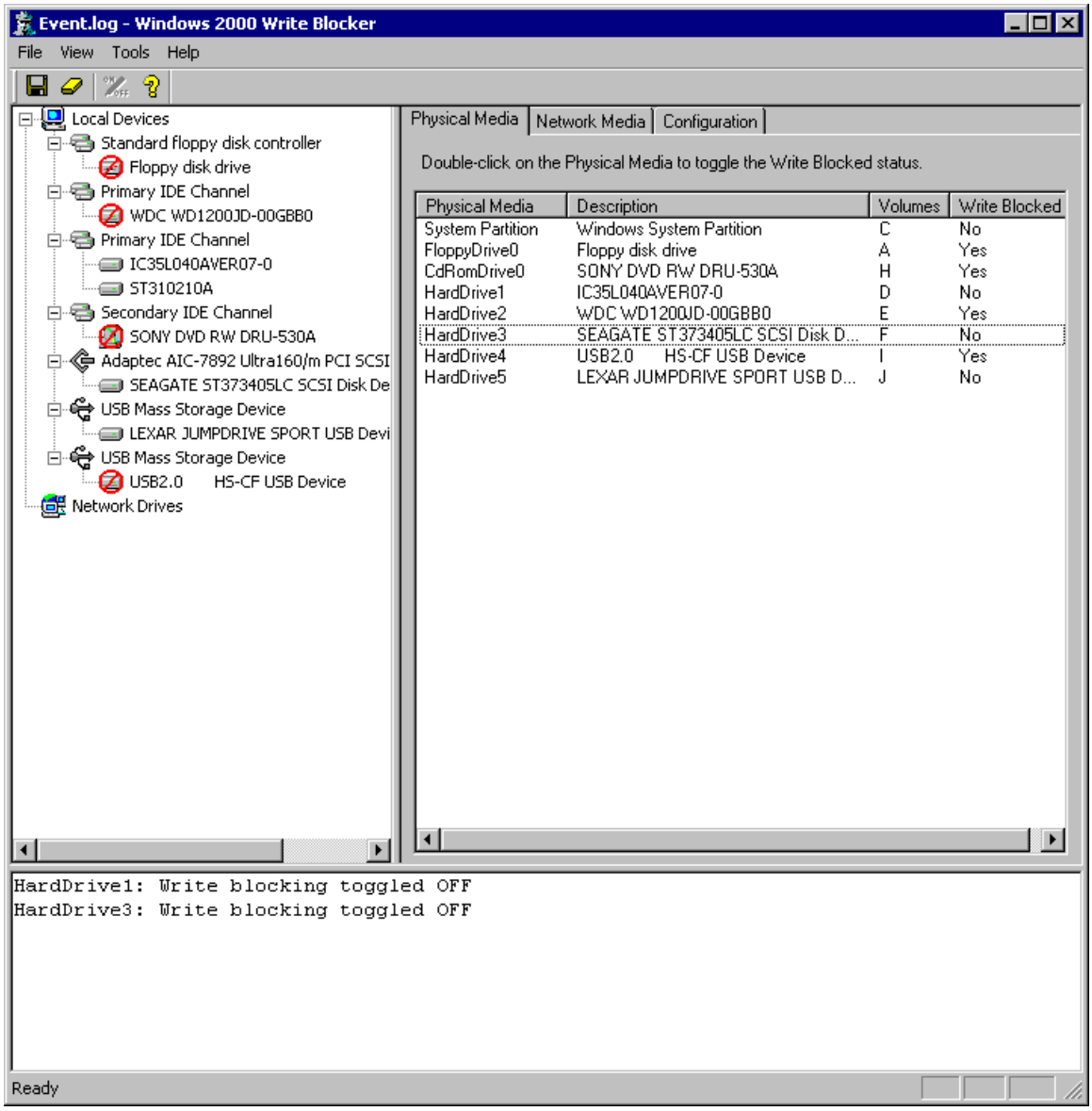
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UUP. The expected result of this test is the tool will:

- 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

9.9.1 Hard disk configuration



9.9.2 Write blocker configuration



9.9.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Mar 30 11:48:48 2006

Test case:              SWB-09
Command set:            RWOVU
Number of drives:       3
Protection pattern:     UUP
Test administered by:   DPA
Details logged to file: SWB-09.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

9.9.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	E26F57A42CCC32489F6BD382FC01A66690719C2F
		After	BDEB66F73ECABCA326F047C95761AE4A89C6DBE7
\\.\PhysicalDrive2 (CFTT-119)	U	Before	183C6516E79819BC6A939438AC5A743C09F2D9F6
		After	5AC51BAA663778A3677F08A502B91F4689D6029F
\\.\PhysicalDrive3 (CFTT-25)	P	Before	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547
		After	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547

9.9.5 Test results analysis

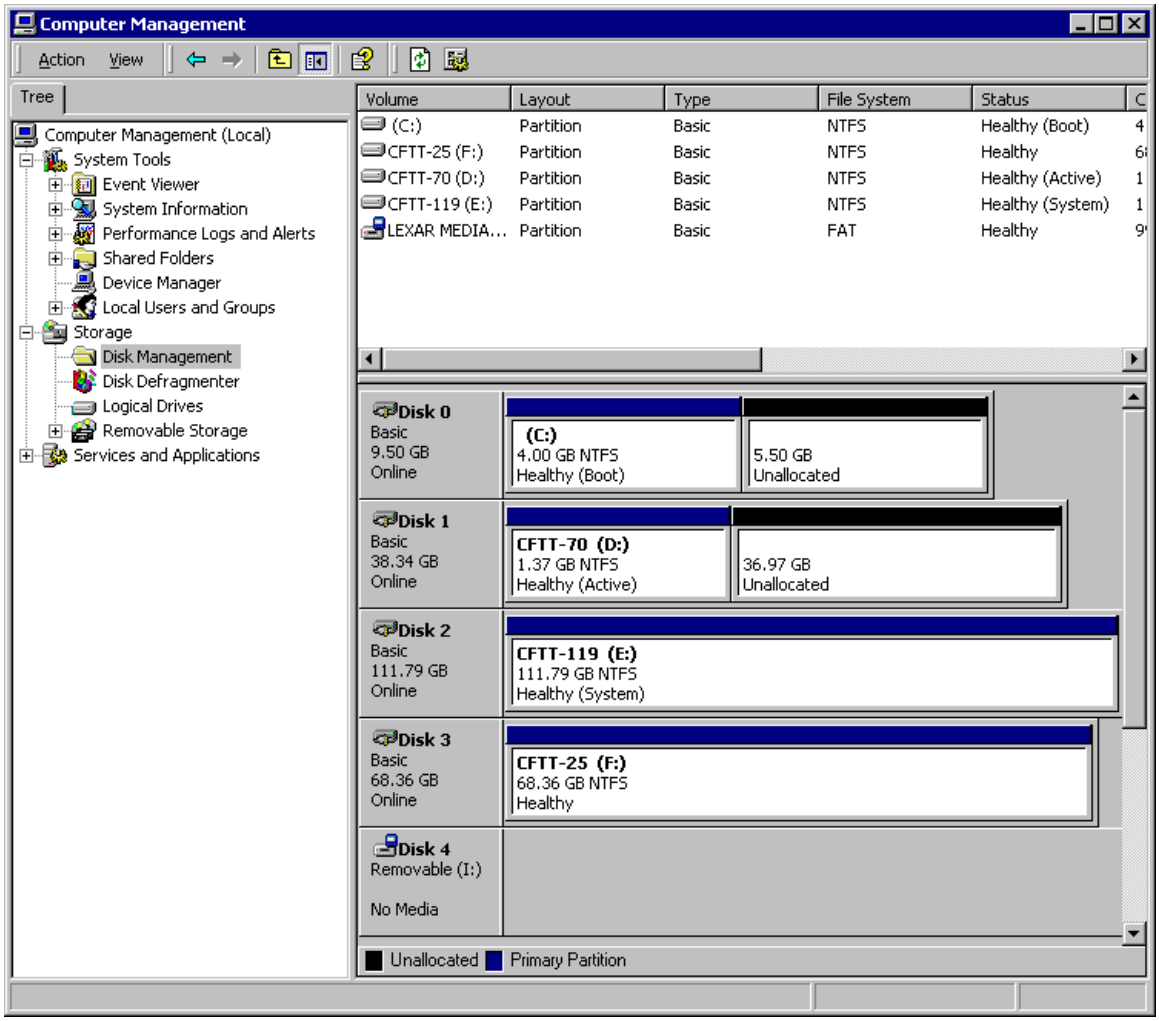
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.10 Test case SWB-10

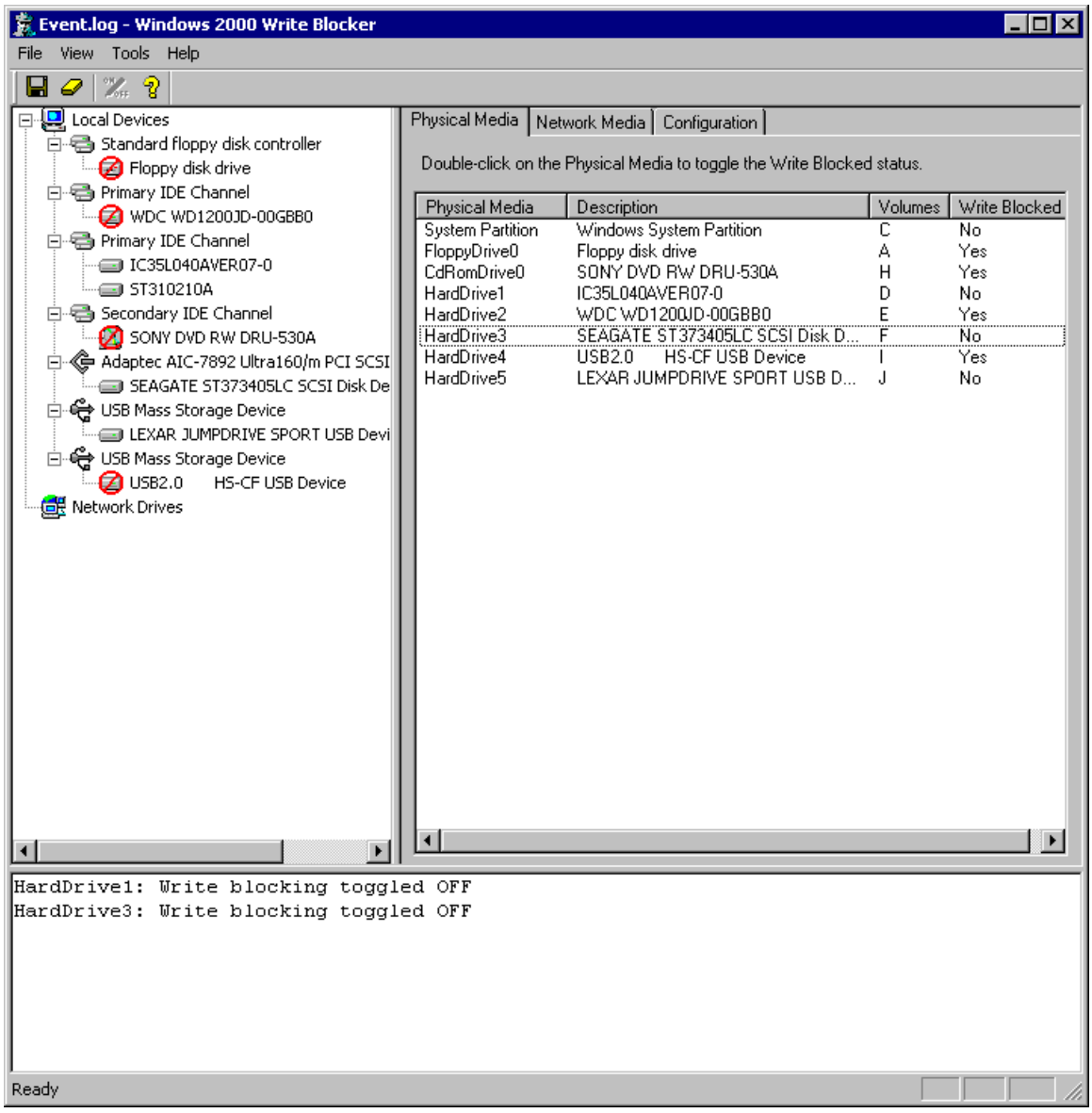
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern UPP. The expected result of this test is the tool will:

- 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

9.10.1 Hard disk configuration



9.10.2 Write blocker configuration



9.10.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Mar 30 14:56:39 2006

Test case:              SWB-10
Command set:            RWOVU
Number of drives:       3
Protection pattern:     UPP
Test administered by:   DPA
Details logged to file: SWB-10.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

9.10.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	BDEB66F73ECABCA326F047C95761AE4A89C6DBE7
		After	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
\\.\PhysicalDrive2 (CFTT-119)	P	Before	5AC51BAA663778A3677F08A502B91F4689D6029F
		After	5AC51BAA663778A3677F08A502B91F4689D6029F
\\.\PhysicalDrive3 (CFTT-25)	P	Before	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547
		After	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547

9.10.5 Test results analysis

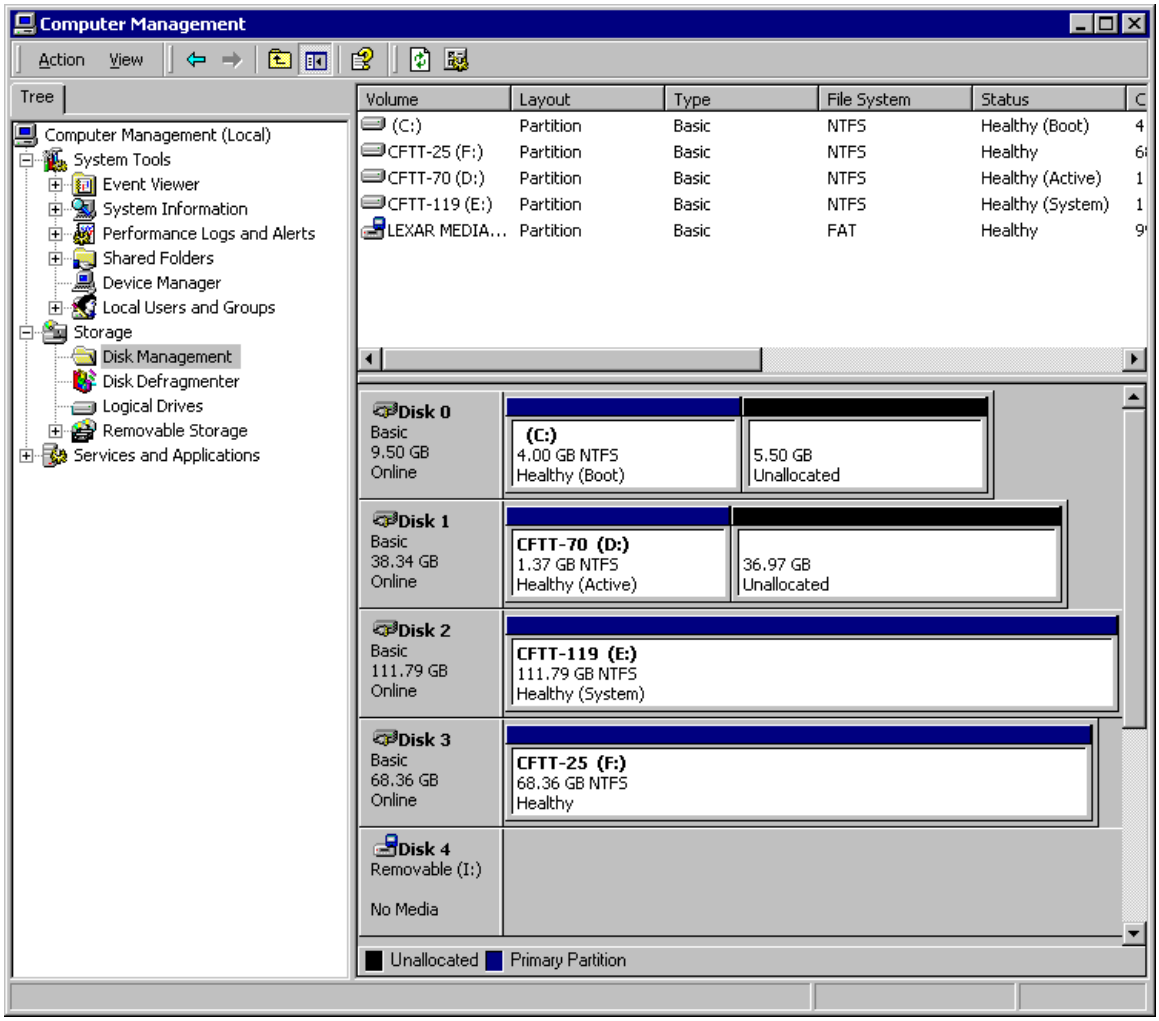
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.11 Test case SWB-11

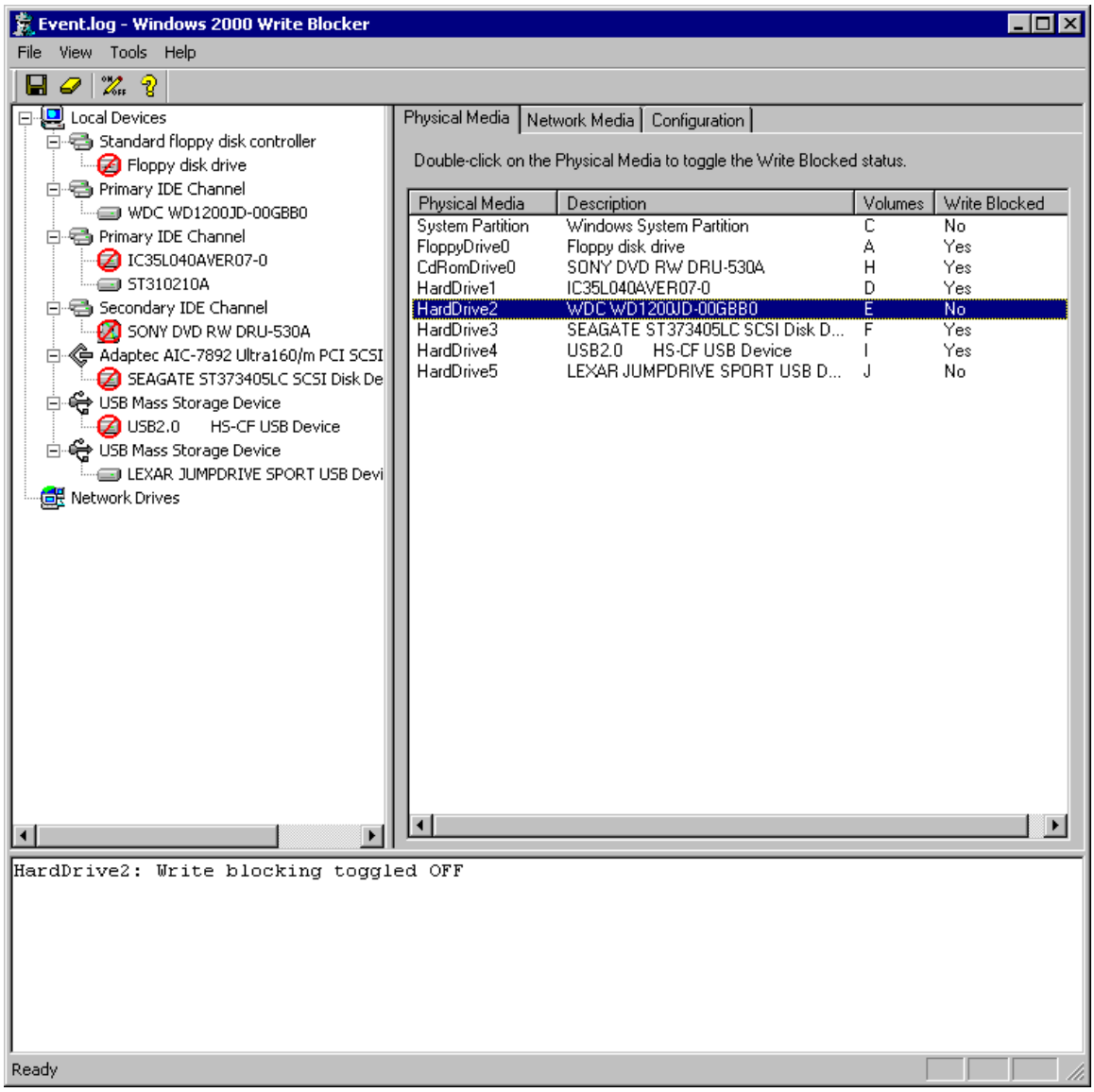
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of three drives protected with the pattern PUP. The expected result of this test is the tool will:

- 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

9.11.1 Hard disk configuration



9.11.2 Write blocker configuration



9.11.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Mar 30 16:27:02 2006

Test case:              SWB-11
Command set:            RWOVU
Number of drives:       3
Protection pattern:     PUP
Test administered by:   DPA
Details logged to file: SWB-11.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

9.11.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
		After	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
\\.\PhysicalDrive2 (CFTT-119)	U	Before	5AC51BAA663778A3677F08A502B91F4689D6029F
		After	7B4D517D0D330103FCD6677AC4BC44C39BB637A1
\\.\PhysicalDrive3 (CFTT-25)	P	Before	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547
		After	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547

9.11.5 Test results analysis

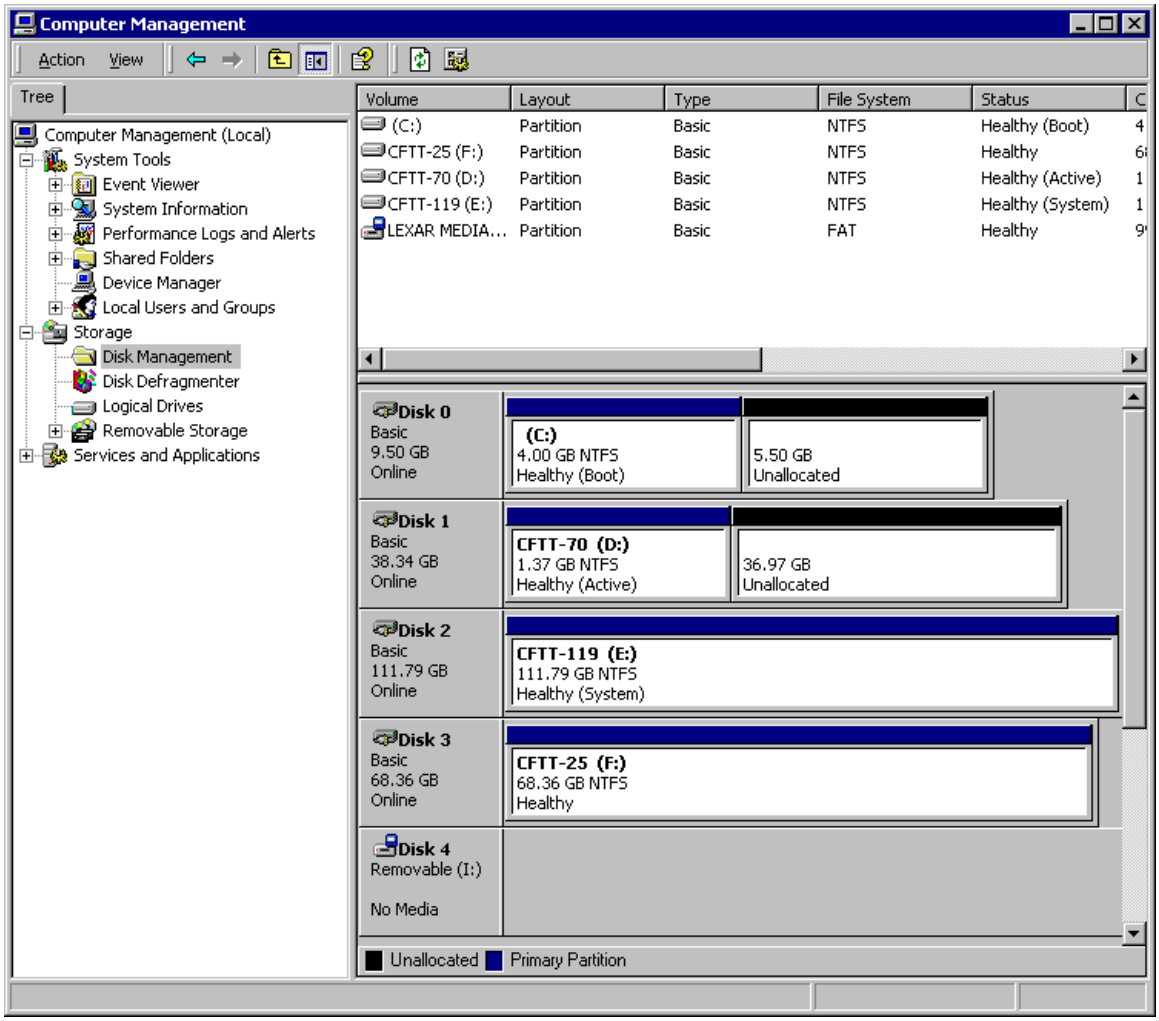
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.12 Test case SWB-12

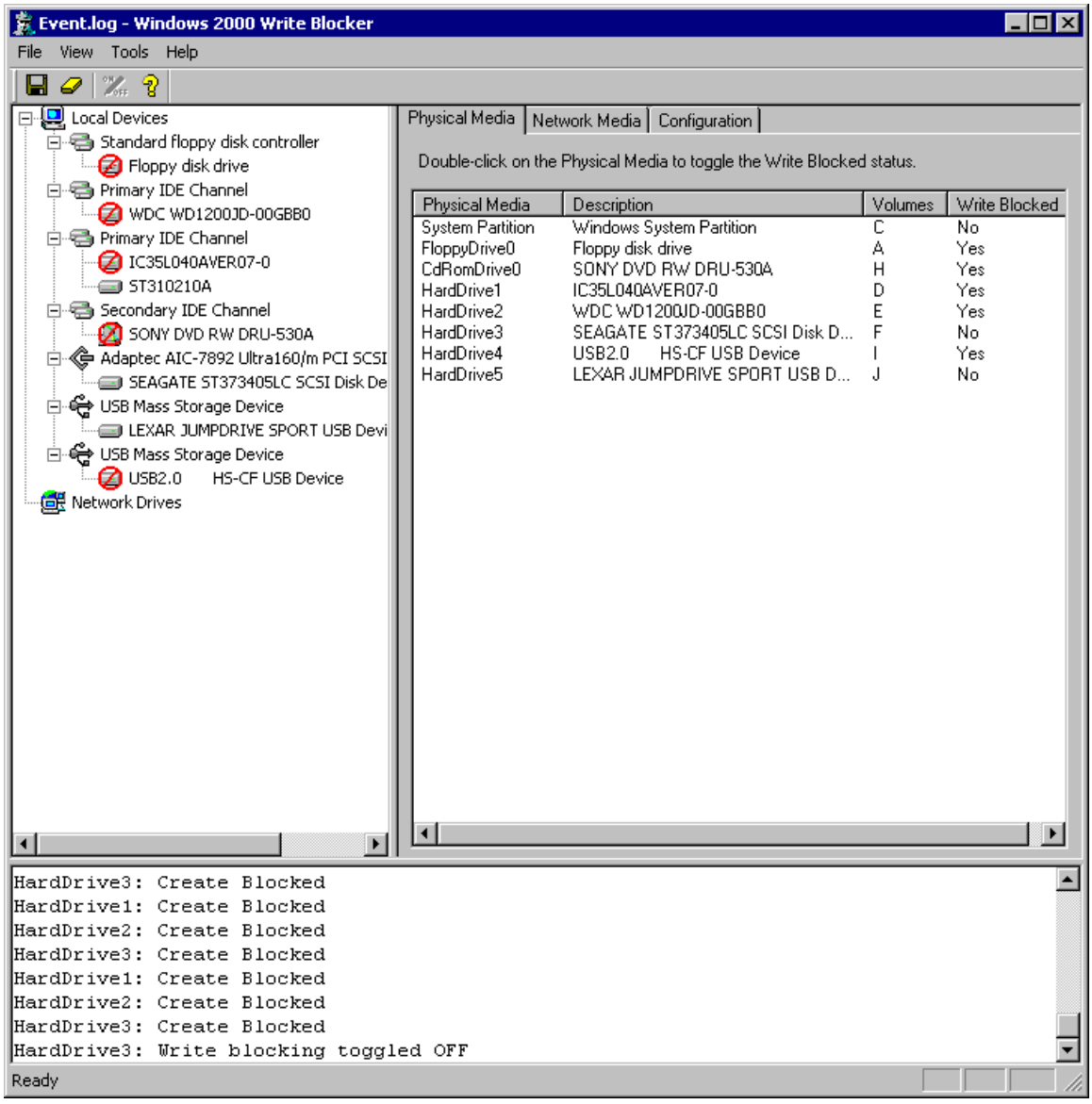
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of three drives protected with the pattern PPU. The expected result of this test is the tool will:

- 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

9.12.1 Hard disk configuration



9.12.2 Write blocker configuration



9.12.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Mar 30 16:27:02 2006

Test case:              SWB-11
Command set:            RWOVU
Number of drives:       3
Protection pattern:     PUP
Test administered by:   DPA
Details logged to file: SWB-11.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

9.12.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
		After	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
\\.\PhysicalDrive2 (CFTT-119)	P	Before	7B4D517D0D330103FCD6677AC4BC44C39BB637A1
		After	7B4D517D0D330103FCD6677AC4BC44C39BB637A1
\\.\PhysicalDrive3 (CFTT-25)	U	Before	1B86BD633B94FF54CE3ED3E6357F1B68DBD79547
		After	ADF1579F0B4ACB5A17D0F647868C78ACD8C6109F

9.12.5 Test results analysis

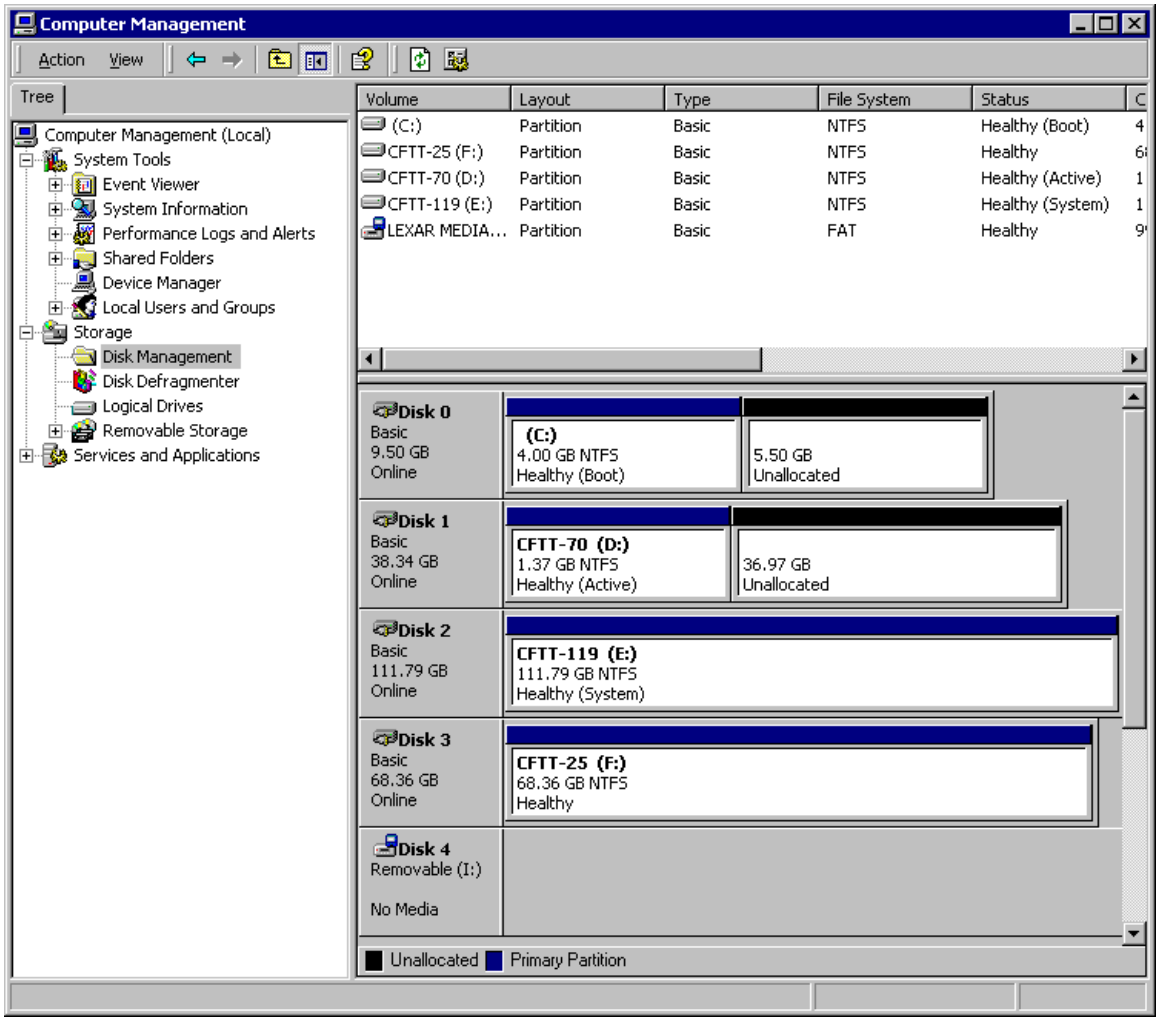
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.13 Test case SWB-13

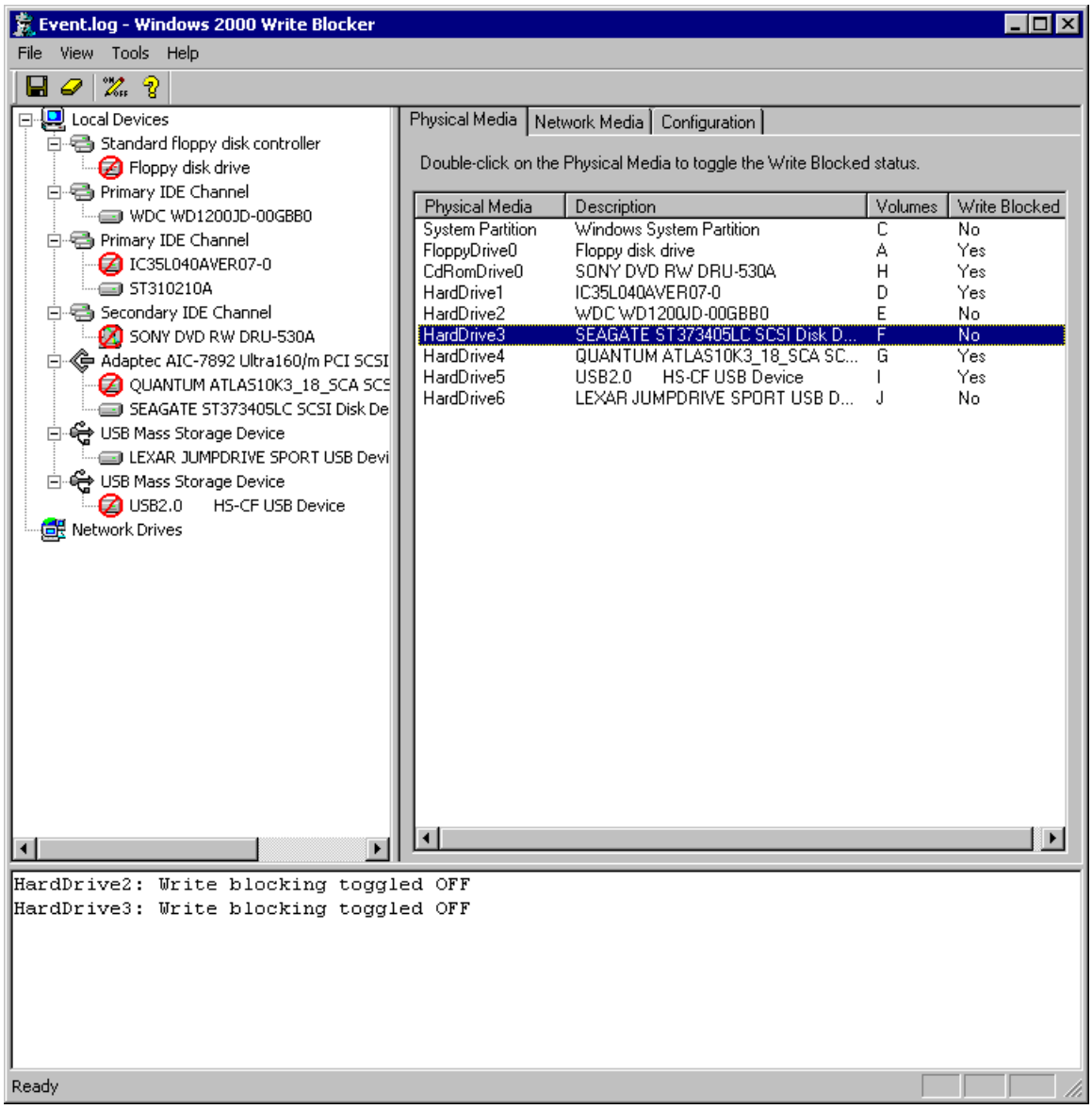
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern NOT_MIDDLE. The expected result of this test is the tool will:

- 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

9.13.1 Hard disk configuration



9.13.2 Write blocker configuration



9.13.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Fri Mar 31 13:43:24 2006

Test case:              SWB-13
Command set:            RWOVU
Number of drives:       4
Protection pattern:     PUUP
Test administered by:   DPA
Details logged to file: SWB-13.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  .............      27          0        27
  Write CDB's .............      22         12        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 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 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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       34
  Other CDB's ................      62          0       62
  Vendor SPecific CDB's ......      80          0       80
  Undefined CDB's.............      53          0       53
```

9.13.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
		After	3E60FCFC2CCA0F89C757FCC608E1F71012F042AC
\\.\PhysicalDrive2 (CFTT-119)	U	Before	7B4D517D0D330103FCD6677AC4BC44C39BB637A1
		After	88C9DC6AA3001F10C1F1109C061A614BCBD62C1B
\\.\PhysicalDrive3 (CFTT-25)	U	Before	ADF1579F0B4ACB5A17D0F647868C78ACD8C6109F
		After	F4D25FF778F15A3C43239400BA2A900CDD9ED64F
\\.\PhysicalDrive4 (CFTT-27)	P	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.13.5 Test results analysis

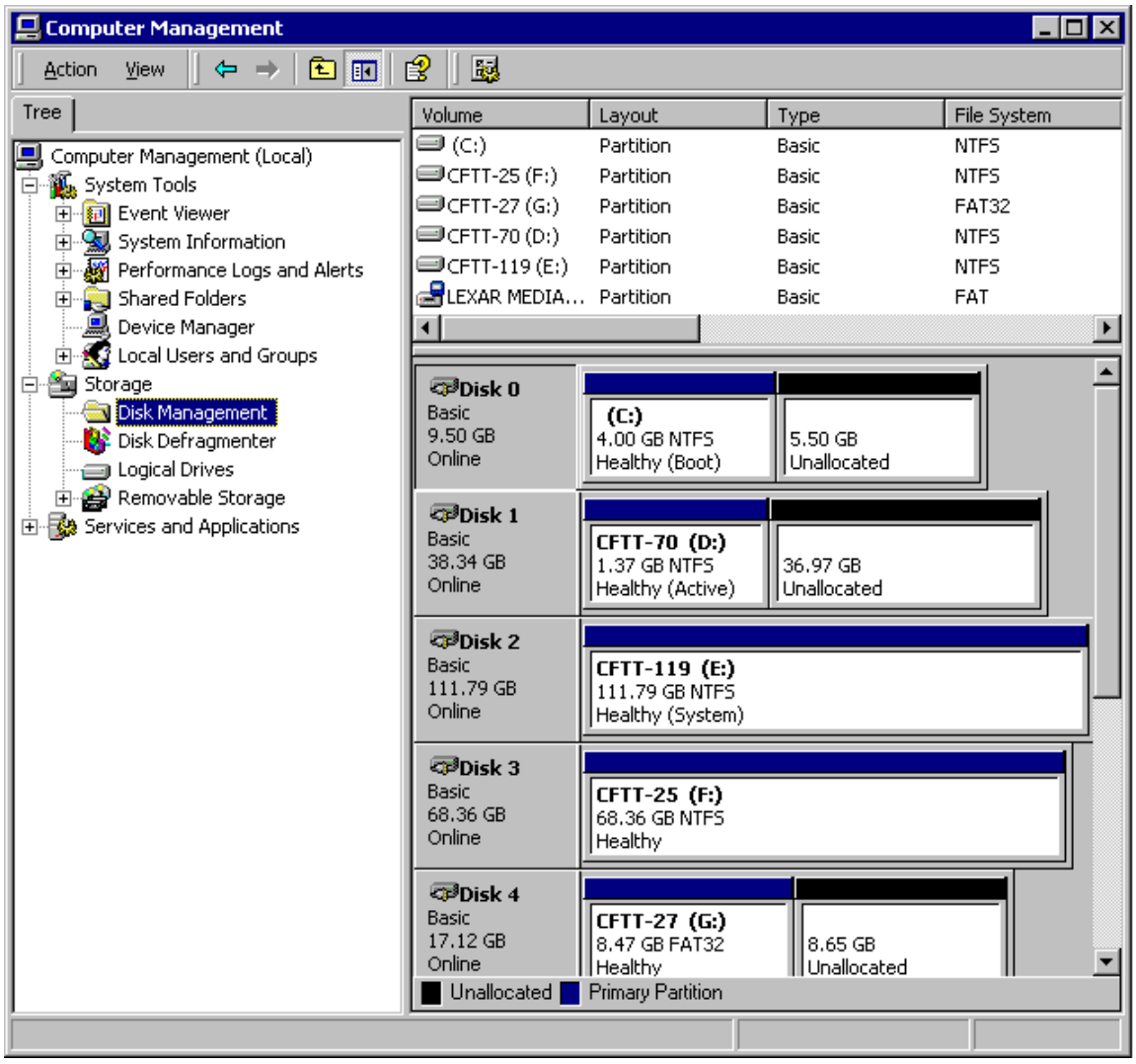
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.14 Test case SWB-14

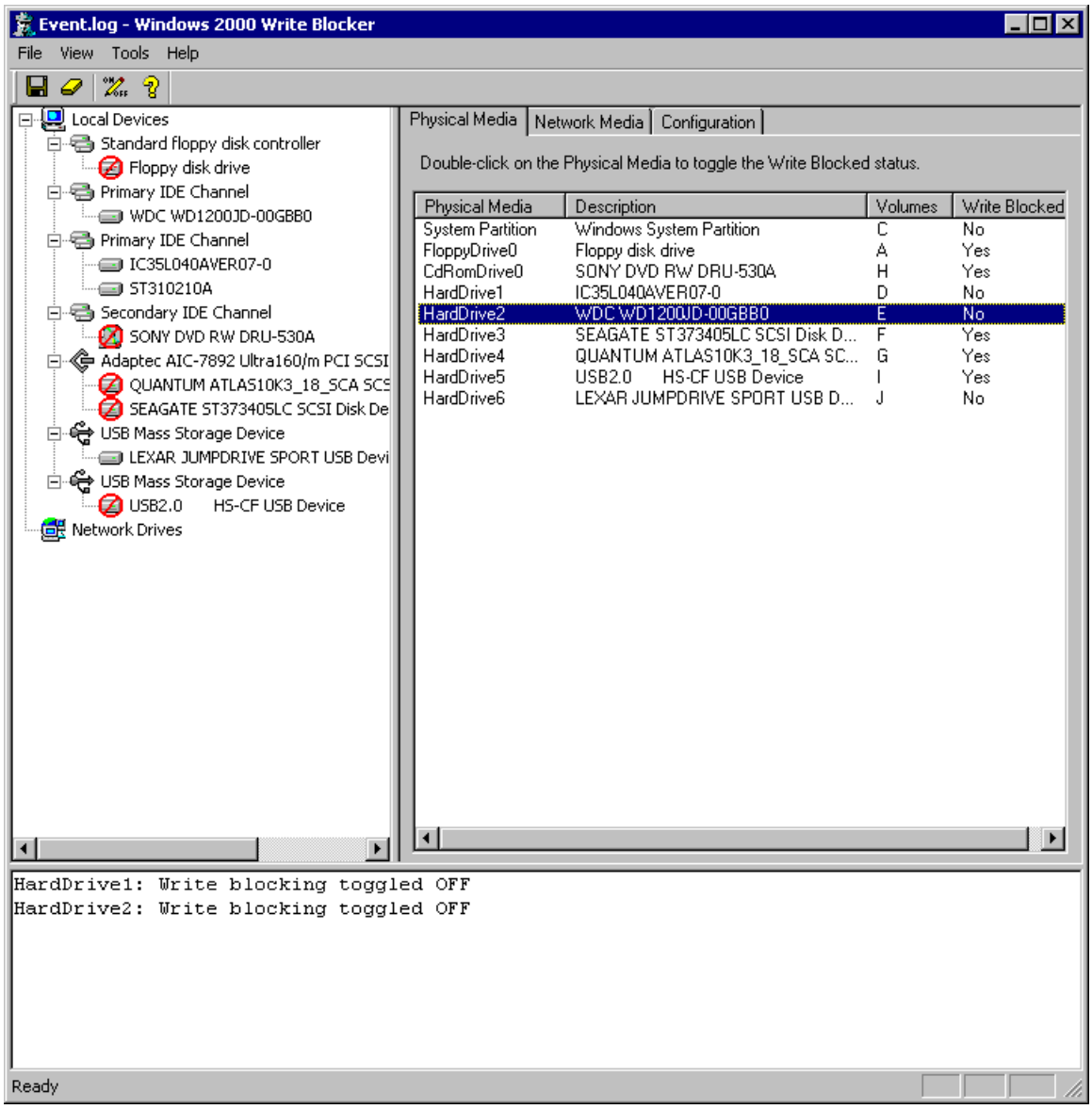
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of four drives protected with the pattern NOT_FIRST. The expected result of this test is the tool will:

- 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

9.14.1 Hard disk configuration



9.14.2 Write blocker configuration



9.14.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Fri May 12 10:13:47 2006

Test case:              SWB-14
Command set:            RWOVU
Number of drives:       4
Protection pattern:     UUPP
Test administered by:   DPA
Details logged to file: SWB-14.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ................       4          0        4
  Write IRP's ...............       4          4        8
  Other IRP's ...............      15          0       15

  Read CDB's  ...............      27          0       27
  Write CDB's ...............      22         12       34
  Other CDB's ...............      62          0       62
  Vendor SPecific CDB's .....      80          0       80
  Undefined CDB's............      53          0       53
```

9.14.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	61A09D9D3DC9B836C0100DE40F5FA72A93241A80
\\.\PhysicalDrive2 (CFTT-119)	U	Before	50A1A42EE6C058B621DB374FA52FF68EFDC14390
		After	1DA330F4A9A535E0FB27E049745F39E7477C8371
\\.\PhysicalDrive3 (CFTT-25)	P	Before	F96F2865DC588885DC005E9E6B38E58358CEB1EF
		After	F96F2865DC588885DC005E9E6B38E58358CEB1EF
\\.\PhysicalDrive4 (CFTT-27)	P	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.14.5 Test results analysis

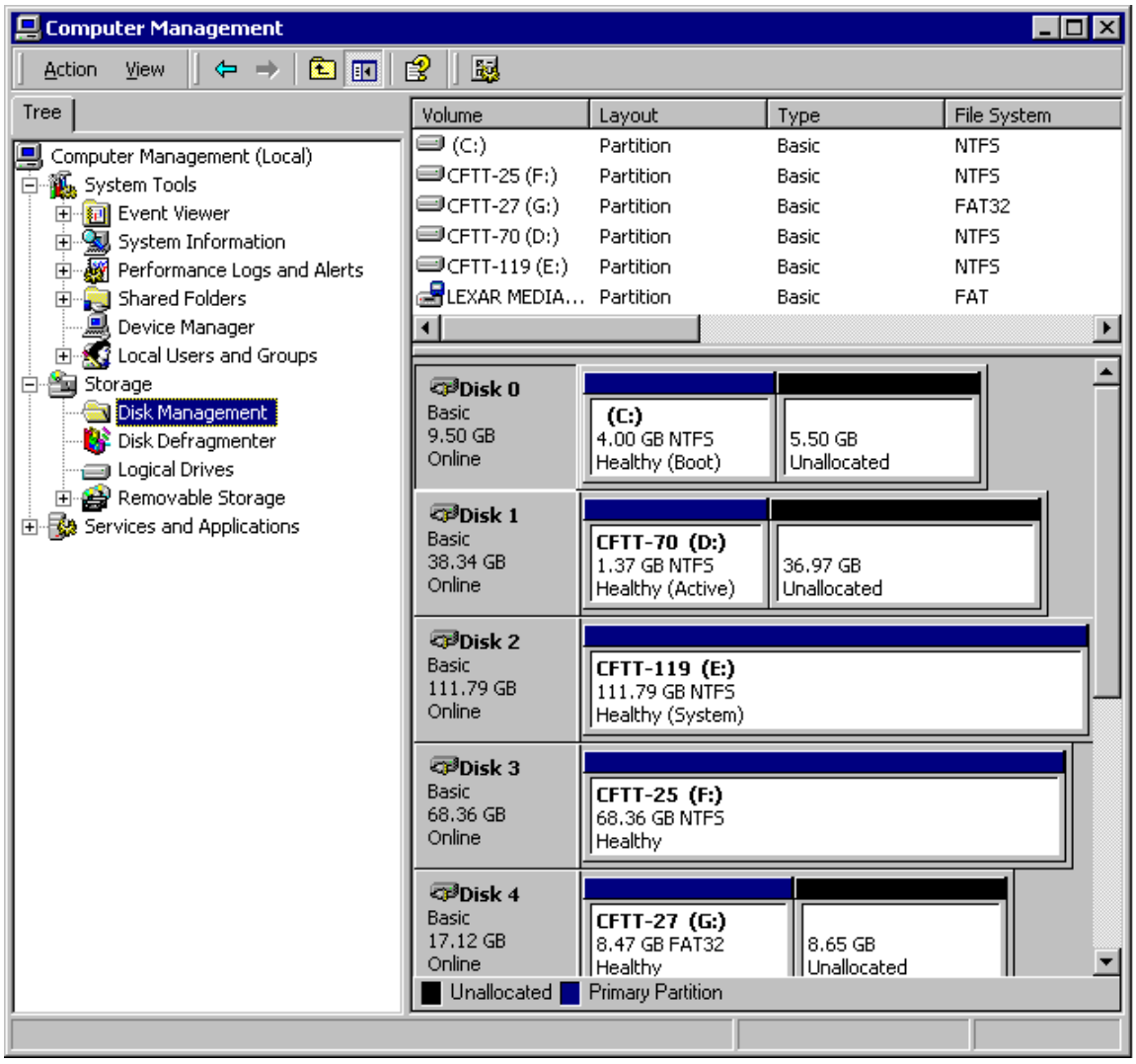
The tool failed to produce the expected result. The number of drives configured and the pattern of protection applied did not alter the ability of the tool to protect designated drives. However, the tool failed to block all commands in the protected categories. The protection failures observed were identical to those of tests SWB-03, SWB-04, and SWB-06.

9.15 Test case SWB-15

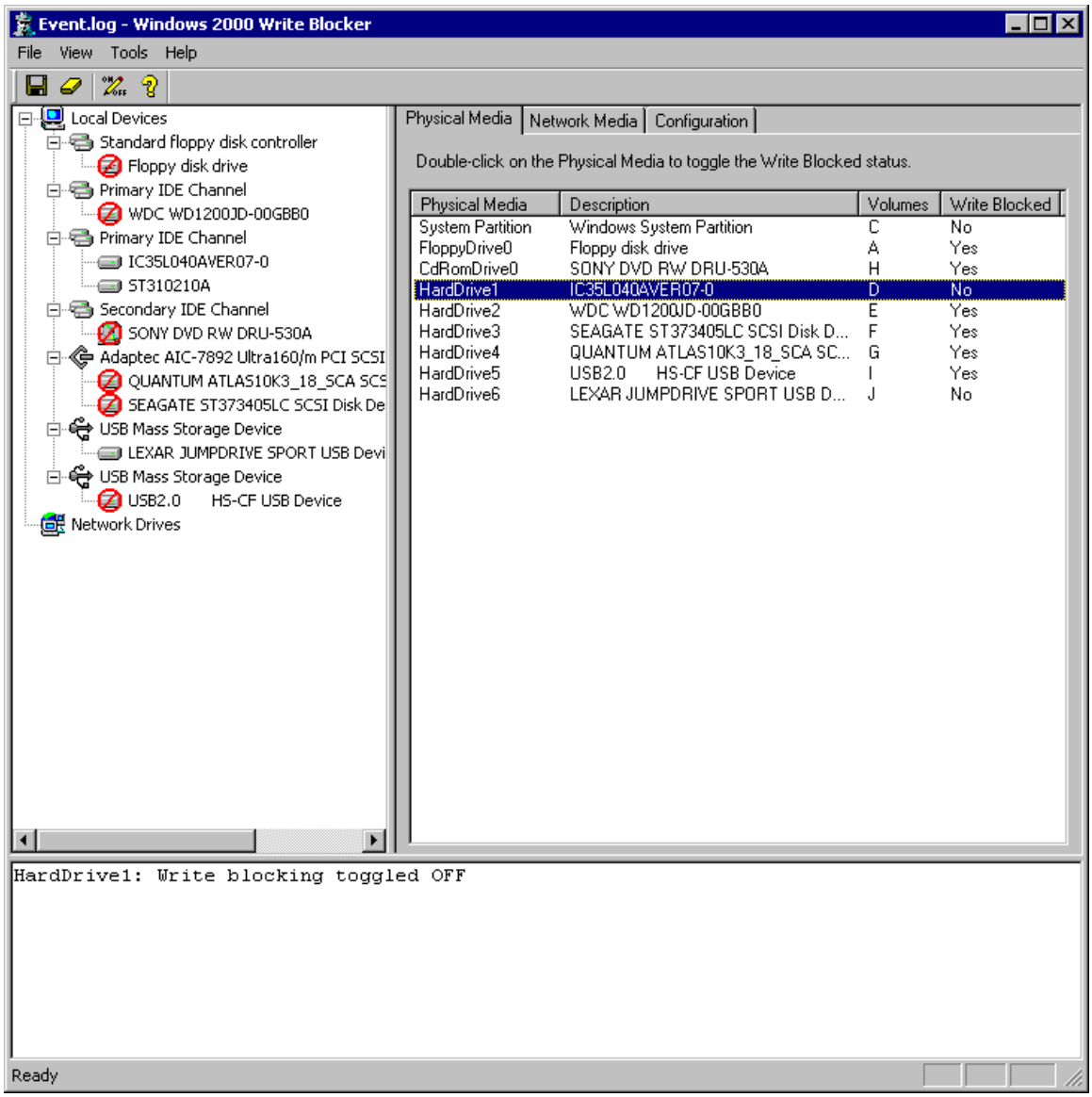
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern NOT_FIRST. The expected result of this test is the tool will:

- 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

9.15.1 Hard disk configuration



9.15.2 Write blocker configuration



9.15.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Apr 06 10:29:16 2006

Test case:              SWB-15
Command set:            RWOVU
Number of drives:       4
Protection pattern:     UPPP
Test administered by:   DPA
Details logged to file: SWB-15.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-----------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ................       4          0        4
  Write IRP's ...............       4          4        8
  Other IRP's ...............      15          0       15

  Read CDB's  ...............      27          0       27
  Write CDB's ...............      22         12       34
  Other CDB's ...............      62          0       62
  Vendor SPecific CDB's .....      80          0       80
  Undefined CDB's............      53          0       53
```

9.15.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	DD28B6EB3F83631A6B917A07EE73A7AD123EEEAD
		After	0AE96E7A9BF49335BD2F64553D4BB917626CE63C
\\.\PhysicalDrive2 (CFTT-119)	P	Before	DBA4F06AFA484833AE3C2EE3F91C5E42623C9205
		After	DBA4F06AFA484833AE3C2EE3F91C5E42623C9205
\\.\PhysicalDrive3 (CFTT-25)	P	Before	F4D25FF778F15A3C43239400BA2A900CDD9ED64F
		After	F4D25FF778F15A3C43239400BA2A900CDD9ED64F
\\.\PhysicalDrive4 (CFTT-27)	P	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.15.5 Test results analysis

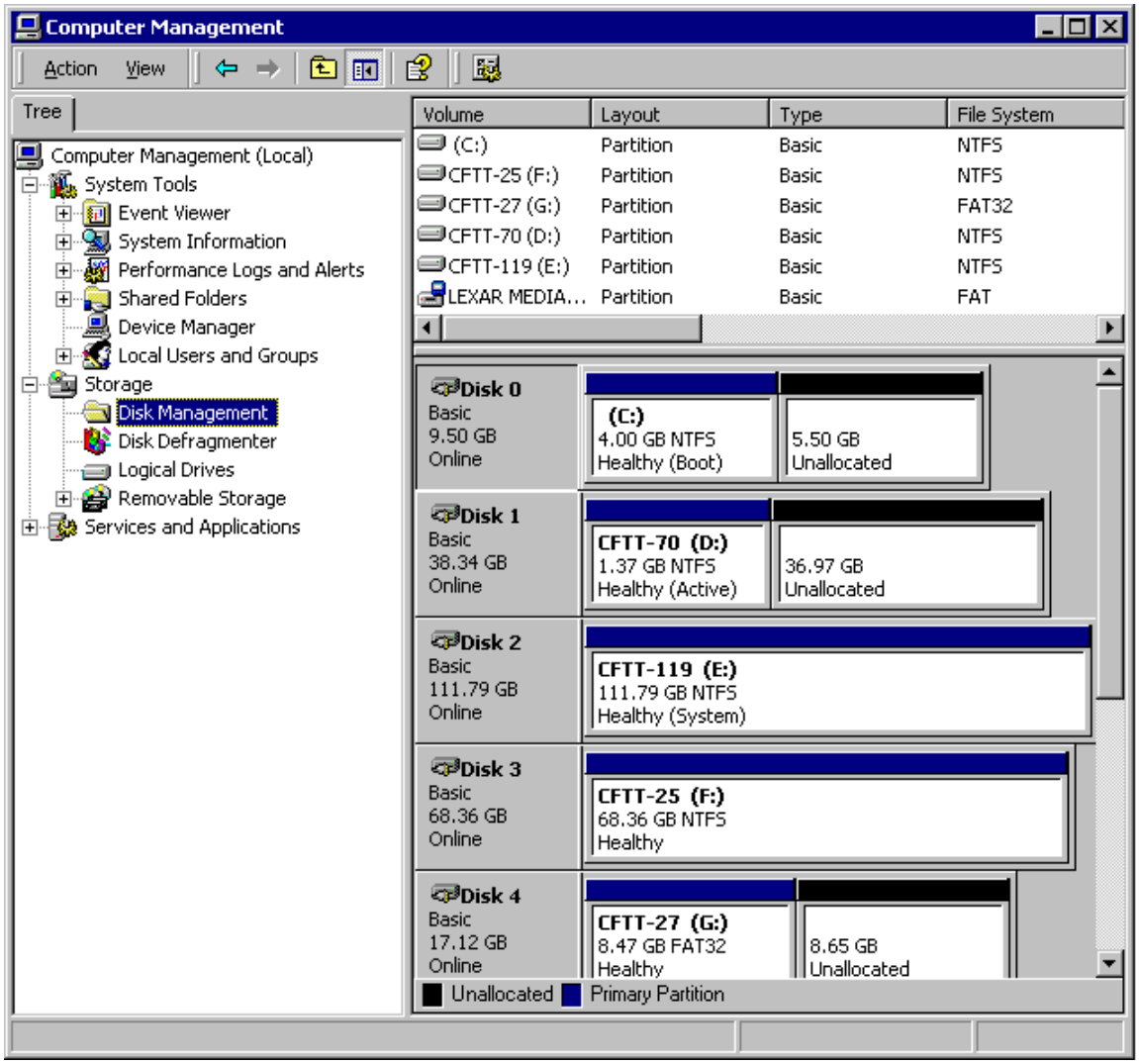
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.16 Test case SWB-16

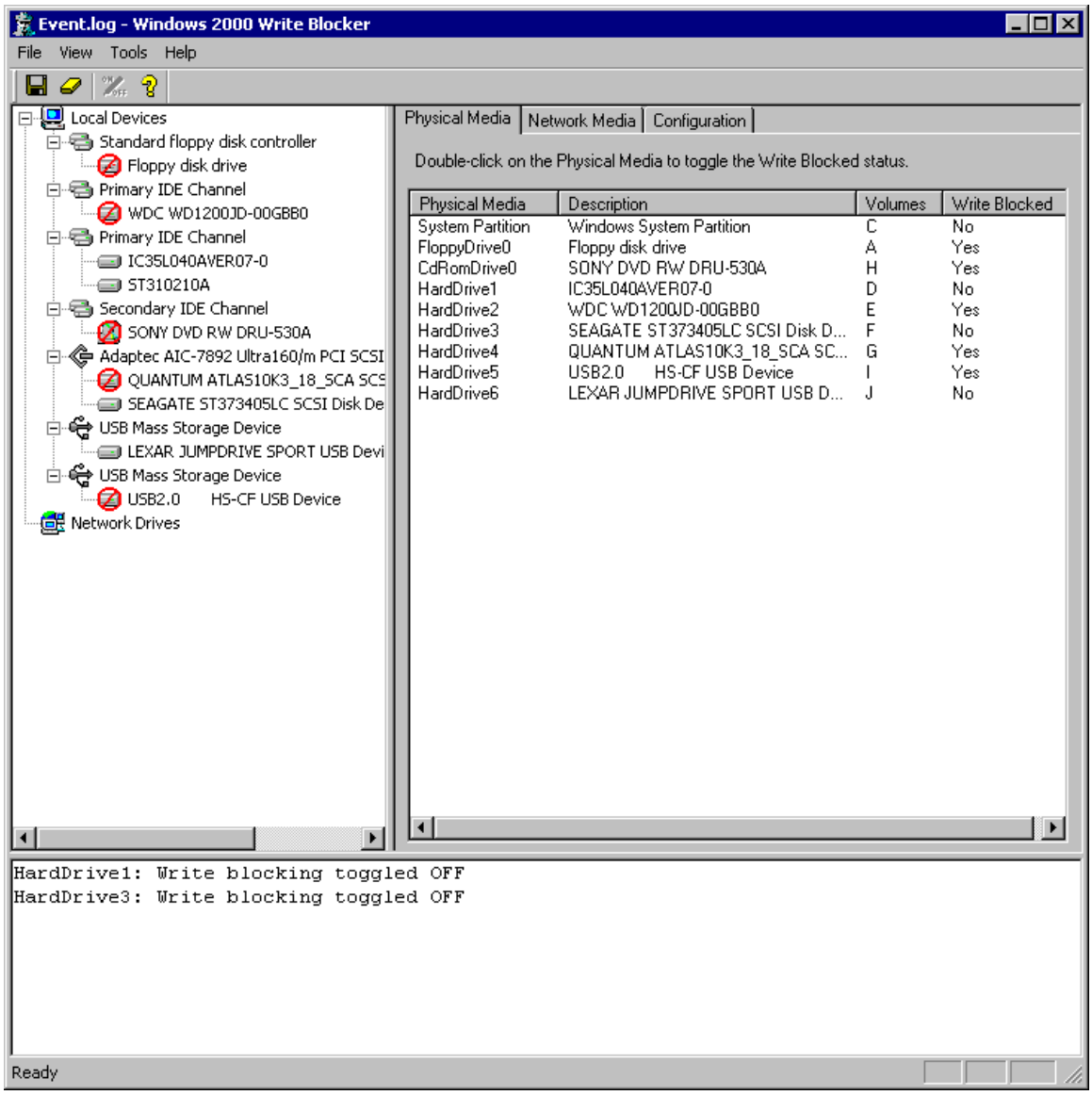
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of four drives protected with the pattern EVEN. The expected result of this test is the tool will:

- 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

9.16.1 Hard disk configuration



9.16.2 Write blocker configuration



9.16.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Apr 06 15:07:26 2006

Test case:              SWB-16
Command set:            RWOVU
Number of drives:       4
Protection pattern:     UPUP
Test administered by:   DPA
Details logged to file: SWB-16.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ................       4          0        4
  Write IRP's ...............       4          4        8
  Other IRP's ...............      15          0       15

  Read CDB's  ...............      27          0       27
  Write CDB's ...............      22         12       34
  Other CDB's ...............      62          0       62
  Vendor SPecific CDB's .....      80          0       80
  Undefined CDB's............      53          0       53
```

9.16.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	0AE96E7A9BF49335BD2F64553D4BB917626CE63C
		After	ECB0F9D42242E83F9CFF624E0D5F408A9FA7E6DD
\\.\PhysicalDrive2 (CFTT-119)	P	Before	DBA4F06AFA484833AE3C2EE3F91C5E42623C9205
		After	DBA4F06AFA484833AE3C2EE3F91C5E42623C9205
\\.\PhysicalDrive3 (CFTT-25)	U	Before	F4D25FF778F15A3C43239400BA2A900CDD9ED64F
		After	9C5EA8DA3F847431EAE01816D403D223714AD1FA
\\.\PhysicalDrive4 (CFTT-27)	P	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.16.5 Test results analysis

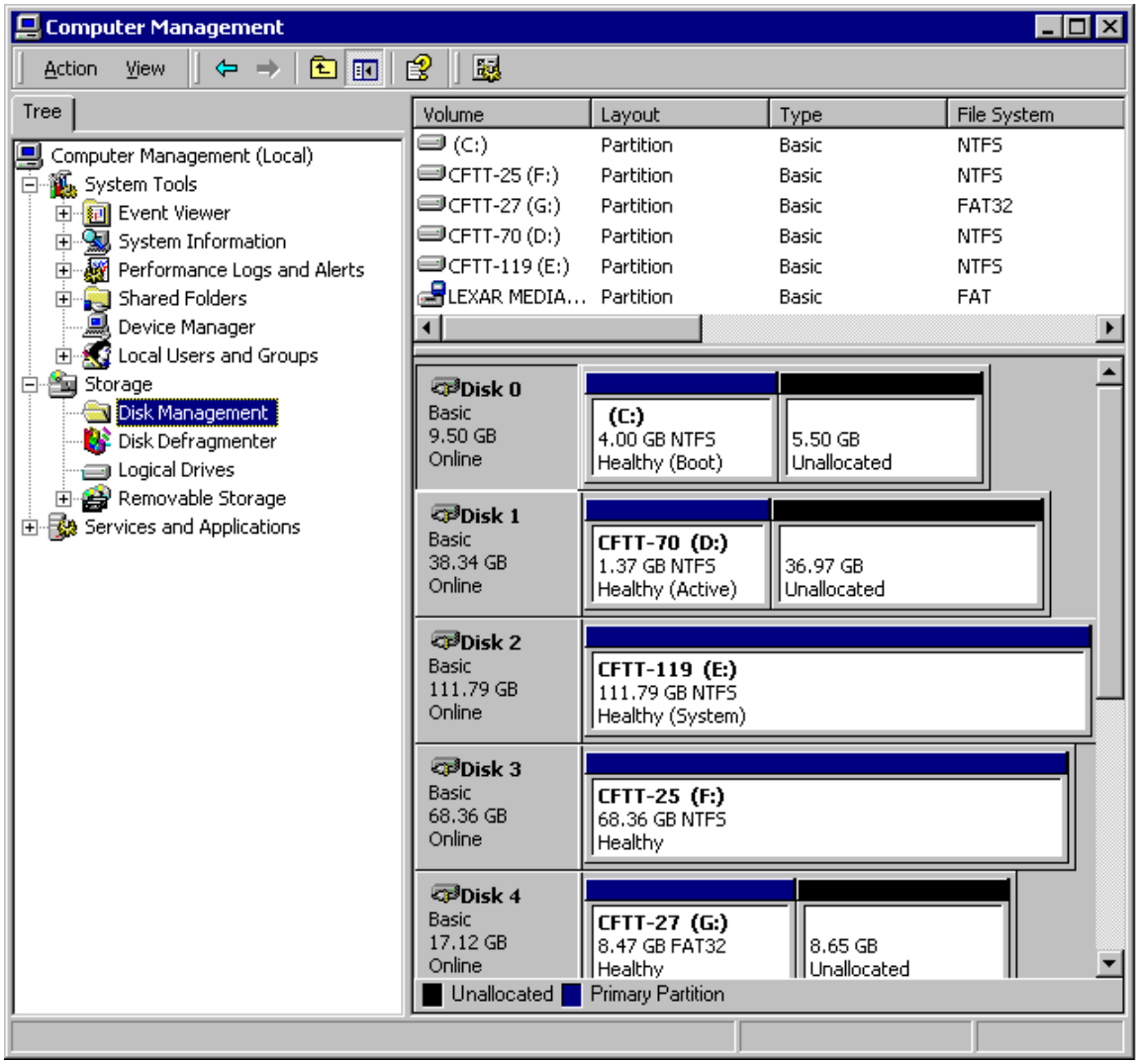
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.17 Test case SWB-17

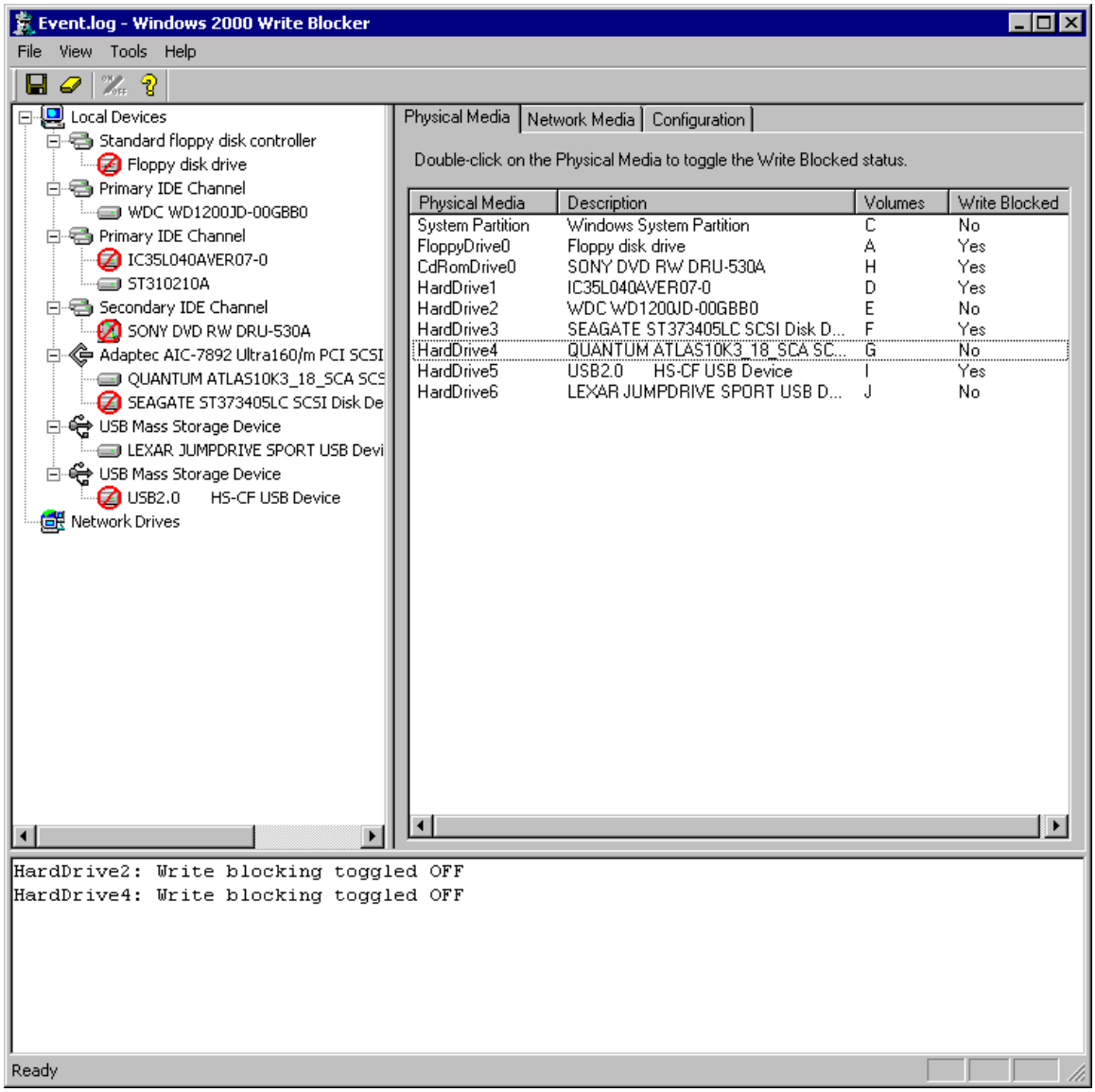
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of four drives protected with the pattern ODD. The expected result of this test is the tool will:

- 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

9.17.1 Hard disk configuration



9.17.2 Write blocker configuration



9.17.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Apr 06 16:25:12 2006

Test case:              SWB-17
Command set:            RWOVU
Number of drives:       4
Protection pattern:     PUPU
Test administered by:   DPA
Details logged to file: SWB-17.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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
```

9.17.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	ECB0F9D42242E83F9CFF624E0D5F408A9FA7E6DD
		After	ECB0F9D42242E83F9CFF624E0D5F408A9FA7E6DD
\\.\PhysicalDrive2 (CFTT-119)	U	Before	DBA4F06AFA484833AE3C2EE3F91C5E42623C9205
		After	131A45DDF90F036AAE15A9D18A140833AF932A07
\\.\PhysicalDrive3 (CFTT-25)	P	Before	9C5EA8DA3F847431EAE01816D403D223714AD1FA
		After	9C5EA8DA3F847431EAE01816D403D223714AD1FA
\\.\PhysicalDrive4 (CFTT-27)	U	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.17.5 Test results analysis

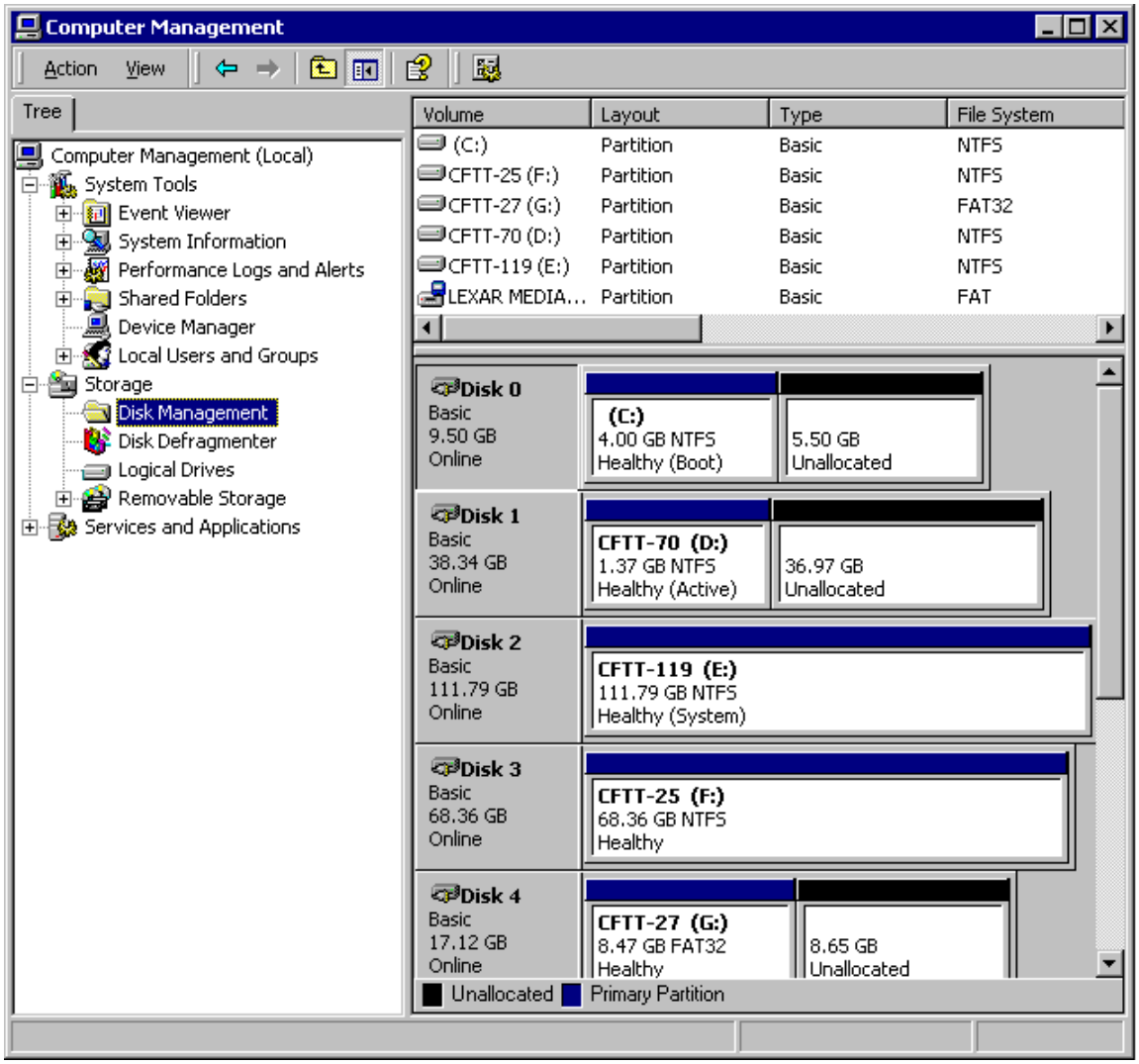
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.18 Test case SWB-18

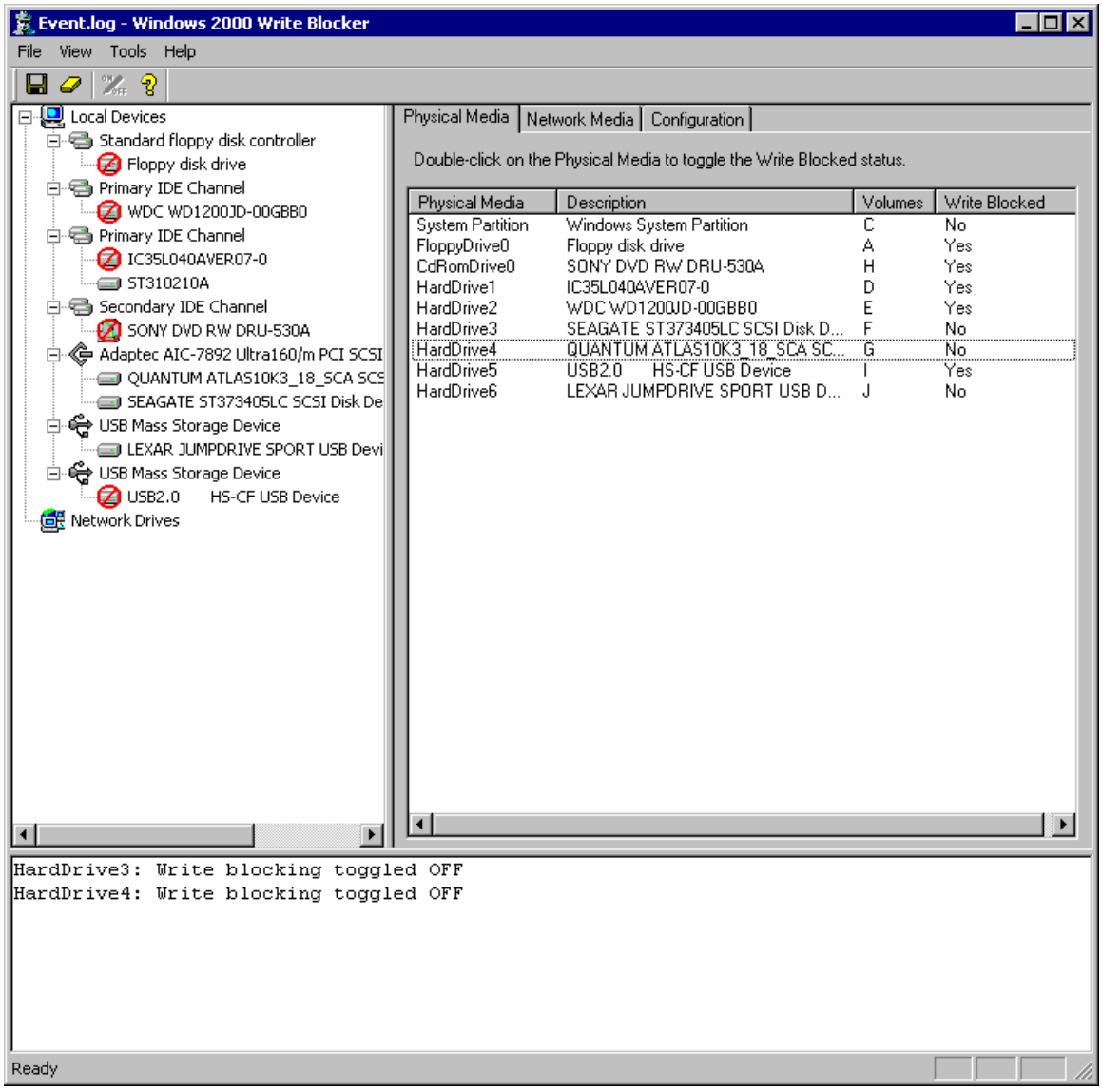
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of four drives protected with the pattern FIRST. The expected result of this test is the tool will:

- 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

9.18.1 Hard disk configuration



9.18.2 Write blocker configuration



9.18.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Tue Apr 18 10:58:26 2006

Test case:              SWB-18
Command set:            RWOVU
Number of drives:       4
Protection pattern:     PPUU
Test administered by:   DPS
Details logged to file: SWB-18.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 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
```

9.18.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	ECB0F9D42242E83F9CFF624E0D5F408A9FA7E6DD
		After	7CA790CE7D88AE88DB474EA036D2FBA0CBE46609
\\.\PhysicalDrive2 (CFTT-119)	P	Before	131A45DDF90F036AAE15A9D18A140833AF932A07
		After	336468E49C86BCF47D6B6EC157C83F6546F680E7
\\.\PhysicalDrive3 (CFTT-25)	U	Before	9C5EA8DA3F847431EAE01816D403D223714AD1FA
		After	1855E34326E0786F34737DDC72197977980BBB77
\\.\PhysicalDrive4 (CFTT-27)	U	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	C4848A0D8BB04D5D684A51F966BE009C7E47EFAA

9.18.5 Test results analysis

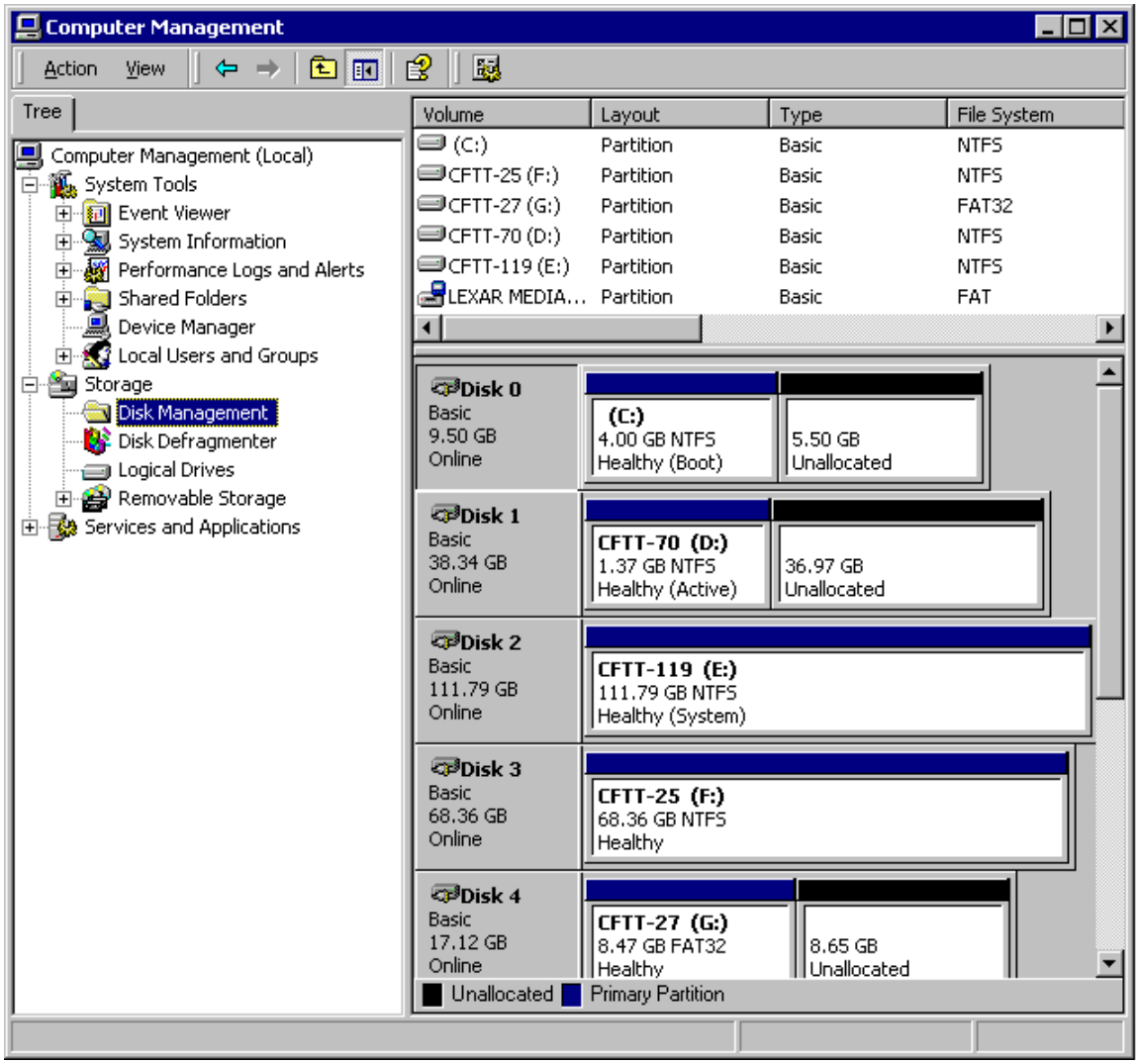
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.19 Test case SWB-19

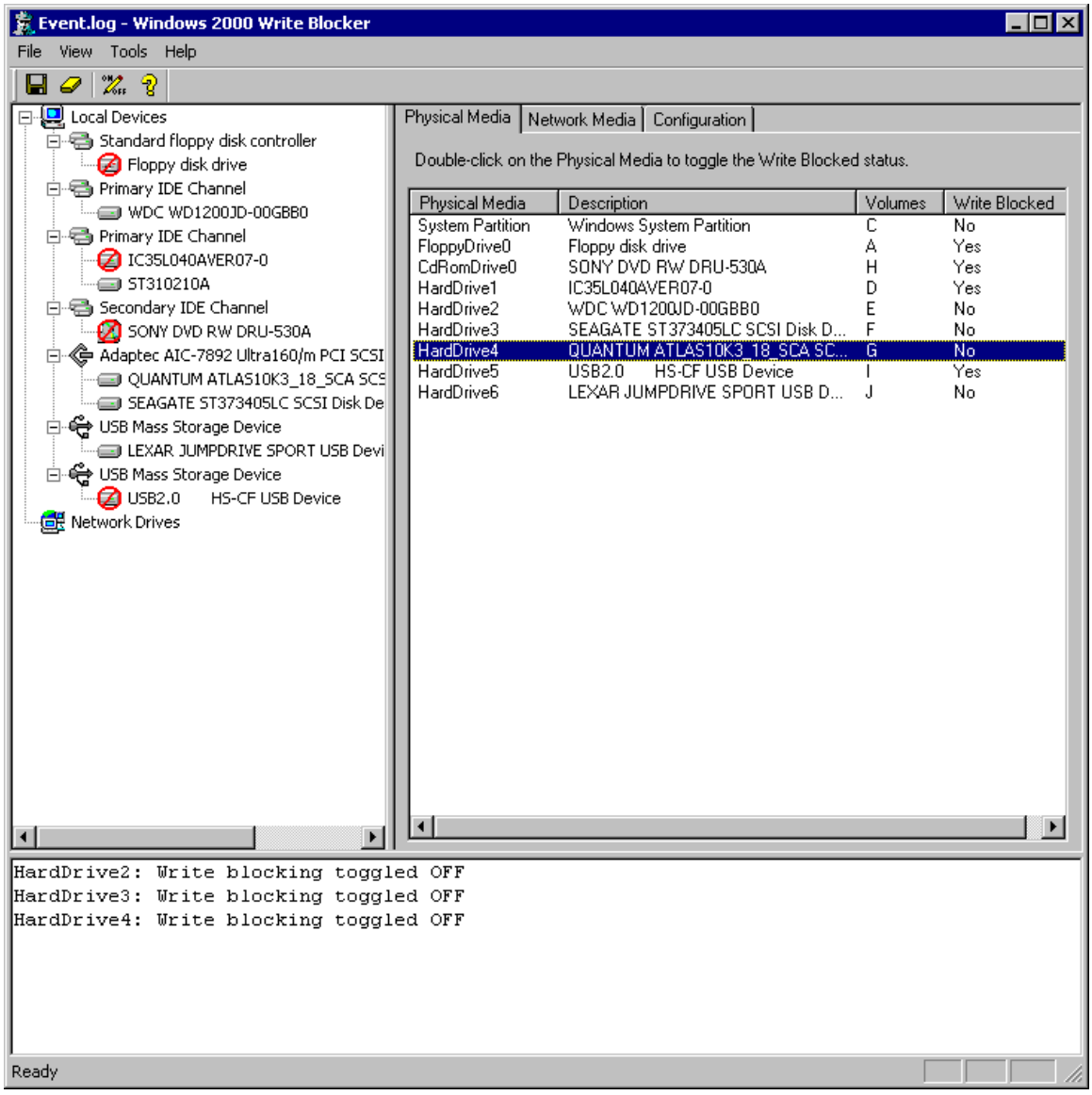
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06 It issues all possible commands to a set of four drives protected with the pattern FIRST. The expected result of this test is the tool will:

- 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

9.19.1 Hard disk configuration



9.19.2 Write blocker configuration



9.19.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Tue Apr 18 14:51:16 2006

Test case:              SWB-19
Command set:            RWOVU
Number of drives:       4
Protection pattern:     PUUU
Test administered by:   DPA
Details logged to file: SWB-19.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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 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 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
```

9.19.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	7CA790CE7D88AE88DB474EA036D2FBA0CBE46609
		After	7CA790CE7D88AE88DB474EA036D2FBA0CBE46609
\\.\PhysicalDrive2 (CFTT-119)	U	Before	336468E49C86BCF47D6B6EC157C83F6546F680E7
		After	0D65AB595B26DAB353A9DA4B9D41AF8894912510
\\.\PhysicalDrive3 (CFTT-25)	U	Before	1855E34326E0786F34737DDC72197977980BBB77
		After	E465187EE396FFA8AEEB2F6E8FA0957A02AC1FBD
\\.\PhysicalDrive4 (CFTT-27)	U	Before	C4848A0D8BB04D5D684A51F966BE009C7E47EFAA
		After	C4848A0D8BB04D5D684A51F966BE009C7E47EFAA

9.19.5 Test results analysis

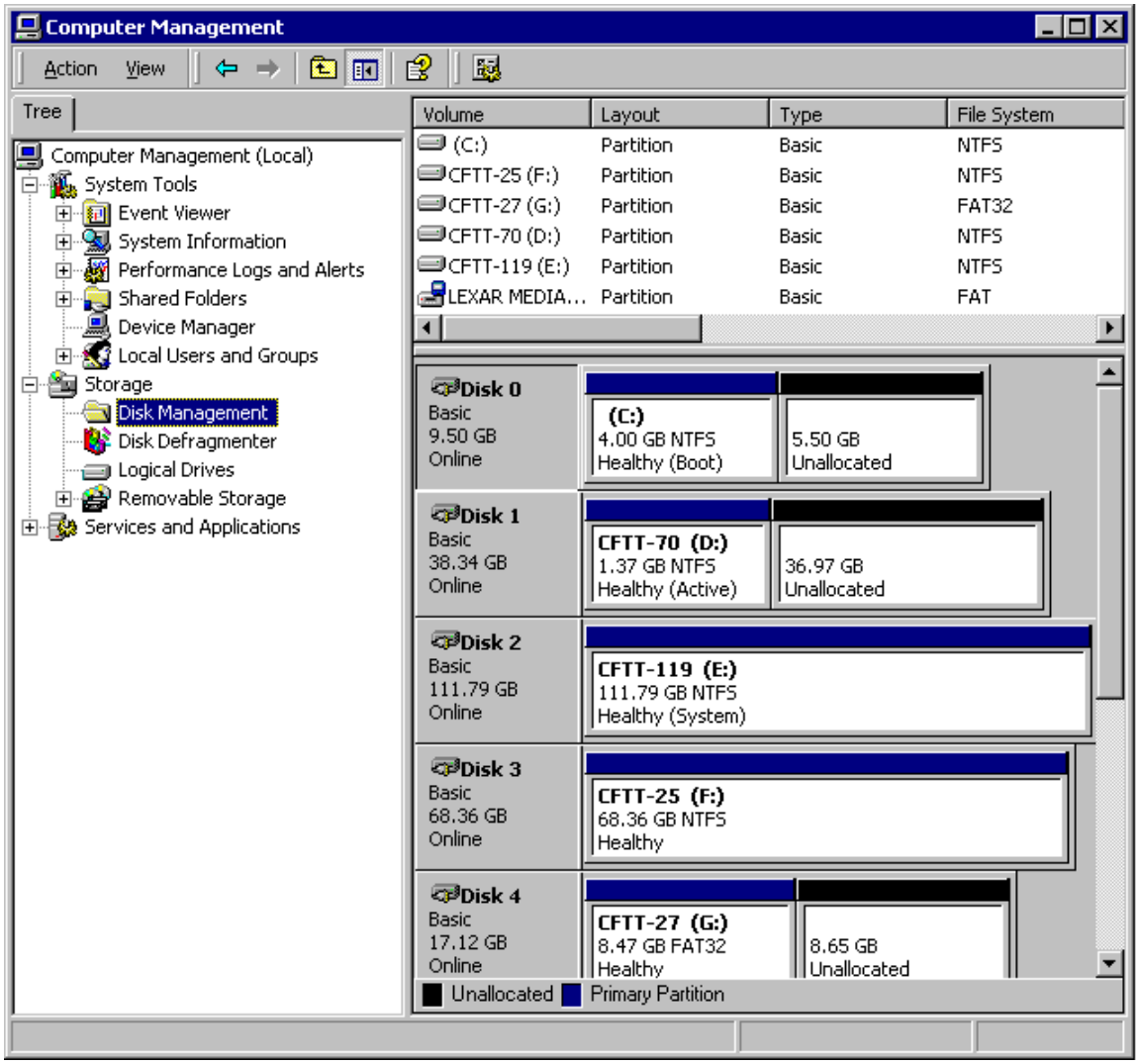
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.20 Test case SWB-20

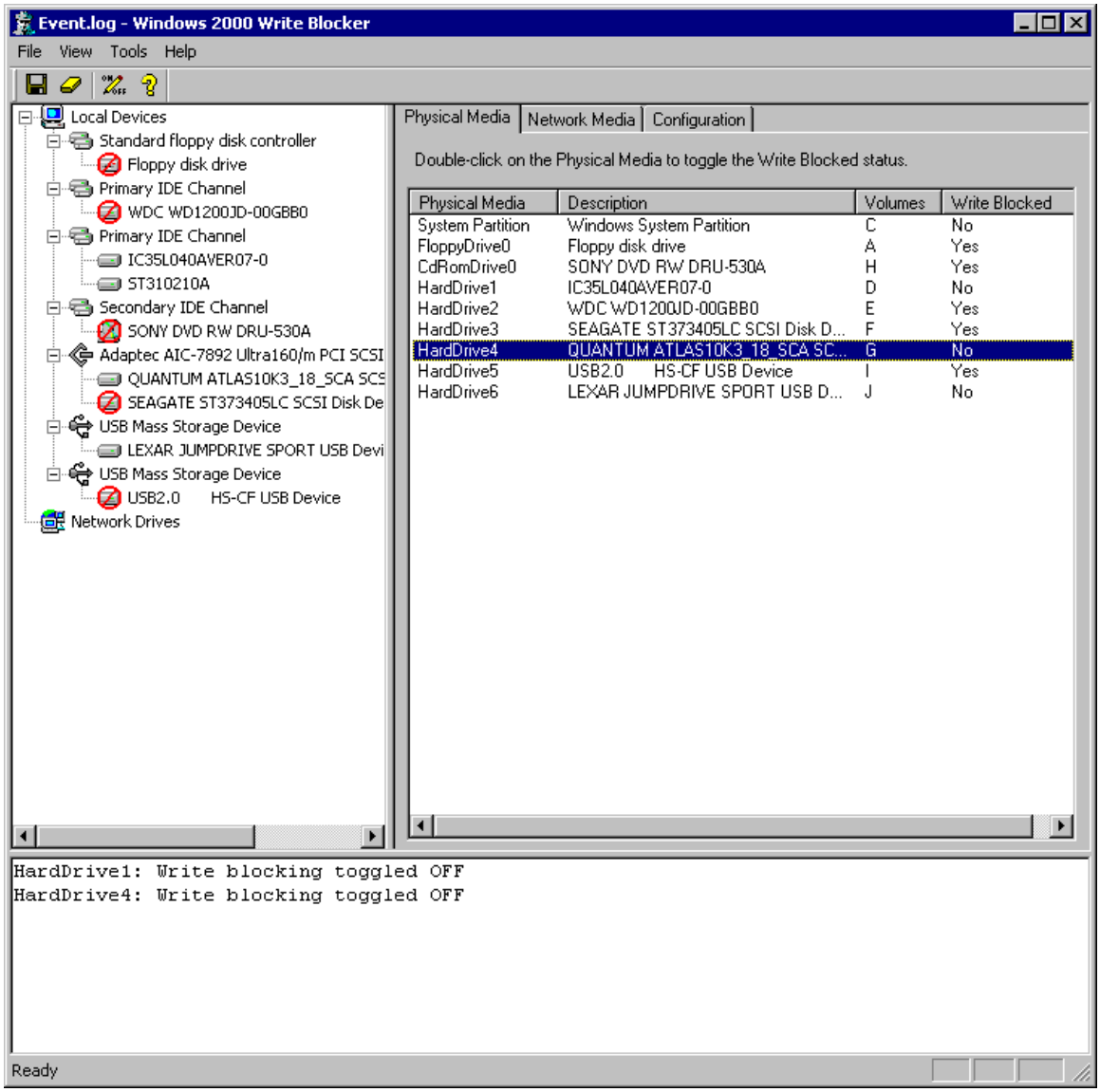
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern MIDDLE. The expected result of this test is the tool will:

- 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

9.20.1 Hard disk configuration



9.20.2 Write blocker configuration



9.20.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Tue Apr 18 16:24:06 2006

Test case:              SWB-20
Command set:            RWOVU
Number of drives:       4
Protection pattern:     UPPU
Test administered by:   DPA
Details logged to file: SWB-20.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-----------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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
```

9.20.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	ECB0F9D42242E83F9CFF624E0D5F408A9FA7E6DD
		After	EB74D63A59F2CB623A9AC581E8ACCC904B1F7704
\\.\PhysicalDrive2 (CFTT-119)	P	Before	BCAD400D8ECBFDB2B99DBB7B2D319DC218EDEB31
		After	BCAD400D8ECBFDB2B99DBB7B2D319DC218EDEB31
\\.\PhysicalDrive3 (CFTT-25)	P	Before	F35DD2C28F83DDDA9B4A828B425442F520FDDDDE
		After	F35DD2C28F83DDDA9B4A828B425442F520FDDDDE
\\.\PhysicalDrive4 (CFTT-27)	U	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.20.5 Test results analysis

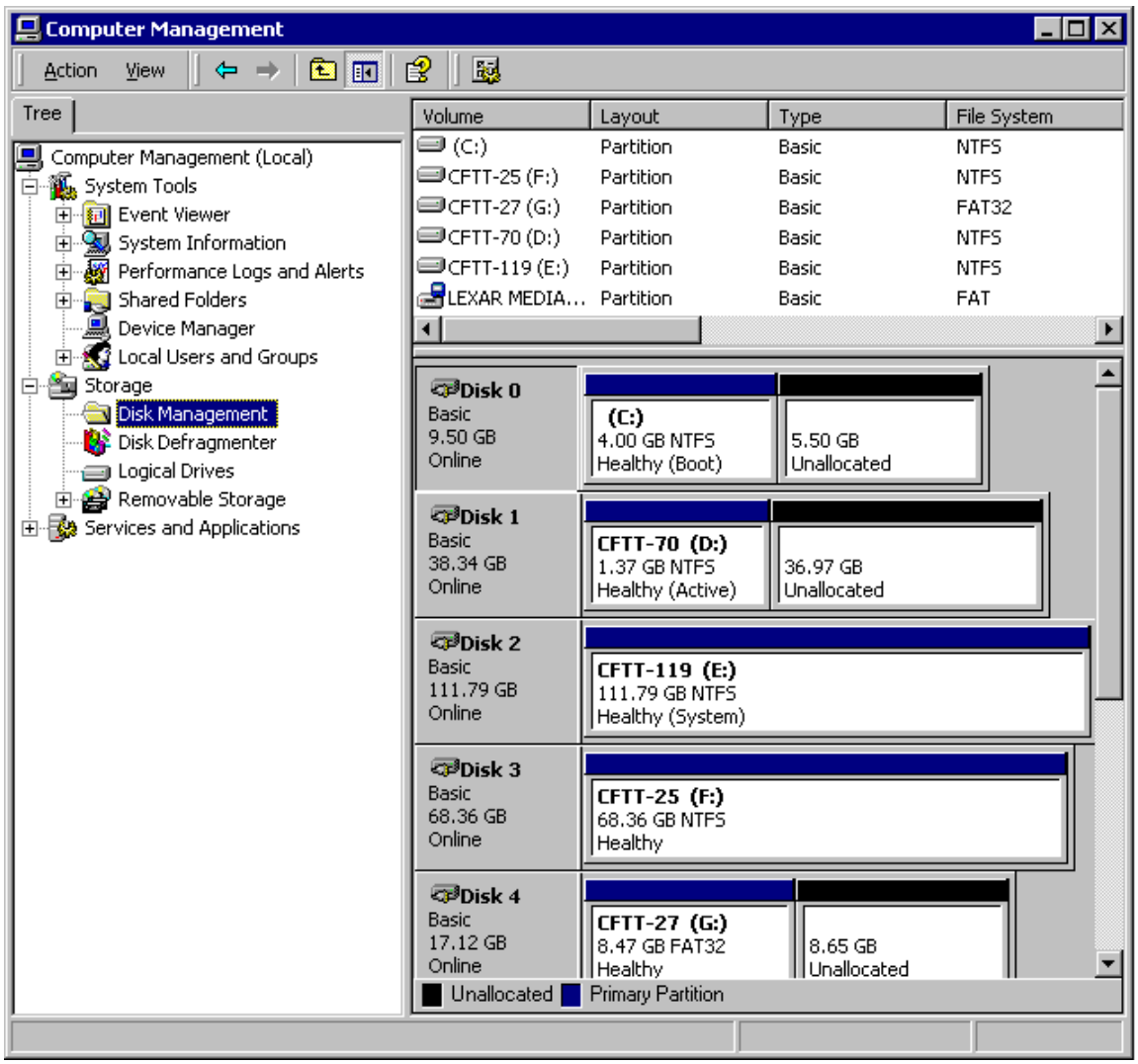
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.21 Test case SWB-21

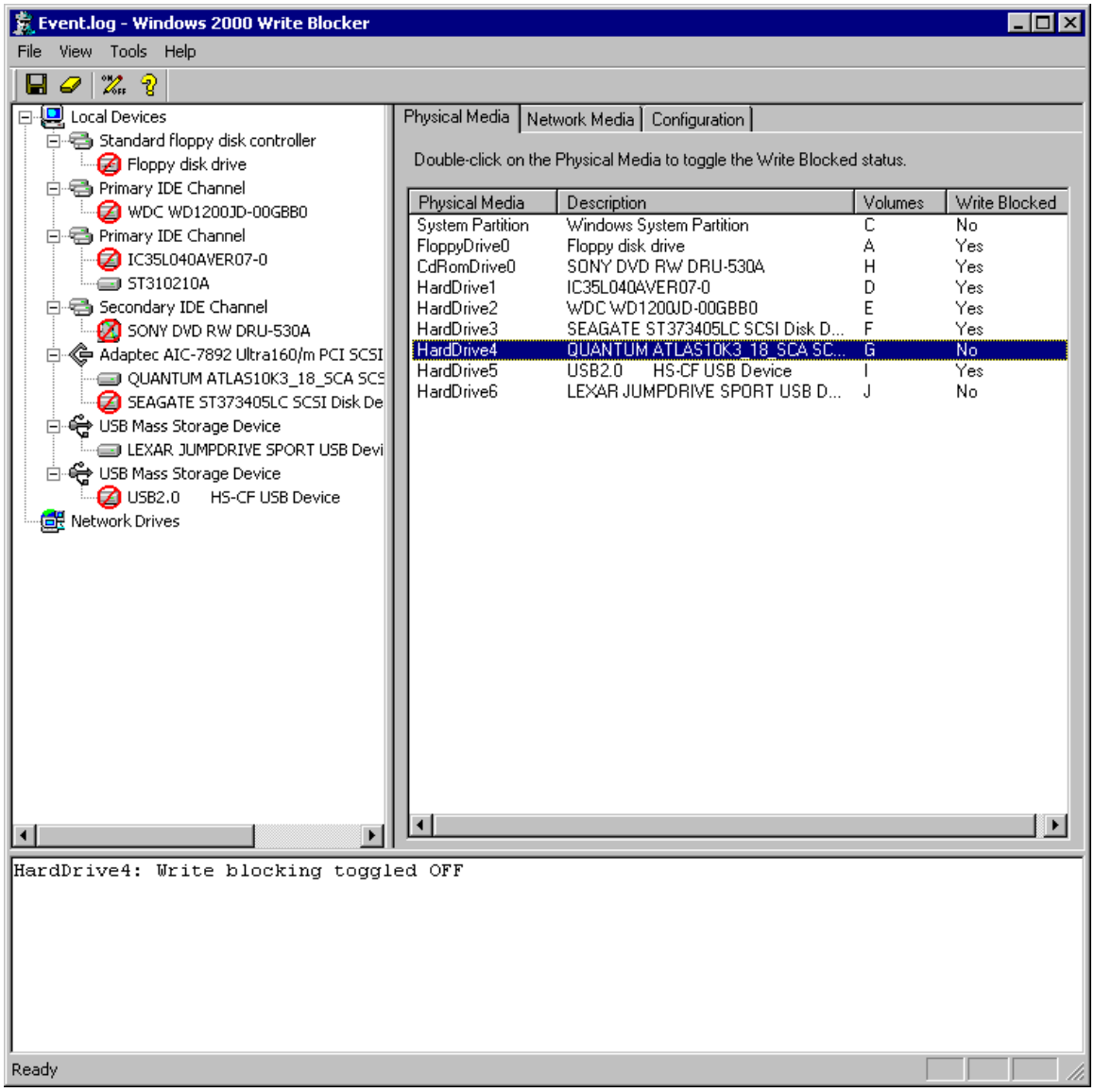
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern NOT_LAST. The expected result of this test is the tool will:

- 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

9.21.1 Hard disk configuration



9.21.2 Write blocker configuration



9.21.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Wed Apr 19 10:56:26 2006

Test case:              SWB-21
Command set:            RWOUV
Number of drives:       4
Protection pattern:     PPPU
Test administered by:   DPA
Details logged to file: SWB-21.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-----------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-----------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 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
```

9.21.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	EB74D63A59F2CB623A9AC581E8ACCC904B1F7704
		After	EB74D63A59F2CB623A9AC581E8ACCC904B1F7704
\\.\PhysicalDrive2 (CFTT-119)	P	Before	BCAD400D8ECBFDB2B99DBB7B2D319DC218EDEB31
		After	BCAD400D8ECBFDB2B99DBB7B2D319DC218EDEB31
\\.\PhysicalDrive3 (CFTT-25)	P	Before	F35DD2C28F83DDDA9B4A828B425442F520FDDDDE
		After	F35DD2C28F83DDDA9B4A828B425442F520FDDDDE
\\.\PhysicalDrive4 (CFTT-27)	U	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.21.5 Test results analysis

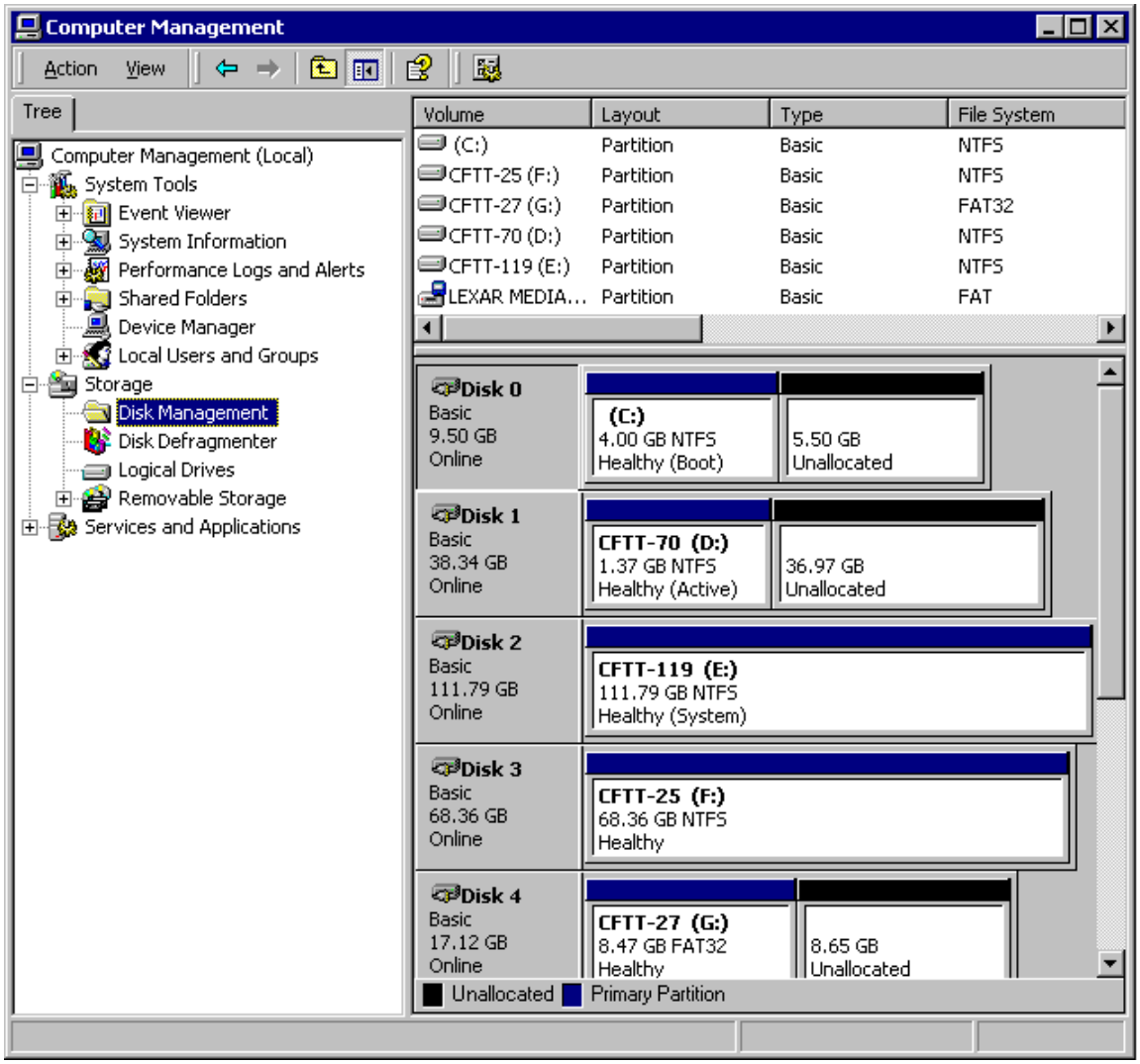
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.22 Test case SWB-22

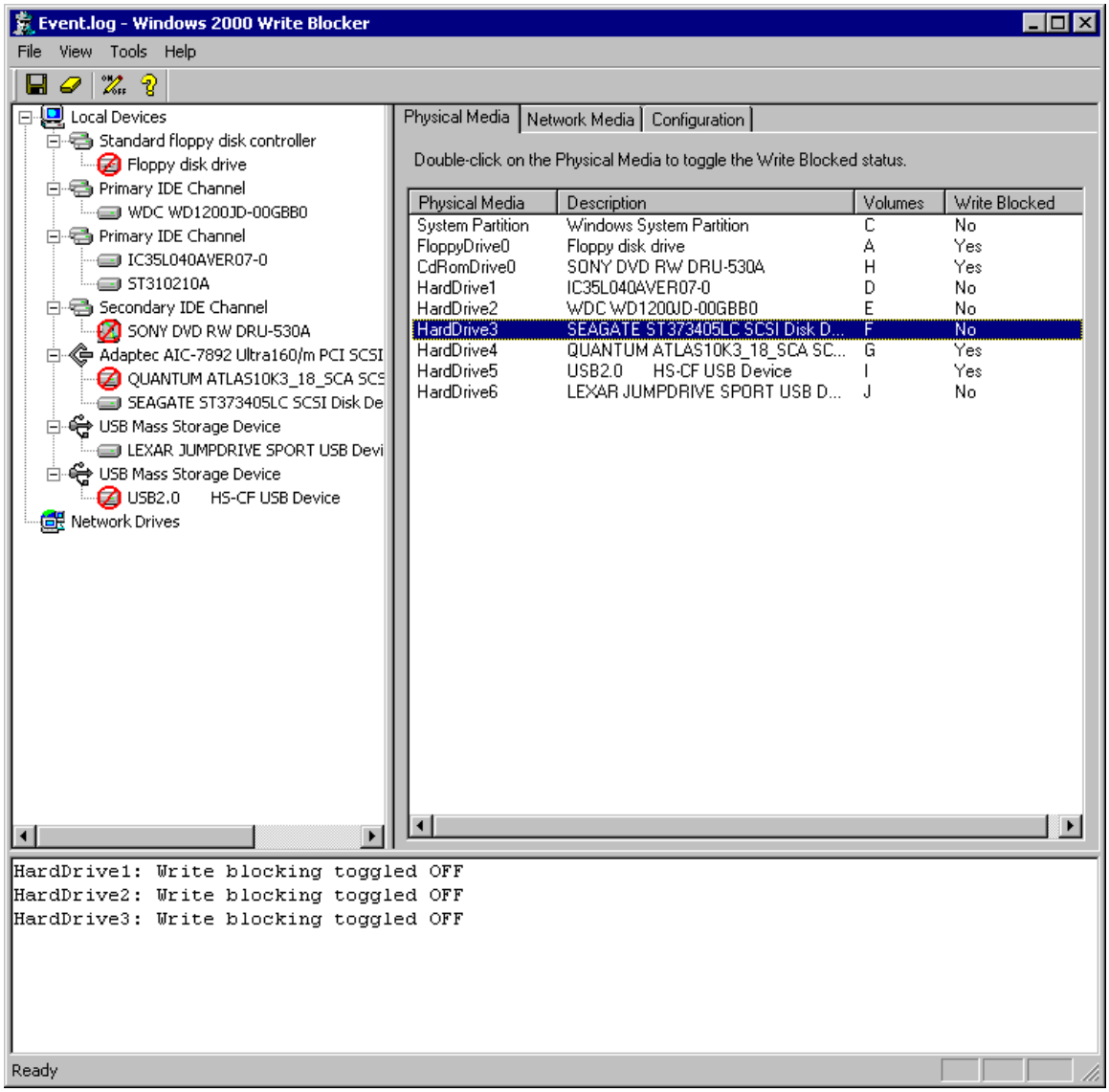
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-06. It issues all possible commands to a set of four drives protected with the pattern LAST. The expected result of this test is the tool will:

- 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

9.22.1 Hard disk configuration



9.22.2 Write blocker configuration



9.22.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Apr 20 11:19:17 2006

Test case:              SWB-22
Command set:            RWOVU
Number of drives:       4
Protection pattern:     UUUP
Test administered by:   DPA
Details logged to file: SWB-22.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ...............      27          0       27
  Write CDB's ...............      22         12       34
  Other CDB's ...............      62          0       62
  Vendor SPecific CDB's .....      80          0       80
  Undefined CDB's............      53          0       53
```

9.22.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	EB74D63A59F2CB623A9AC581E8ACCC904B1F7704
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
\\.\PhysicalDrive2 (CFTT-119)	U	Before	BCAD400D8ECBFDB2B99DBB7B2D319DC218EDEB31
		After	DBA79F2A76A66B62B8D1DE2531926DD8E24A4212
\\.\PhysicalDrive3 (CFTT-25)	U	Before	F35DD2C28F83DDDA9B4A828B425442F520FDDDDE
		After	ED8EBA001023BF8A13F30EB2C368B0C80EC0E711
\\.\PhysicalDrive4 (CFTT-27)	P	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.22.5 Test results analysis

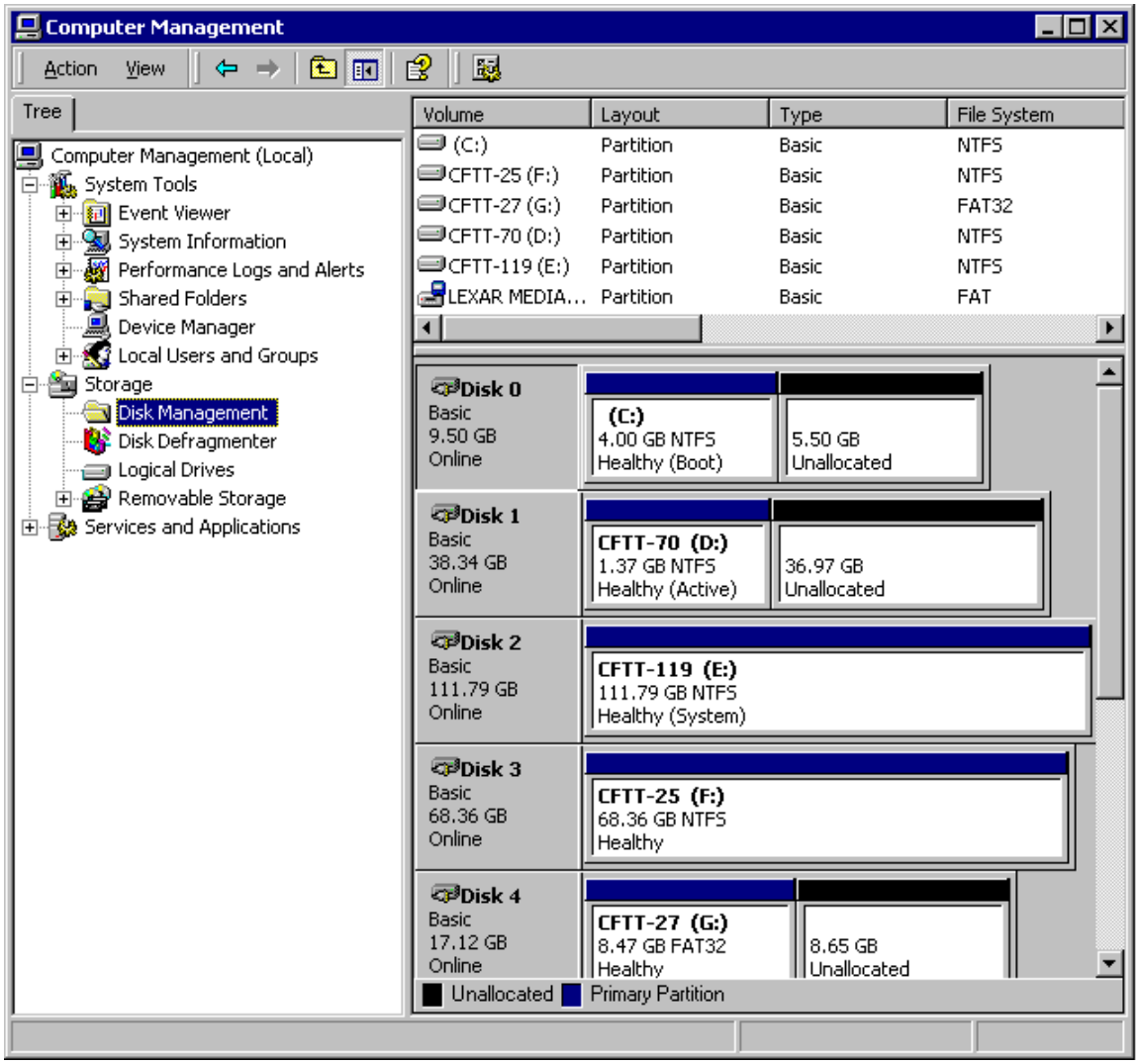
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.23 Test case SWB-23

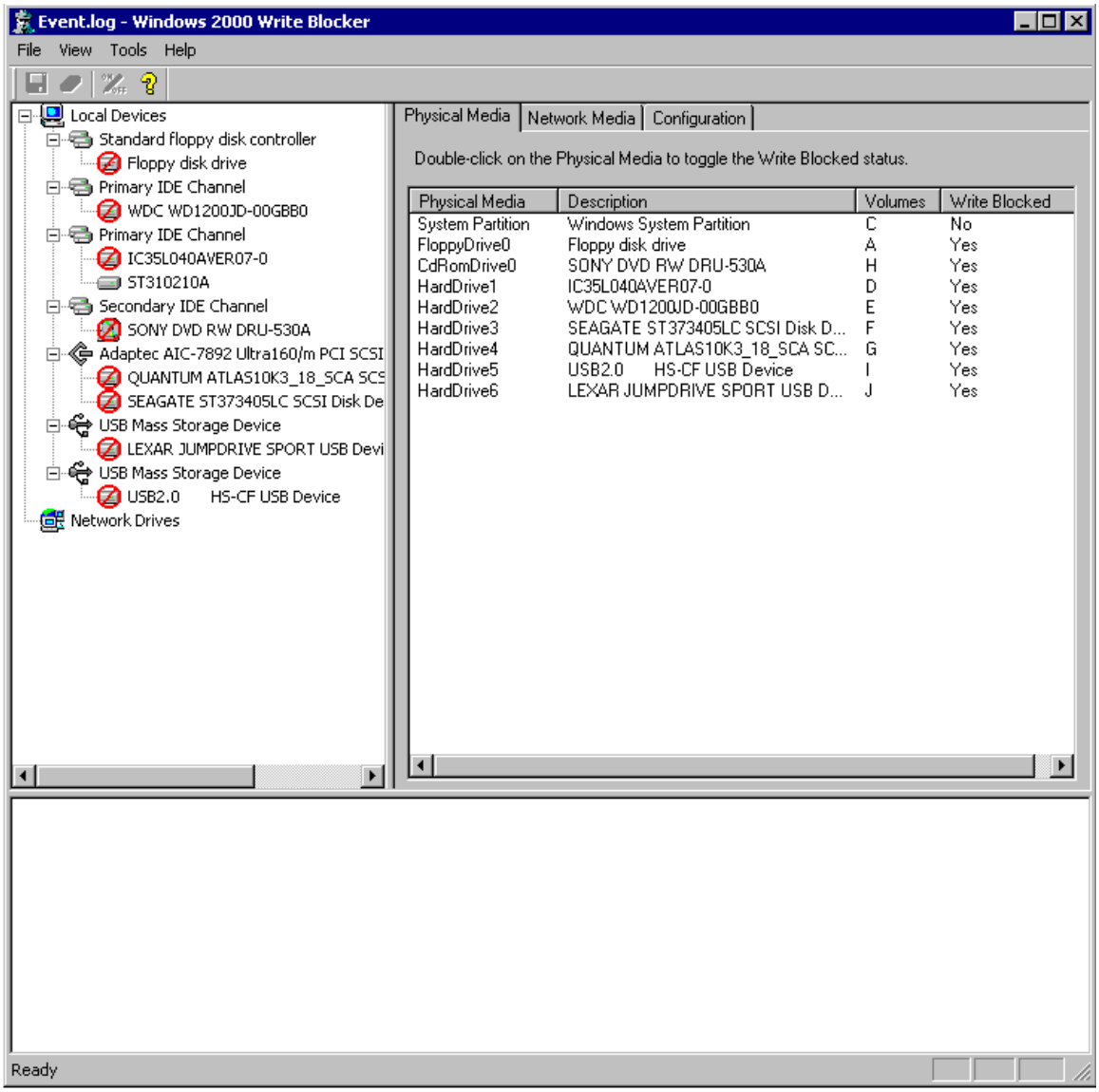
This case test's the tools compliance with optional assertions SWB-AO-01 through SWB-AO-08. It is run using the BOOT protocol, in which all configured drives are protected, the system is rebooted and all possible commands issued to all drives. The expected result of this test is the tool will:

- 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

9.23.1 Hard disk configuration



9.23.2 Write blocker configuration



9.23.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Apr 20 15:12:19 2006

Test case:              SWB-23
Command set:            RWOVU
Number of drives:       4
Protection pattern:     PPPP
Test administered by:   DPA
Details logged to file: SWB-23.log

 **** Test results summary (see logfile for details) *****

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

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

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-----------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-----------------------------------------------------------
  Read IRP's .................       4          0        4
  Write IRP's ................       4          4        8
  Other IRP's ................      15          0       15

  Read CDB's  ................      27          0       27
  Write CDB's ................      22         12       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 Category           Allowed    Blocked    Total
-------------------------------------------------------------
  Read IRP's ................       4          0        4
  Write IRP's ...............       4          4        8
  Other IRP's ...............      15          0       15

  Read CDB's  ...............      27          0       27
  Write CDB's ...............      22         12       34
  Other CDB's ...............      62          0       62
  Vendor SPecific CDB's .....      80          0       80
  Undefined CDB's............      53          0       53
```

9.23.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
\\.\PhysicalDrive2 (CFTT-119)	P	Before	DBA79F2A76A66B62B8D1DE2531926DD8E24A4212
		After	DBA79F2A76A66B62B8D1DE2531926DD8E24A4212
\\.\PhysicalDrive3 (CFTT-25)	P	Before	ED8EBA001023BF8A13F30EB2C368B0C80EC0E711
		After	ED8EBA001023BF8A13F30EB2C368B0C80EC0E711
\\.\PhysicalDrive4 (CFTT-27)	P	Before	21B811181FFFF4D8237461C1848343FF3F477CE7
		After	21B811181FFFF4D8237461C1848343FF3F477CE7

9.23.5 Test results analysis

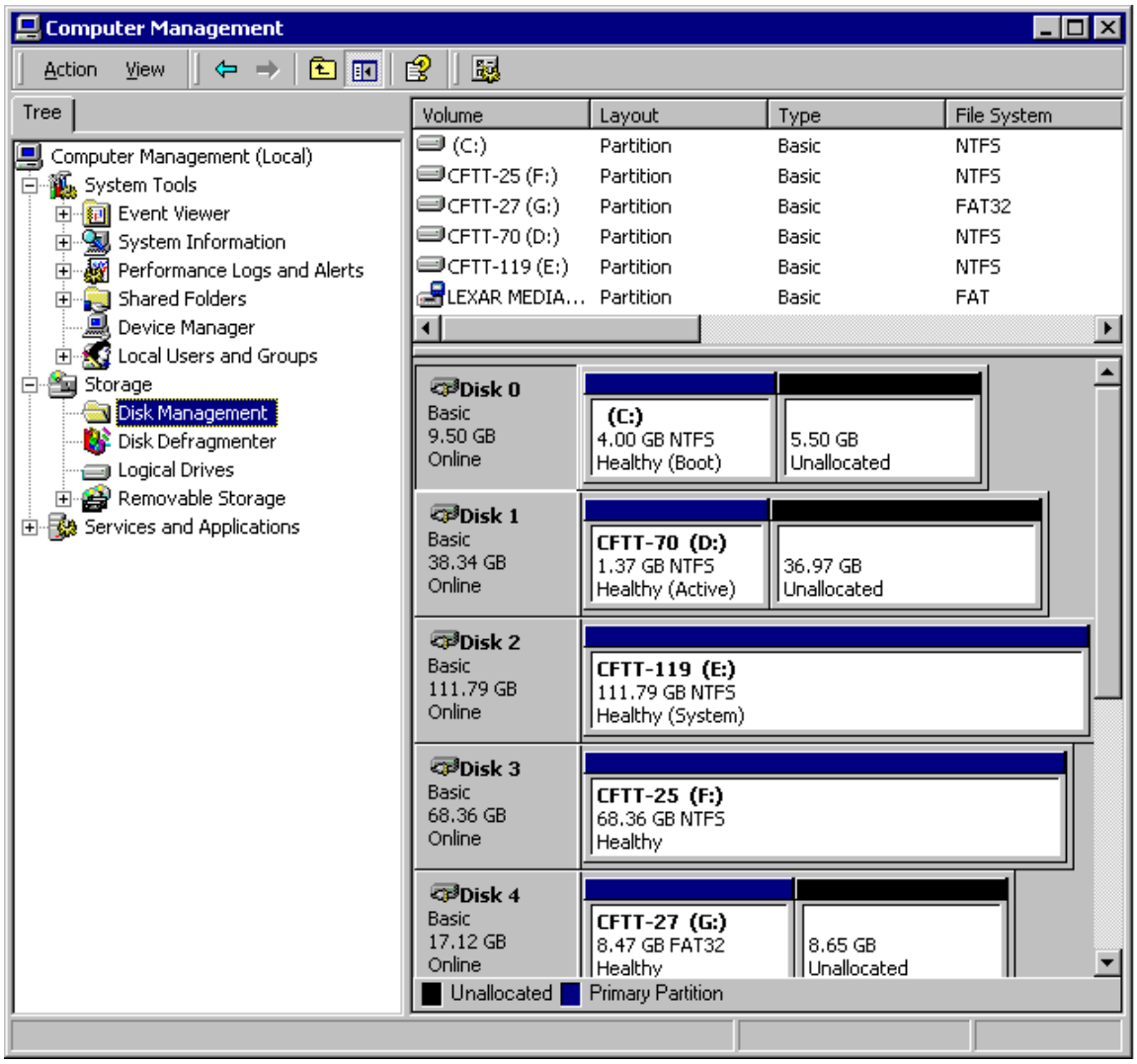
The tool failed to produce the expected result. The pattern of protection did not affect the ability of the tool to protect designated drives but the protection applied failed to block all commands in the protected categories. The protection applied for protected drives was identical to tests SWB-03, SWB-04, and SWB-06.

9.24 Test case SWB-24

This case test's the tools 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 the tool is de-installed, the system is rebooted and all possible commands issued to all drives. The expected result of this test is:

- No command from any category will be blocked for any drive

9.24.1 Hard disk configuration



9.24.2 Write blocker configuration

None

9.24.3 Test output summary

```
NIST Software Write Blocker Test Suite V1.2
Thu Aug 25 10:35:33 2005

Test case:              SWB-24
Command set:            RWOVU
Number of drives:       4
Protection pattern:     UUUU
Test administered by:   DPA
Details logged to file: SWB-24.log

 **** Test results summary (see logfile for details) *****

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

       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 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 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 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
```

9.24.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-70)	U	Before	N/A
		After	N/A
\\.\PhysicalDrive2 (CFTT-119)	U	Before	N/A
		After	N/A
\\.\PhysicalDrive3 (CFTT-25)	U	Before	N/A
		After	N/A
\\.\PhysicalDrive4 (CFTT-27)	U	Before	N/A
		After	N/A

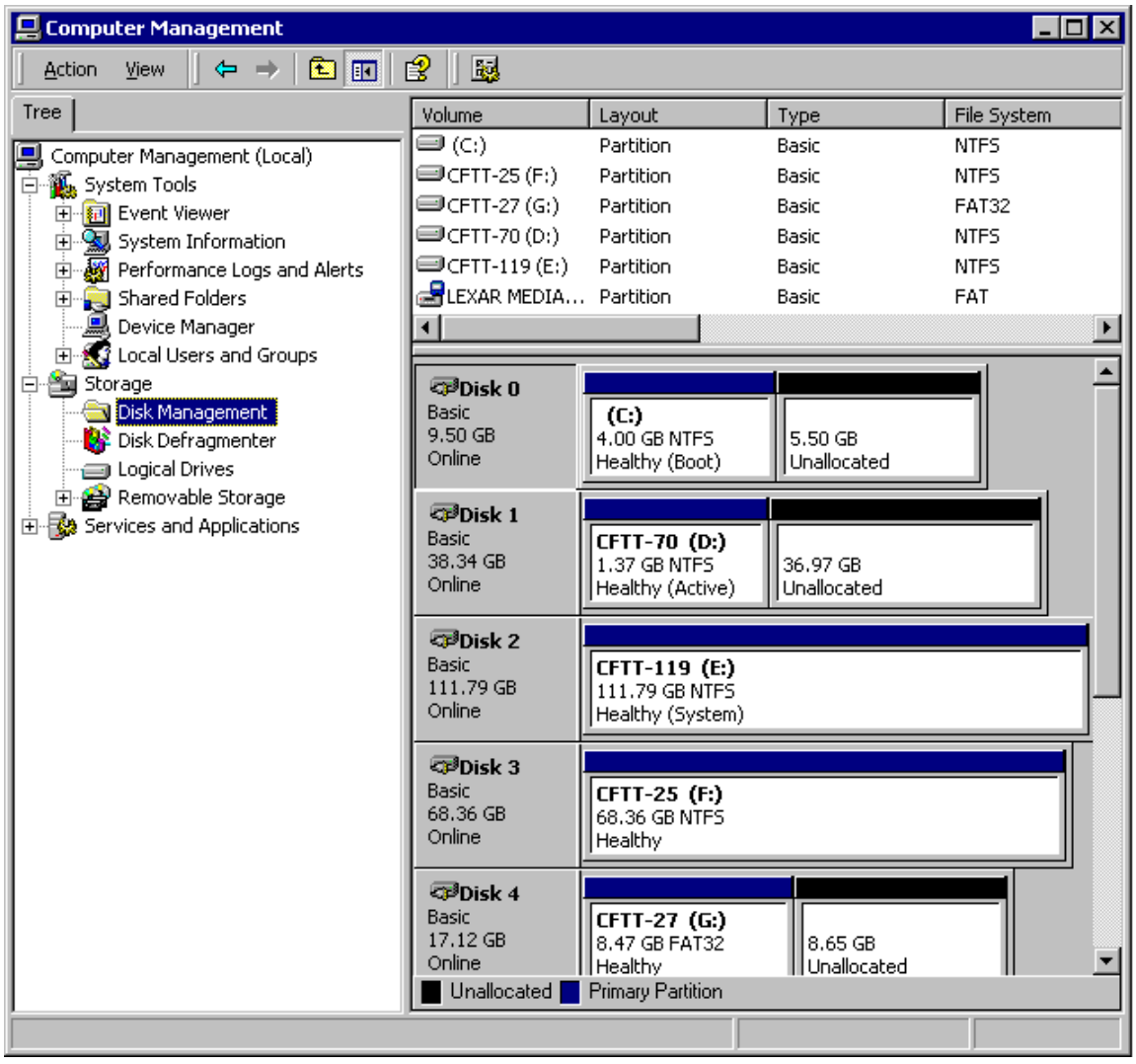
9.24.5 Test results analysis

The tool produced the expected result. No commands were blocked after the de-installation procedure was run and the system was rebooted.

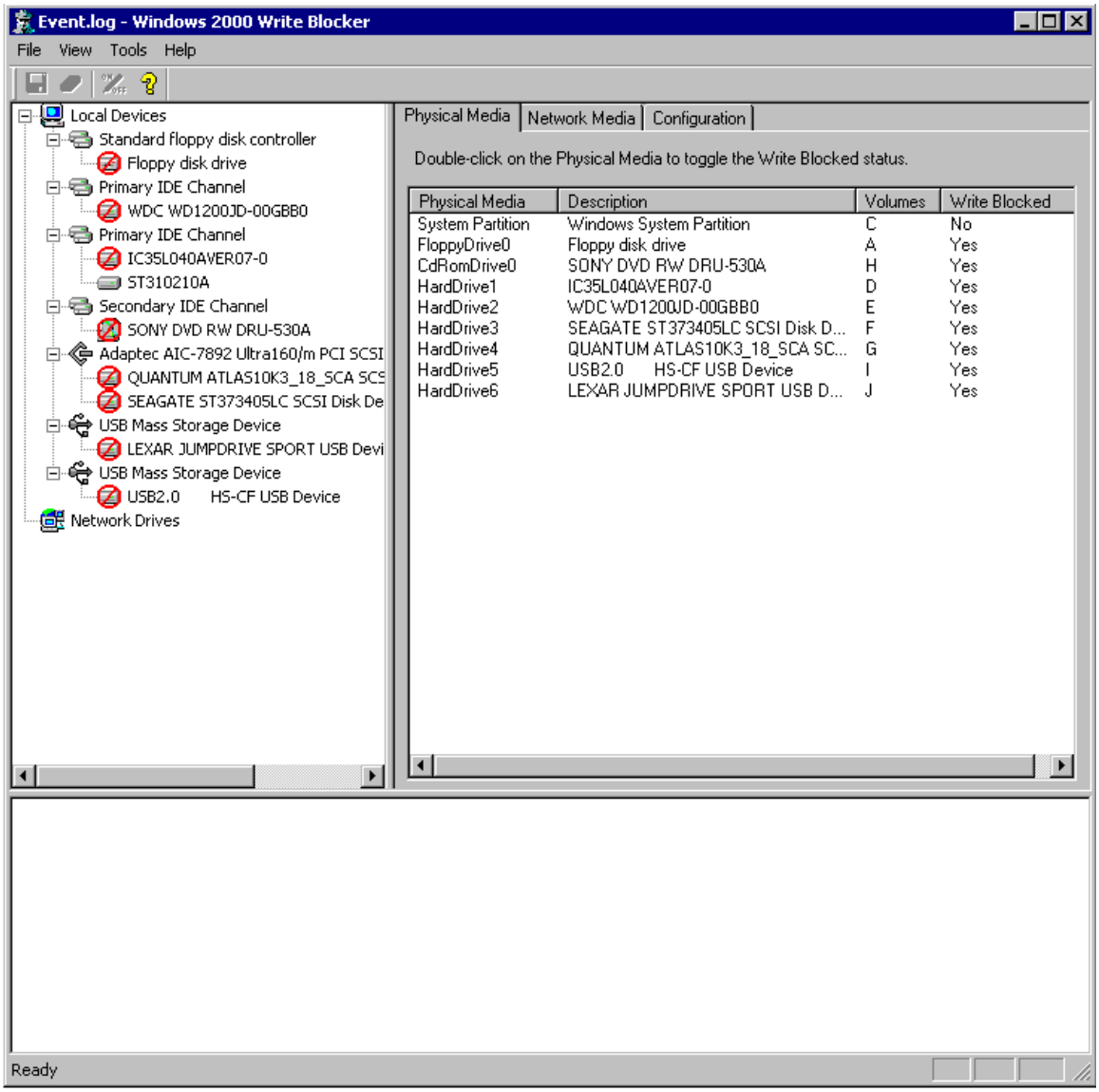
9.25 Test case SWB-25

This case test's the tools compliance with mandatory assertions 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.

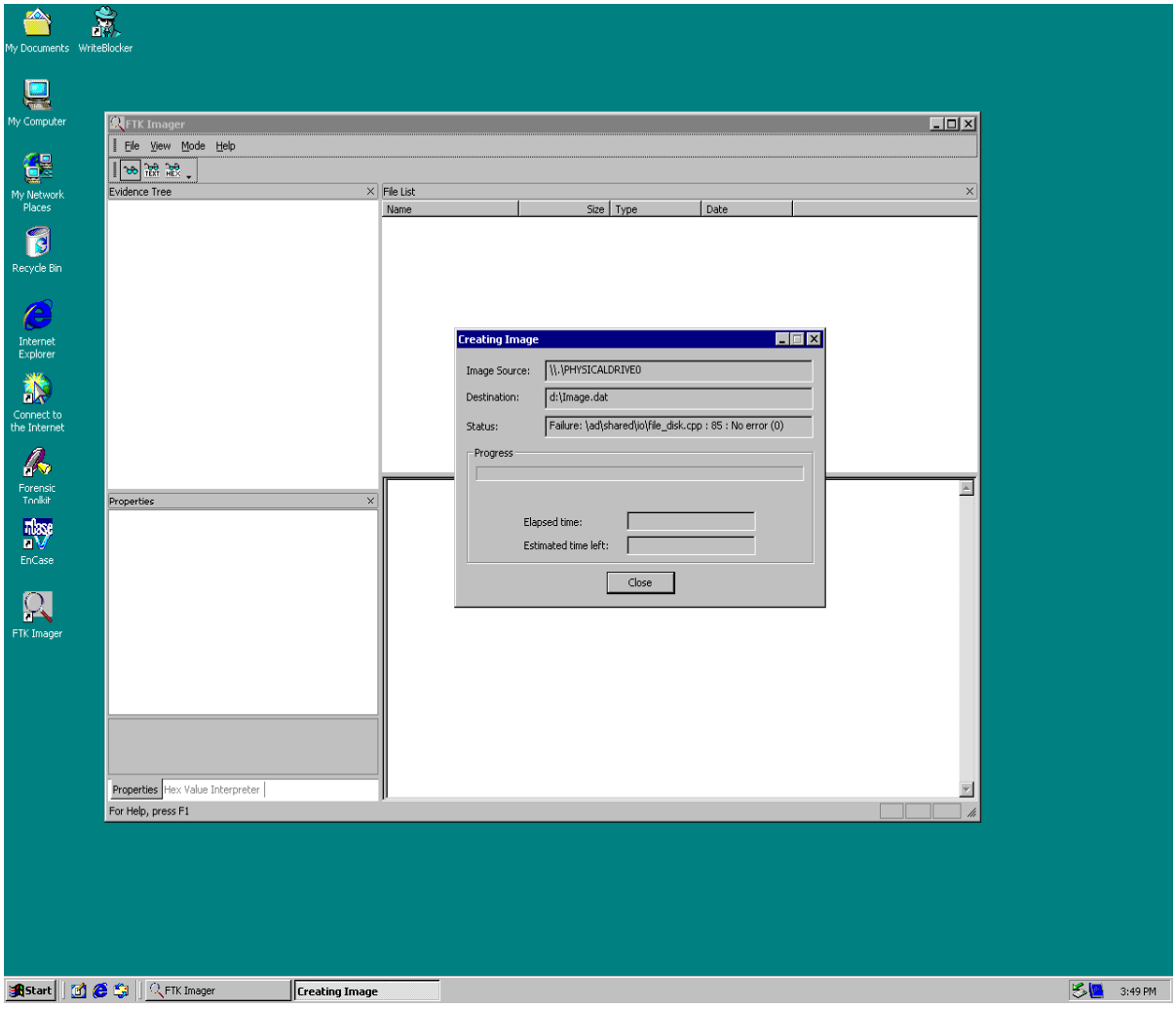
9.25.1 Hard disk configuration

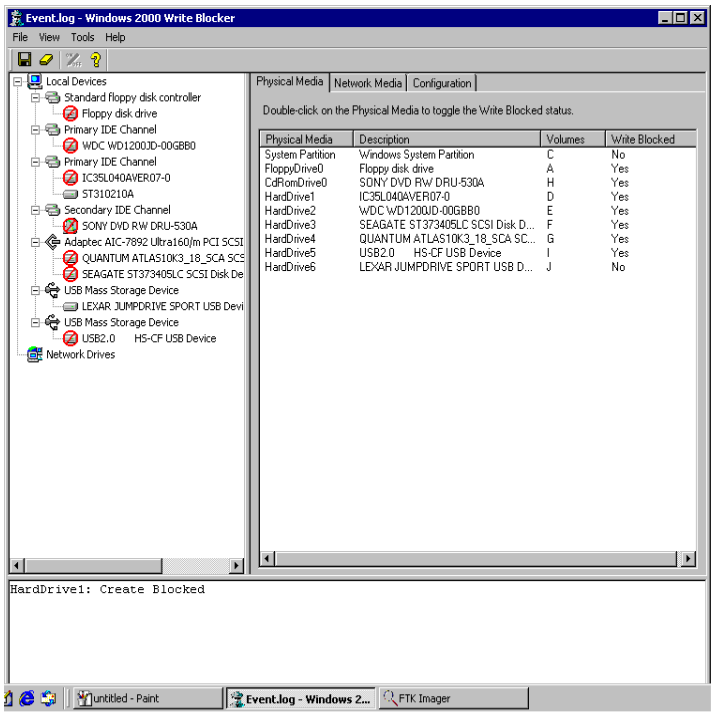


9.25.2 Write blocker configuration



9.25.3 Test output summary





9.25.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1 (CFTT-26)	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219

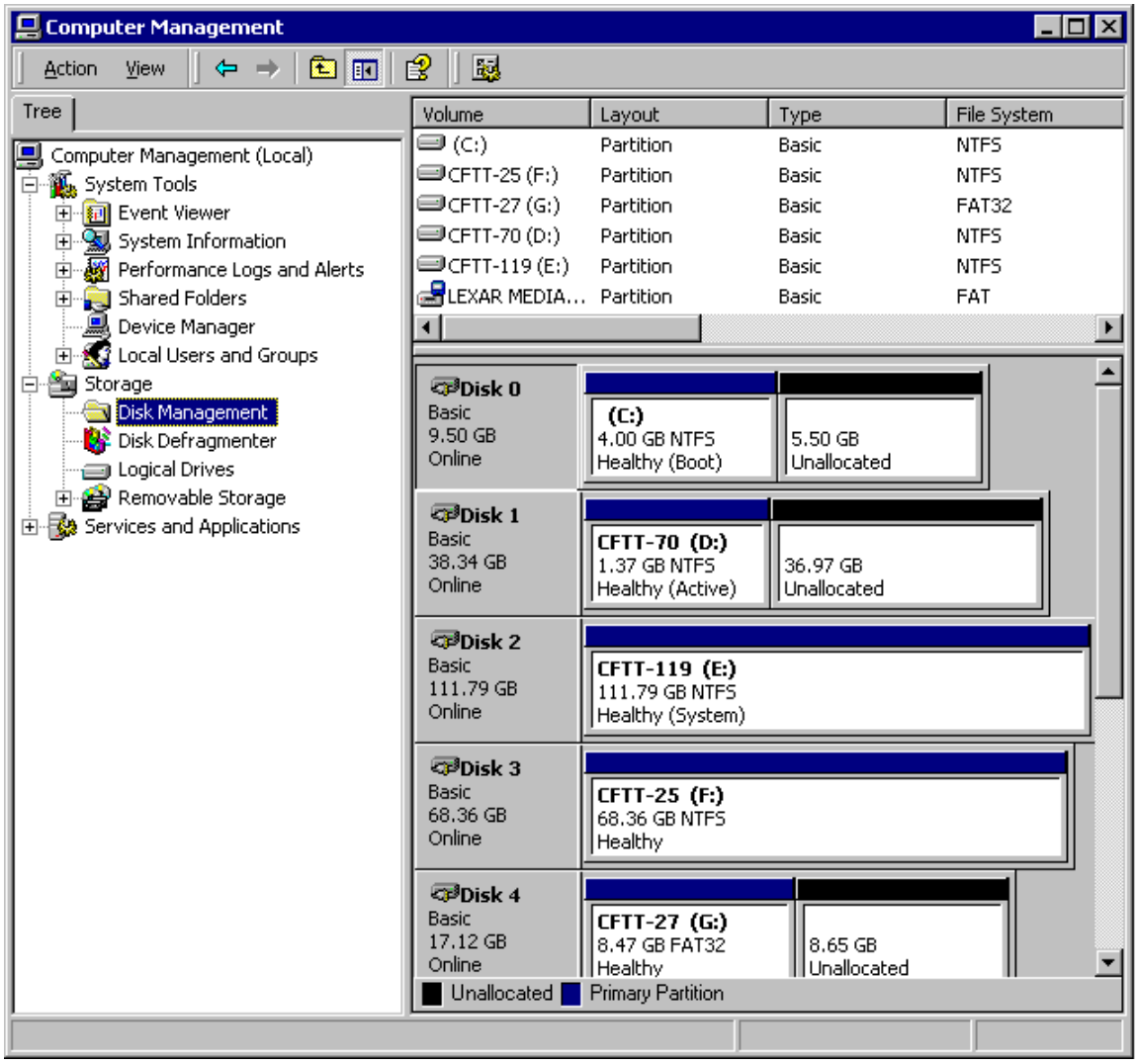
9.25.5 Test results analysis

The tool produced the expected result. The IMAGE operation failed with error number 85, 4 blocked commands (CREATE) were logged by the write blocker tool, and the hash value of the target disk was unchnaged after the test.

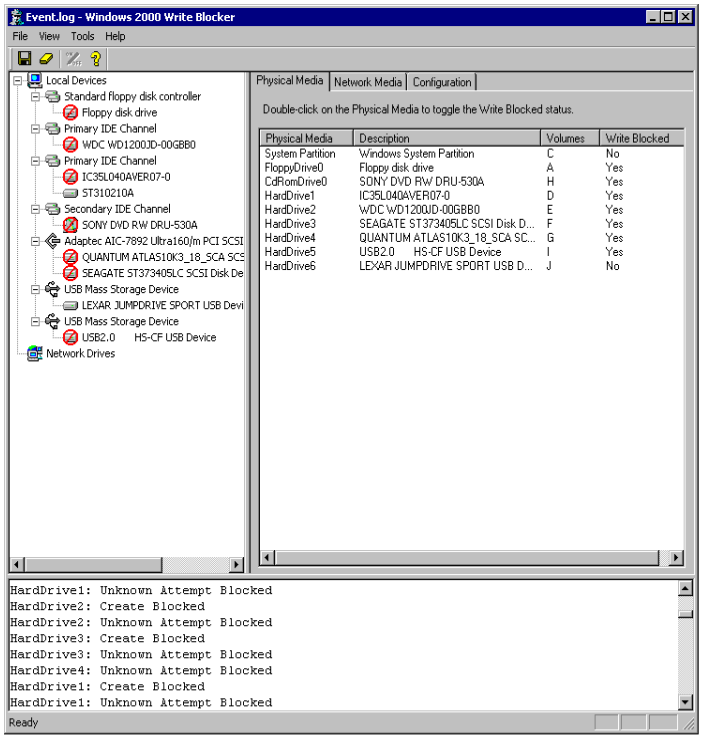
9.26 Test case SWB-26

This case test's the tools 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, one or more blocked commands will be logged by the write blocker, and the disk hash of the test disk will be unchanged by the test.

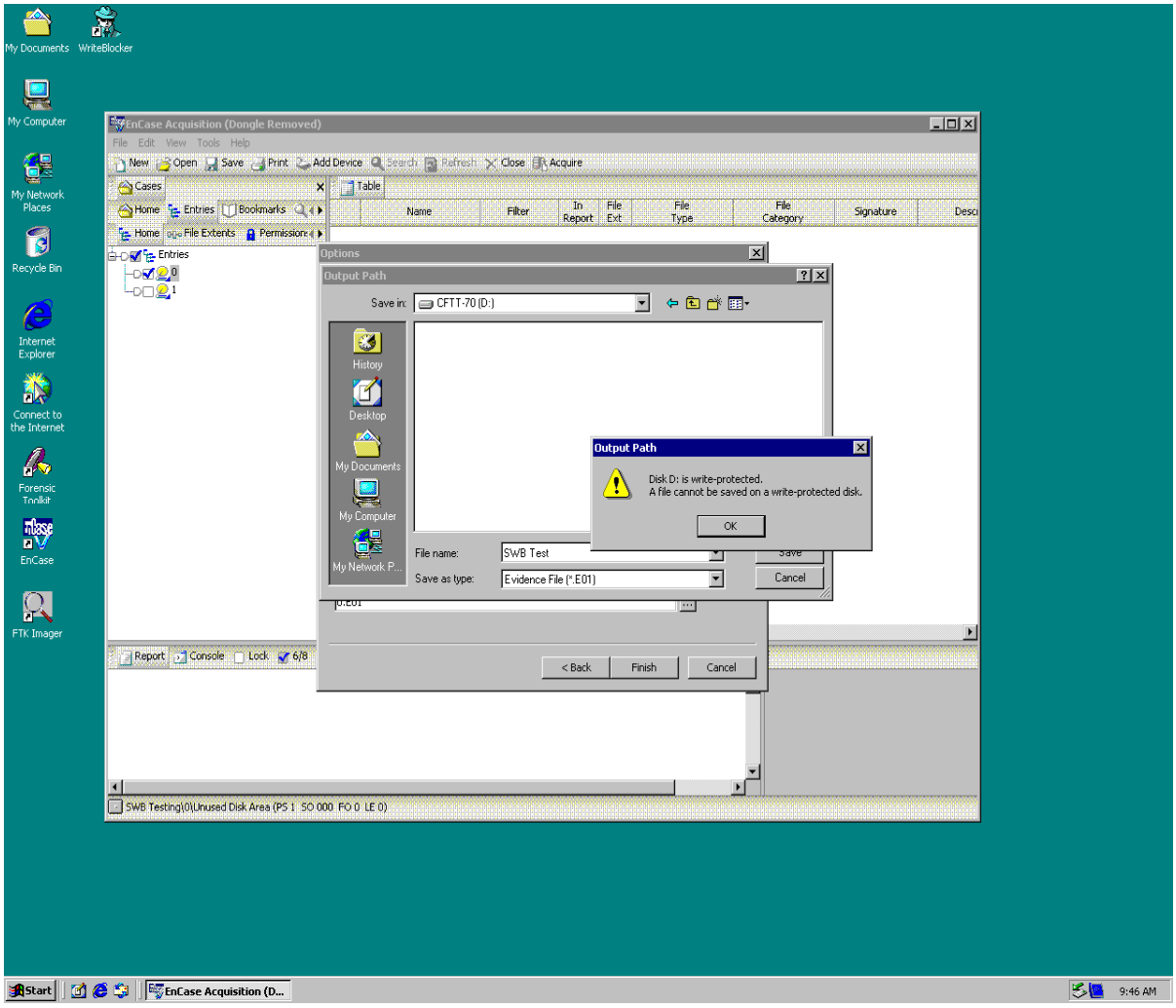
9.26.1 Hard disk configuration



9.26.2 Write blocker configuration



9.26.3 Test output summary



9.26.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219

9.26.5 Test results analysis

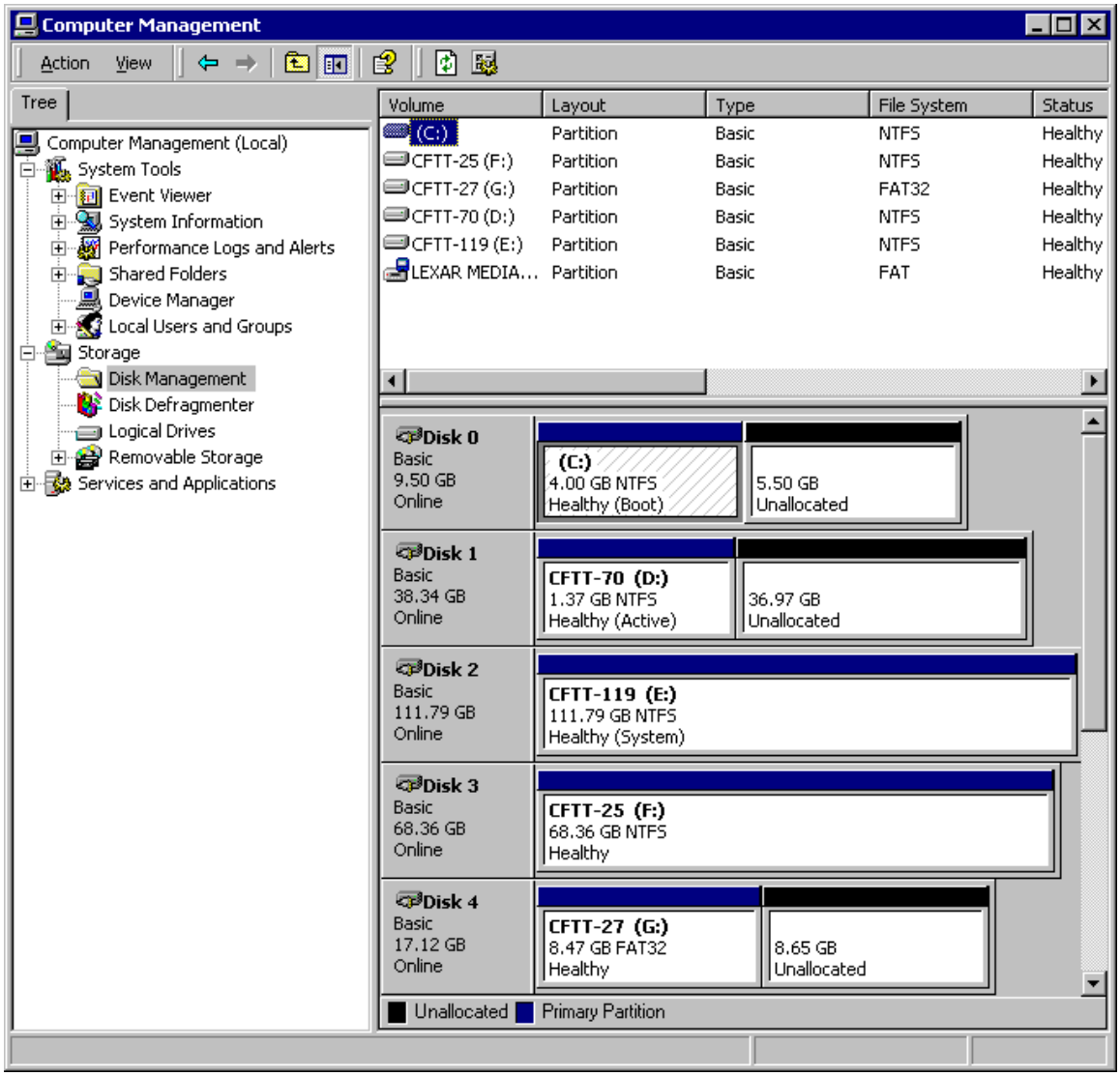
The test produced the expected result. The command failed with a write protection error on the putput device, the write block tool logged 2 blocked commands (CREATE), and the hash value of the protected drive was unchanged after the test.

9.27 Test case SWB-27

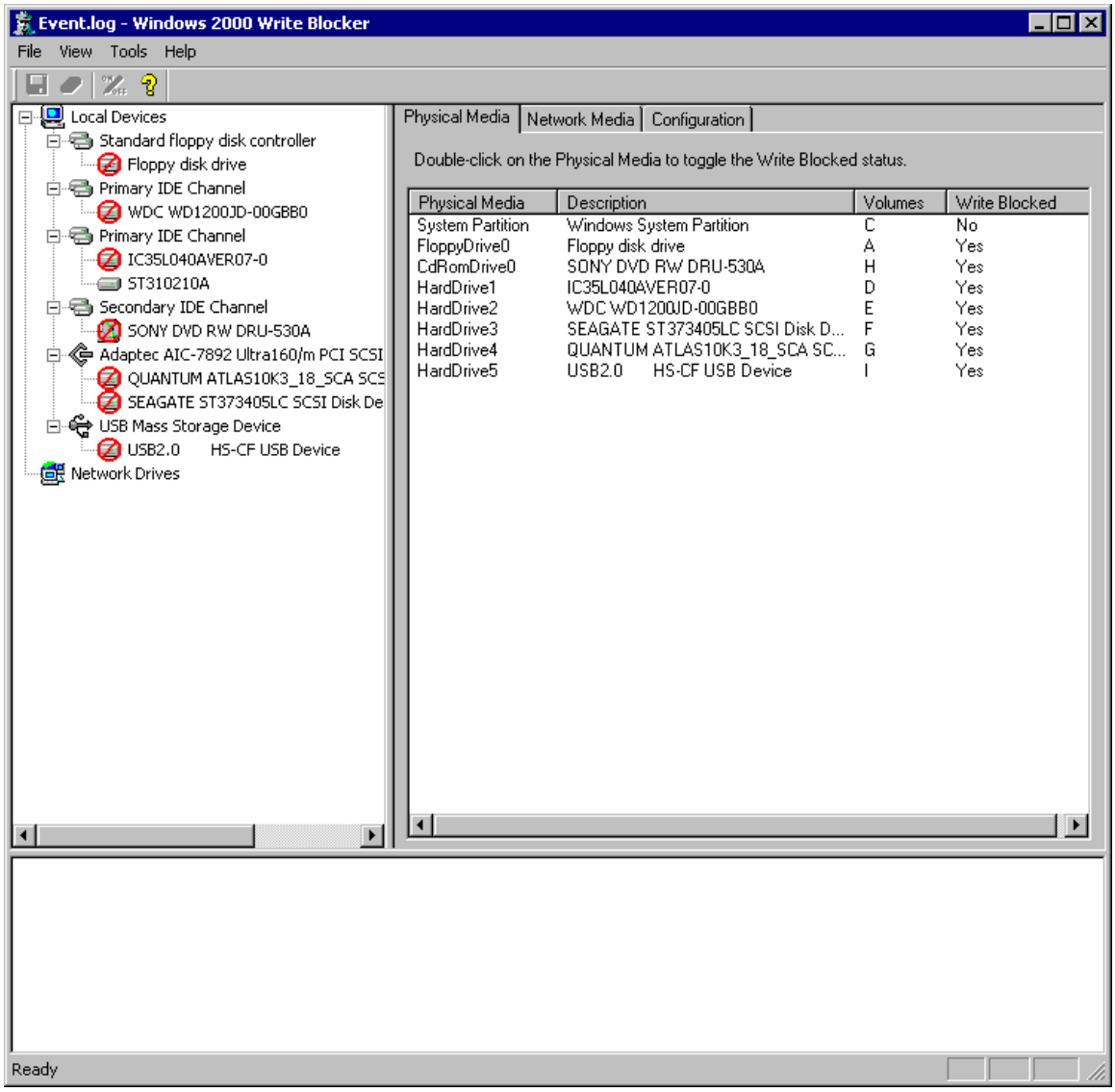
This case test's the tools compliance with assertion SWB-AM-10. It is run using the Typical protocol. The expected result of this test is:

- The COPY command will fail with an error message
- The tool will display a message indicating each command blocked
- The hash value of the target disk will be unchanged after the test

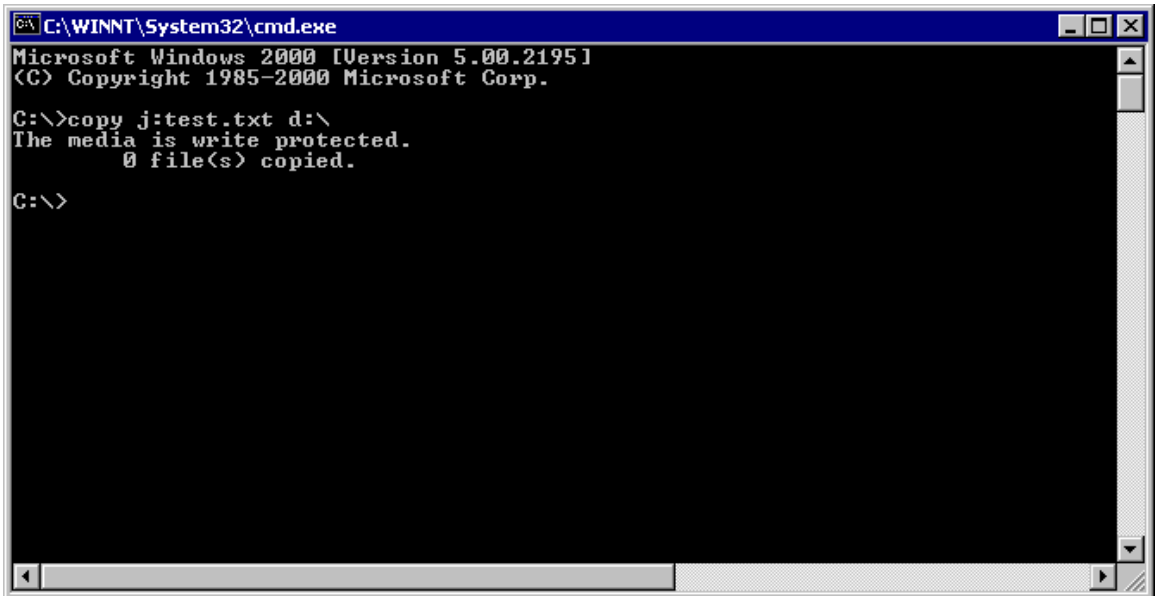
9.27.1 Hard disk configuration



9.27.2 Write blocker configuration



9.27.3 Test output summary



9.27.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219

9.27.5 Test results analysis

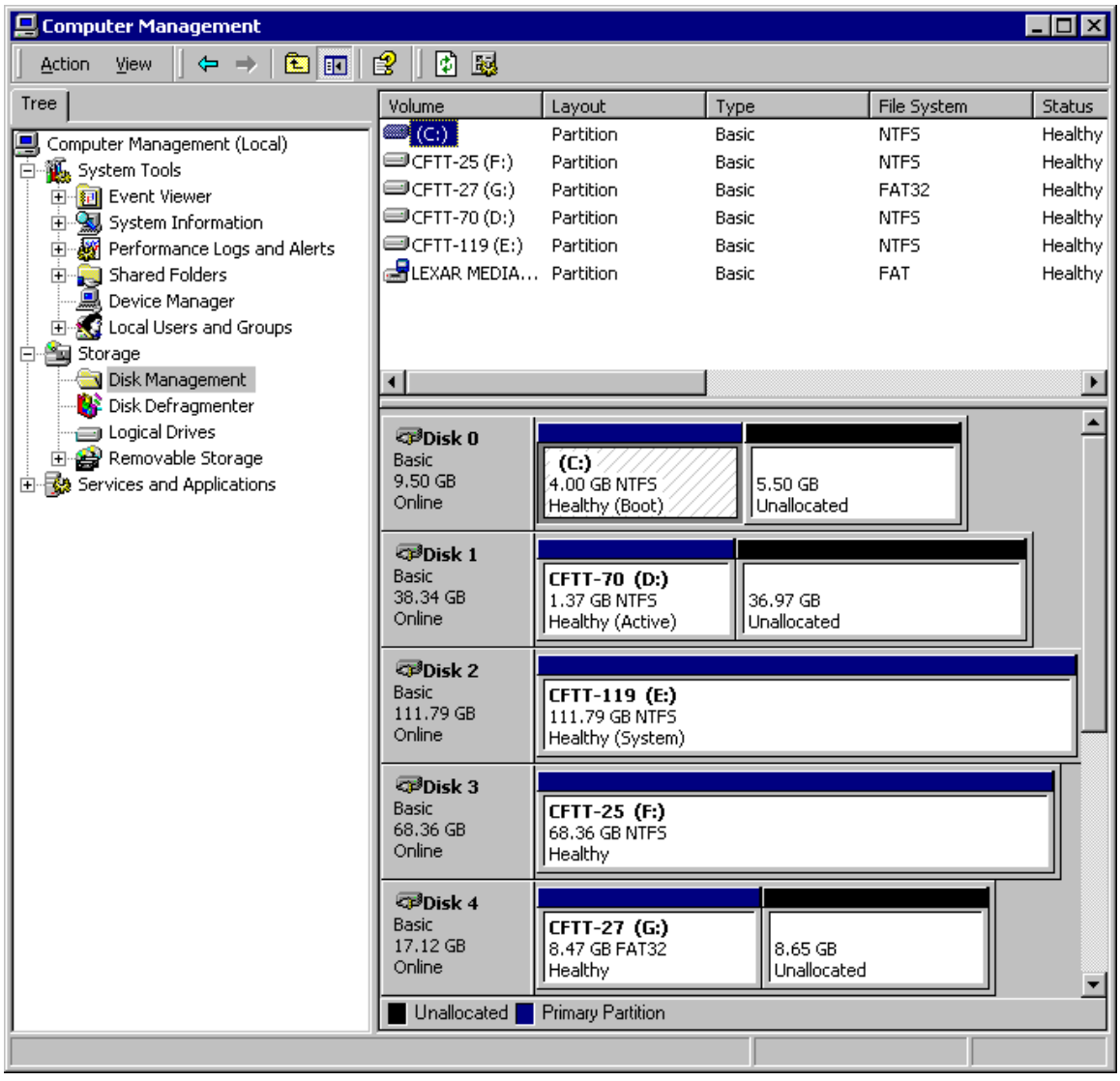
The tool produced the expected result. The COPY operation failed with a write protection error and the hash value of the target disk wsa unchnaged after the test.

9.28 Test case SWB-28

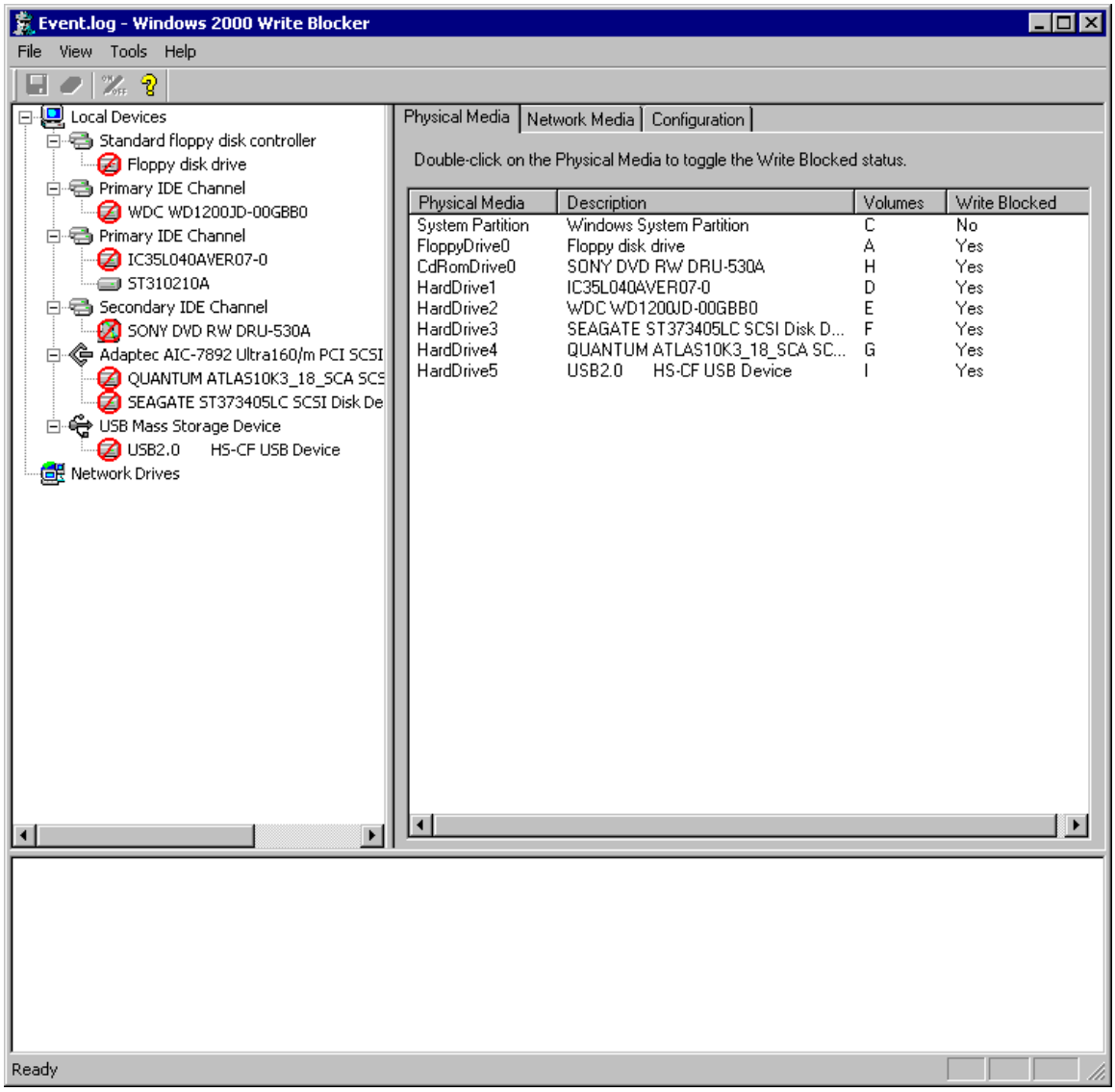
This case test's This case test's the tools compliance with assertion SWB-AM-10. It is run using the Typical protocol. The expected result of this test is:

- The DROP operation will fail with an error message
- The tool will display a message indicating each command blocked
- The hash value of the target disk will be unchanged after the test

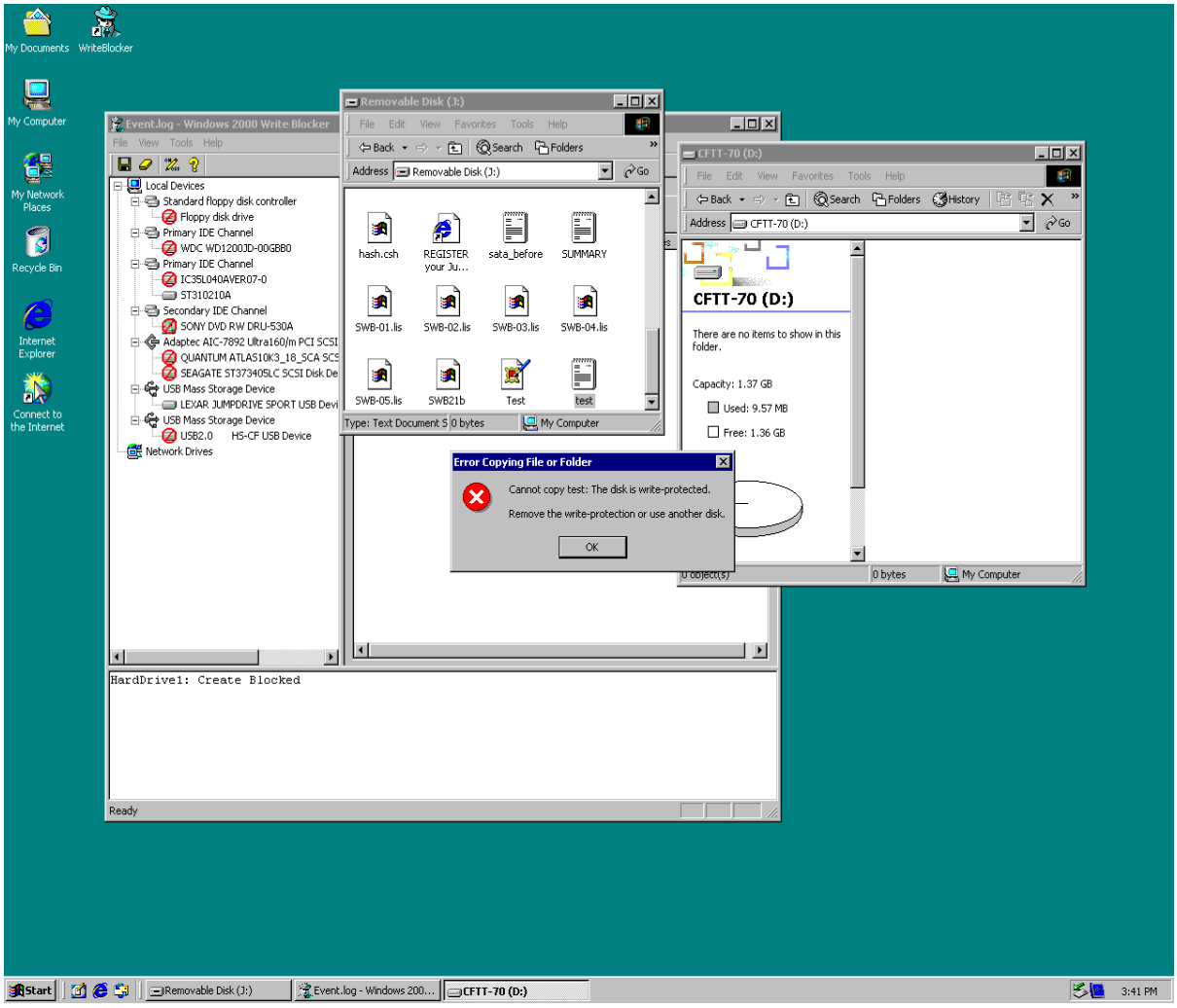
9.28.1 Hard disk configuration



9.28.2 Write blocker configuration



9.28.3 Test output summary



9.28.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219

9.28.5 Test results analysis

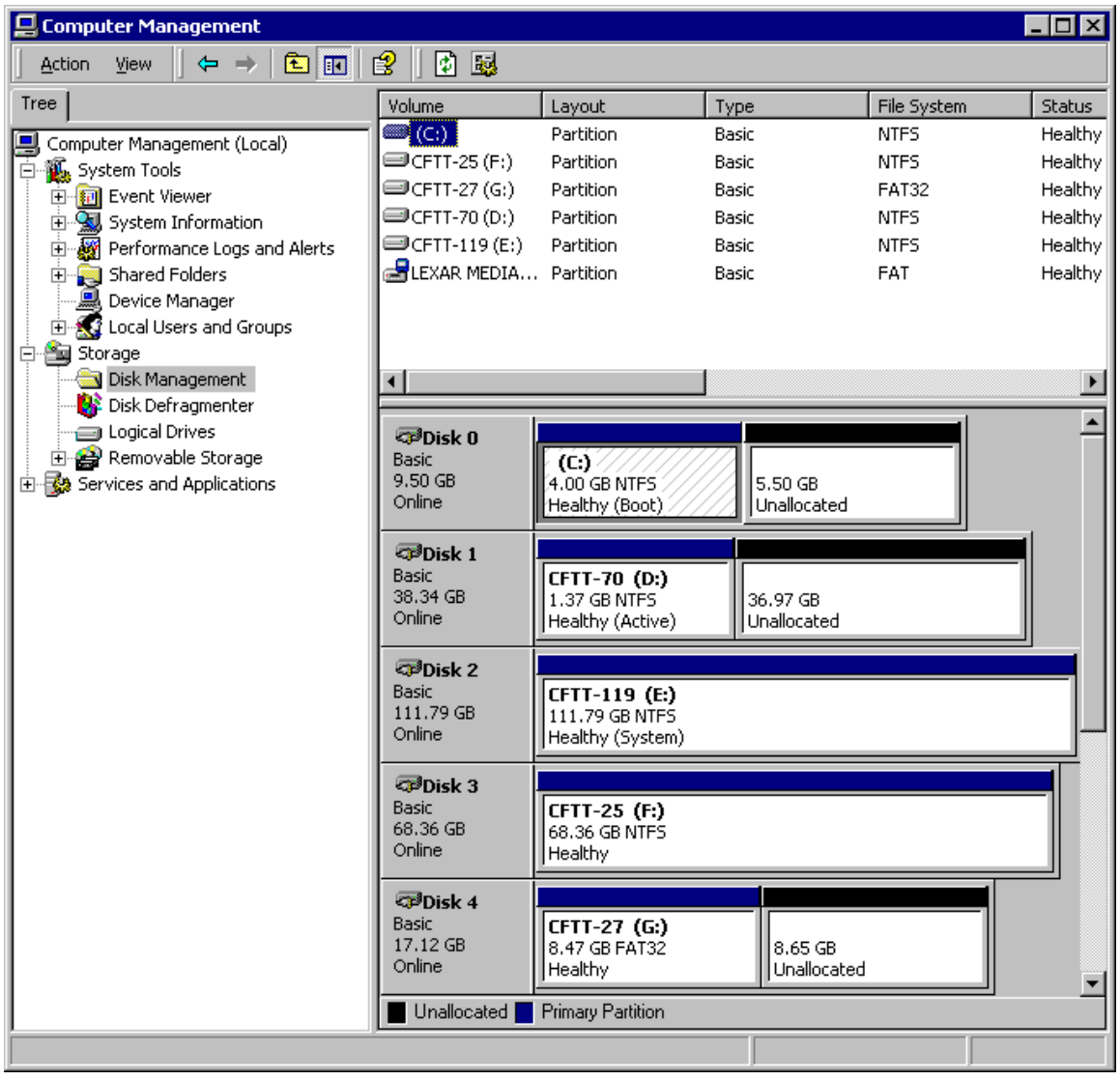
The tool produced the expected result. The DROP operation failed with a write protection error message, 1 blocked commands (CREATE) were logged by the write blocker tool, and the hash value of the target disk wsa unchnaged after the test.

9.29 Test case SWB-29

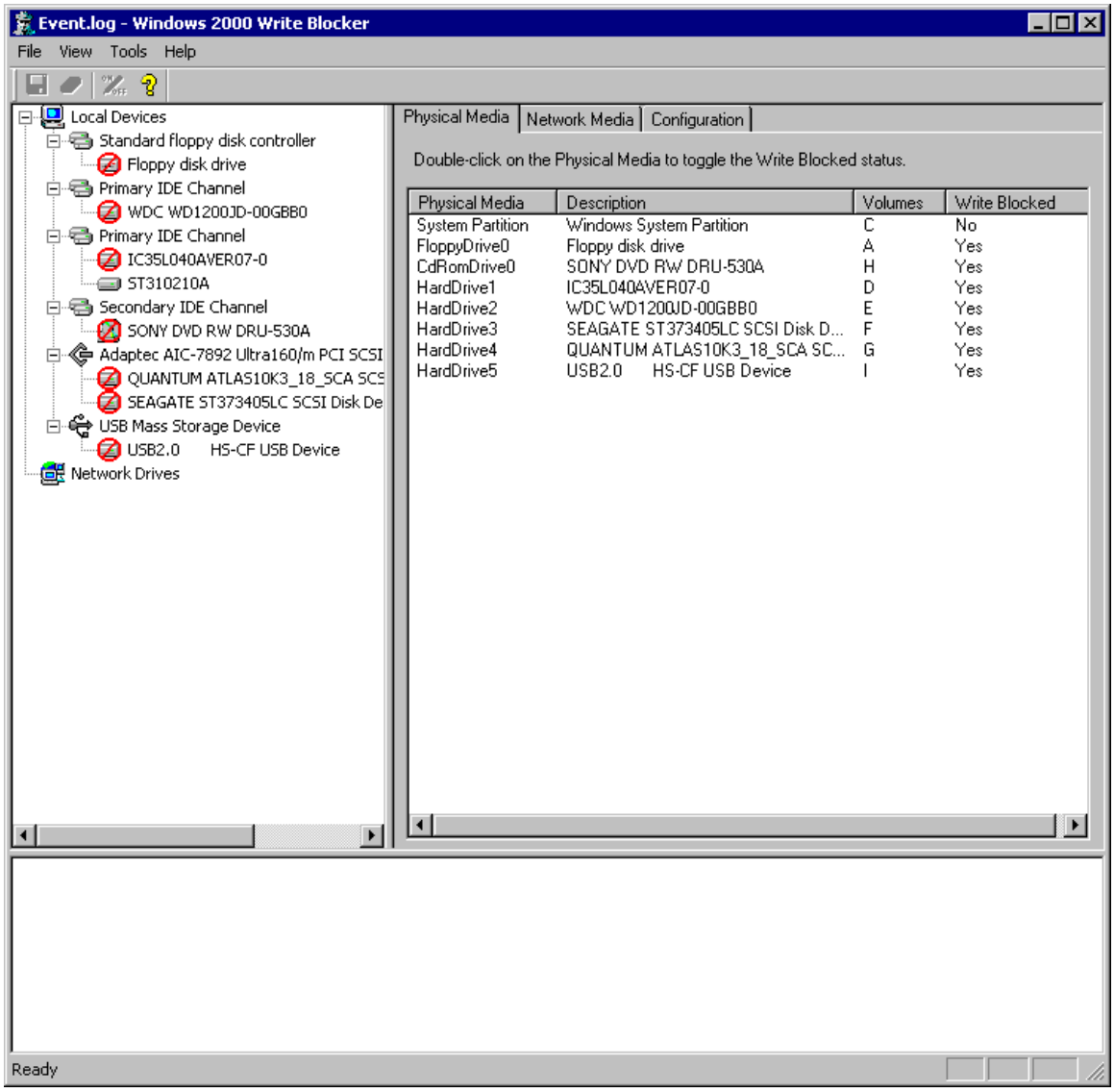
This case test's the tools compliance with assertions SWB-AM-10 and SWB-AO-08. It is run using the Typical protocol. The expected result of this test is:

- The PASTE operation will fail with an error message
- The tool will display a message indicating each command blocked
- The hash value of the target disk will be unchanged after the test

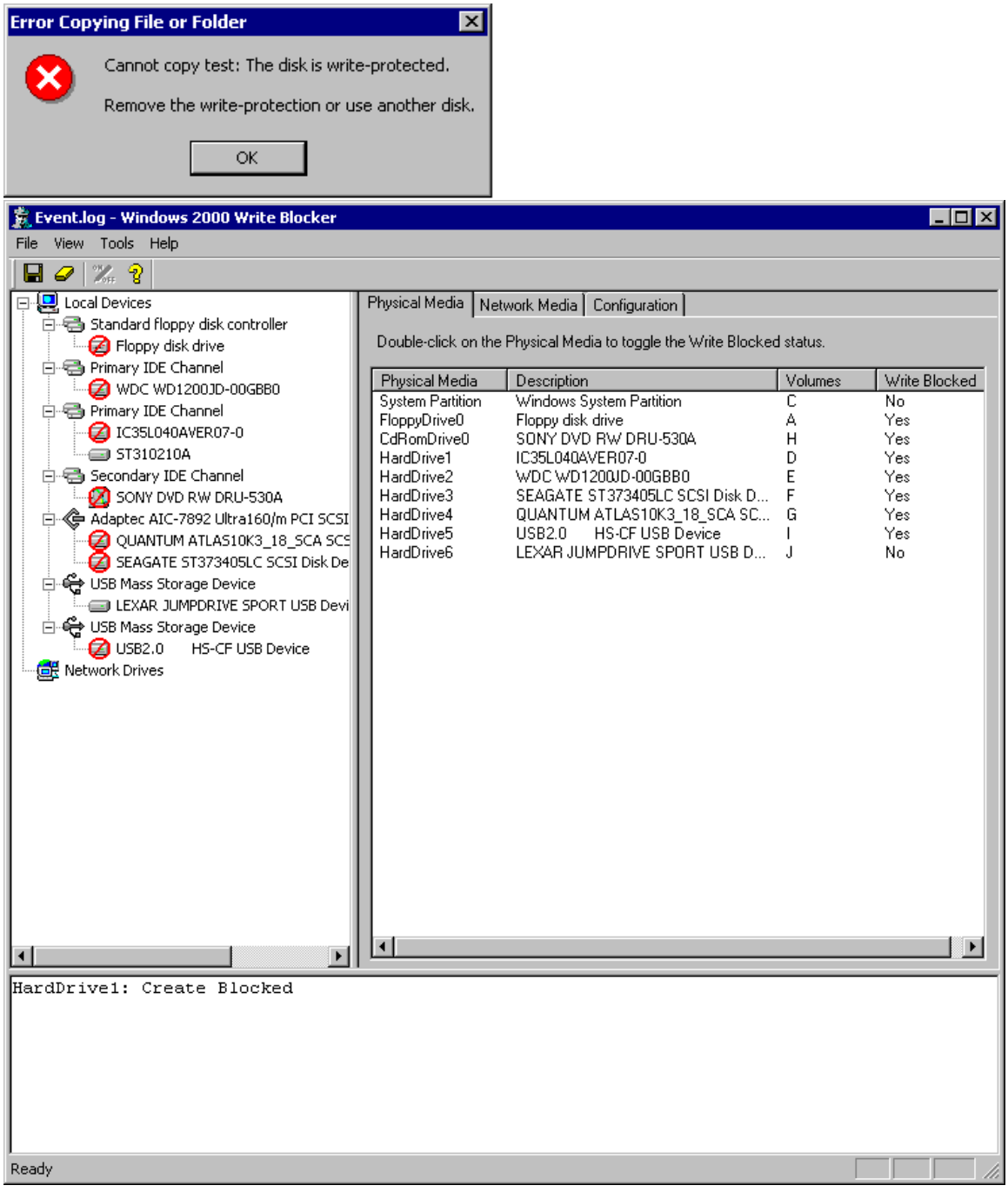
9.29.1 Hard disk configuration



9.29.2 Write blocker configuration



9.29.3 Test output summary



9.29.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219

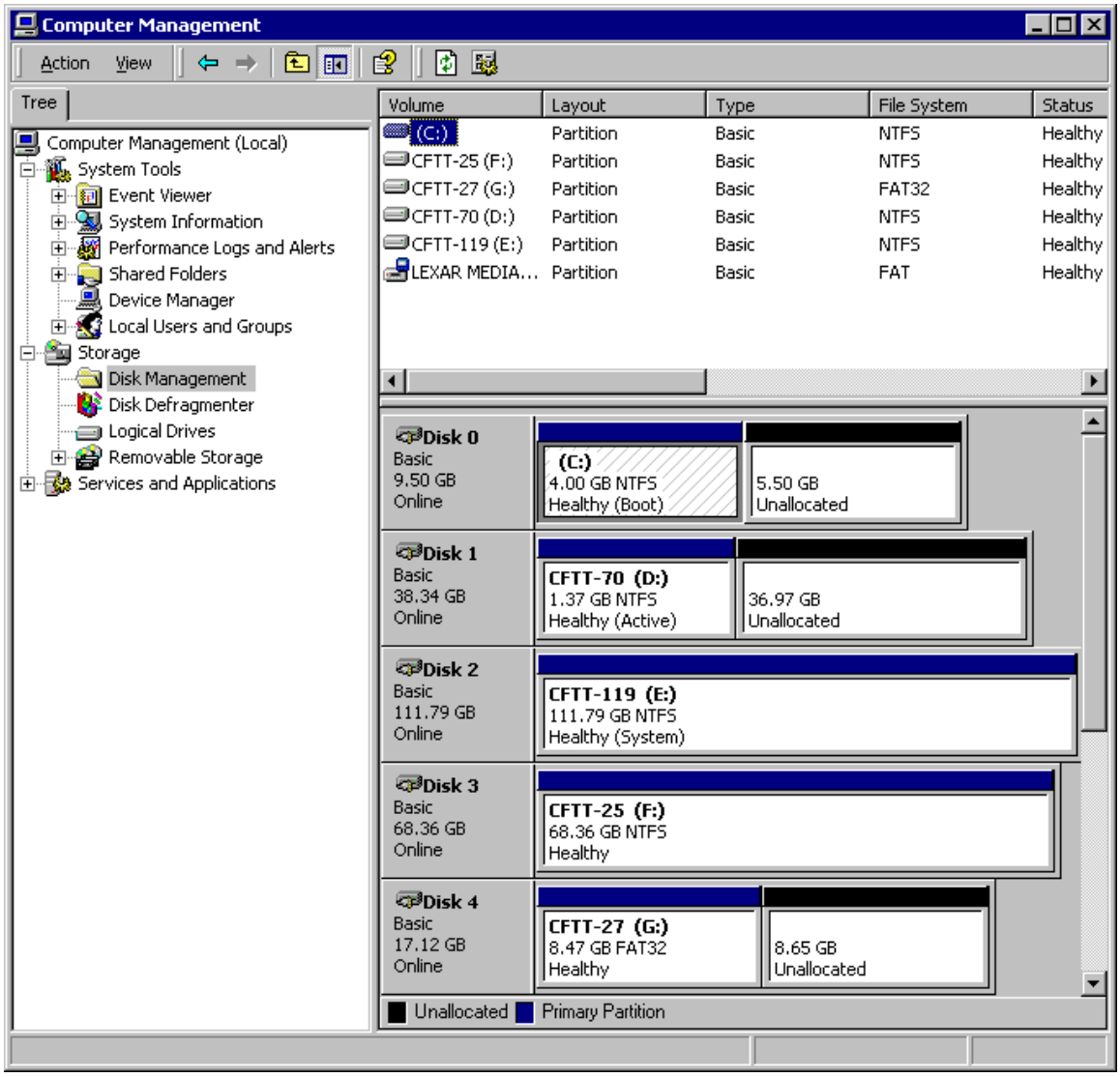
9.29.5 Test results analysis

The tool produced the expected result. The DROP operation failed with a write protection error message, 1 blocked command (CREATE) were logged by the write blocker tool, and the hash value of the target disk wsa unchnaged after the test.

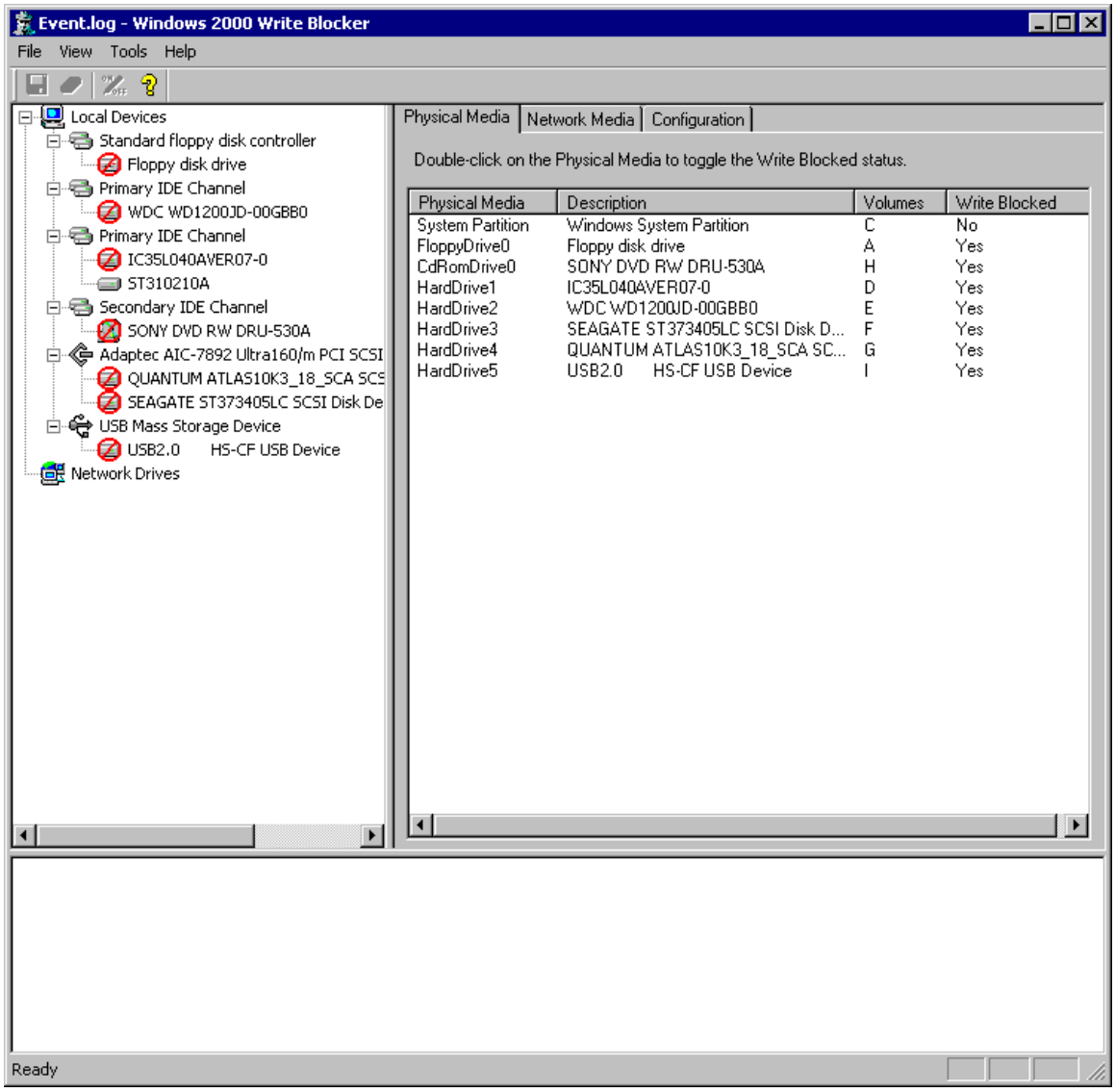
9.30 Test case SWB-30

This case test's the tools 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, one or more blocked commands will be logged by the write blocker, and the disk hash of the test disk will be unchanged by the test.

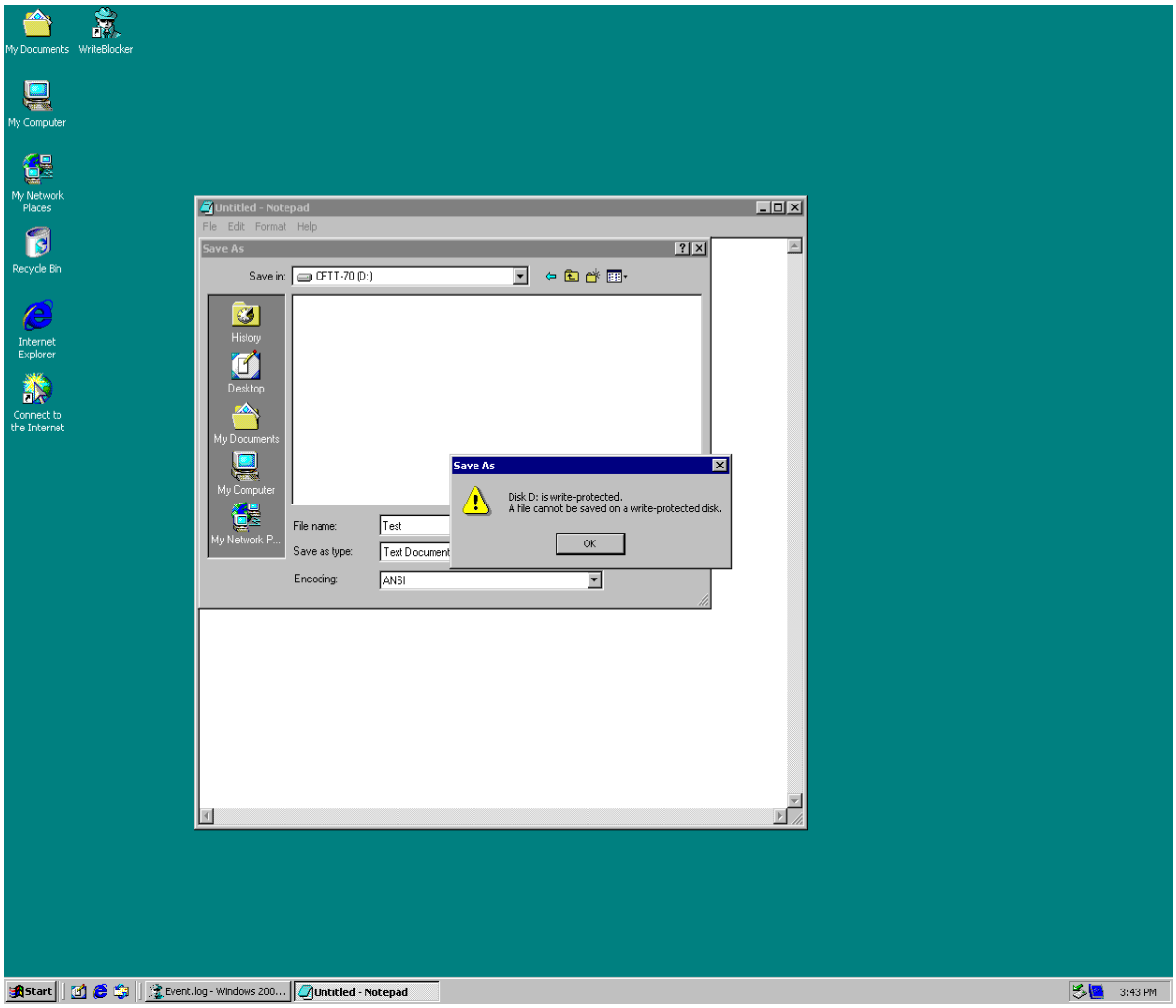
9.30.1 Hard disk configuration



9.30.2 Write blocker configuration



9.30.3 Test output summary



9.30.4 Hard disk hash results

Drive Identification		Computed	SHA1 Value
\\.\PhysicalDrive1	P	Before	6D96DA3851D7C4F4F124D29D0F02636E47DA3219
		After	6D96DA3851D7C4F4F124D29D0F02636E47DA3219

9.30.5 Test results analysis

The tool produced the expected result. The drag and drop operation failed with a write protection error and the protected drive was not altered.

Appendix A – Sample Logfile Listings

Figure A-1 – Logfile output listing for test SWB-01

```
NIST Software Write Blocker Test Suite V1.2
Mon Mar 27 15:59:44 2006

Test case:          SWB-01
Command set:        RWOVU
Number of drives:   1
Protection pattern: U

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_INFORAMATION     (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
  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
```

Figure A-1 – Logfile output listing for test SWB-01

```
  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
  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
```

Figure A-1 – Logfile output listing for test SWB-01

```
  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
  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
  VENDOR_SPECIFIC_CDB     (0xC0)          ALLOWED
```

Figure A-1 – Logfile output listing for test SWB-01

```
  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
  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

 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
 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
```

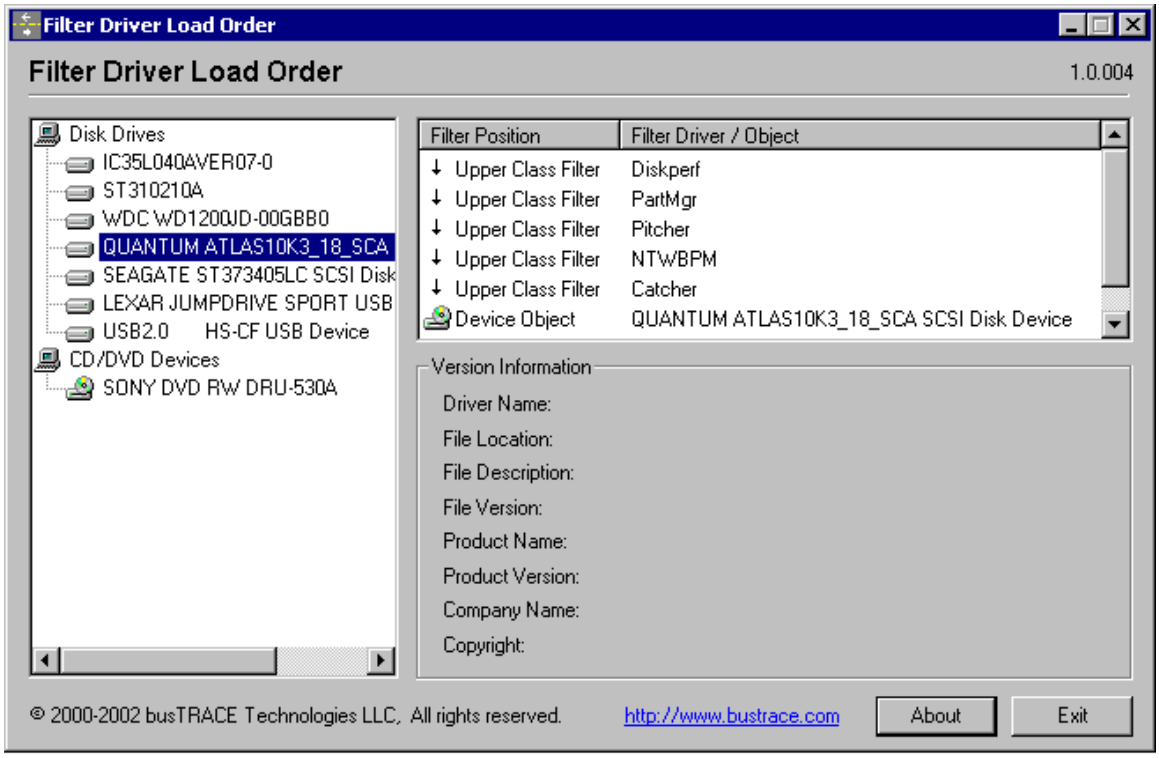
Figure A-1 – Logfile output listing for test SWB-01

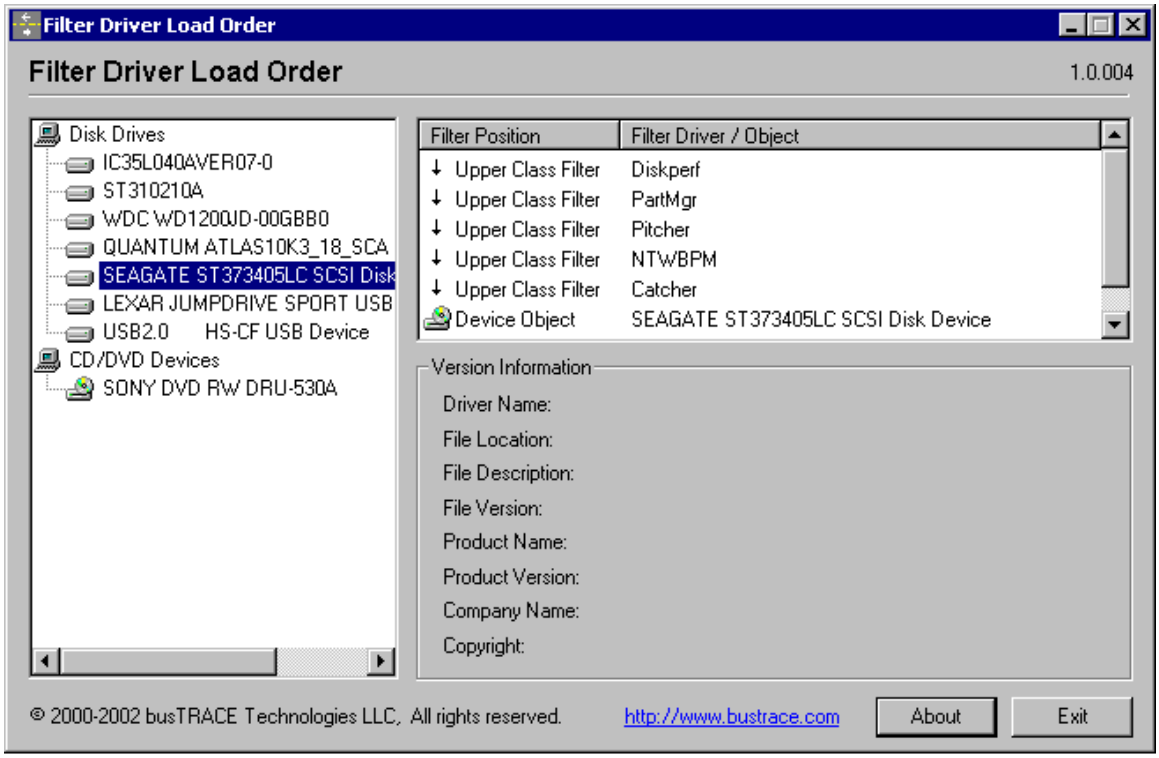
```
 ****************** TEST RESULTs SUMMARY *****************

       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
```

Figure A-2 – Logfile output listing for test SWB-03

```
NIST Software Write Blocker Test Suite V1.2
Mon Mar 27 16:06:32 2006

Test case:          SWB-03
Command set:        W
Number of drives:   1
Protection pattern: P

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

      IRP Function                  Code   Result
-------------------------------------------------
 IRP_MJ_CREATE                     (0x00)  ALLOWED
 IRP_MJ_WRITE                      (0x04)  BLOCKED
 IRP_MJ_SET_INFORMATION            (0x06)  BLOCKED
 IRP_MJ_SET_EA                     (0x08)  BLOCKED
 IRP_MJ_FLUSH_BUFFERS              (0x09)  ALLOWED
 IRP_MJ_SET_VOLUME_INFORAMATION    (0x0B)  BLOCKED
 IRP_MJ_SCSI                       (0x0F)

  SCSI Operation         Opcode
  ----------------------------
  FORMAT_UNIT            (0x04)           BLOCKED
  REASSIGN_BLOCKS        (0x07)           ALLOWED
  WRITE6                 (0x0A)           BLOCKED
  WRITE_FILEMARKS        (0x10)           ALLOWED
  COPY                   (0x18)           ALLOWED
  ERASE                  (0x19)           ALLOWED
  WRITE10                (0x2A)           BLOCKED
  ERASE10                (0x2C)           BLOCKED
  WRITE_AND_VERIFY10     (0x2E)           BLOCKED
  SYNCHRONIZE_CACHE      (0x35)           BLOCKED
  COPY_COMPARE           (0x3A)           ALLOWED
  WRITE_DATA_BUFF        (0x3B)           BLOCKED
  WRITE_LONG10           (0x3F)           ALLOWED
  WRITE_SAME10           (0x41)           ALLOWED
  XDWRITE10              (0x50)           ALLOWED
  XPWRITE10              (0x51)           ALLOWED
  XDWRITucRead10         (0x53)           BLOCKED
  REPAIR_TRACK           (0x58)           BLOCKED
  CLOSE_TRACK_SESSION    (0x5B)           BLOCKED
  SEND_CUE_SHEET         (0x5D)           ALLOWED
  UNDEFINED_CDB          (0x7F)           ALLOWED
  XDWRITE_EXTENDED       (0x80)           ALLOWED
  REBUILD                (0x81)           ALLOWED
  REGENERATE             (0x82)           ALLOWED
  EXTENDED_COPY          (0x83)           ALLOWED
  ATA_PASSTHROUGH16      (0x85)           ALLOWED
  WRITE16                (0x8A)           ALLOWED
  WRITE_AND_VERIFY16     (0x8E)           ALLOWED
  SYNCHRONIZE_CACHE16    (0x91)           ALLOWED
  WRITE_SAME16           (0x93)           ALLOWED
  ATA_PASSTHROUGH12      (0xA1)           BLOCKED
  WRITE12                (0xAA)           BLOCKED
  ERASE12                (0xAC)           ALLOWED
  WRITE_AND_VERIFY12     (0xAE)           ALLOWED

 IRP_MJ_SET_SECURITY               (0x15)  ALLOWED
 IRP_MJ_SET_QUOTA                  (0x1A)  ALLOWED

 ****************** TEST RESULTs SUMMARY *****************

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

  Read CDB's  ................       0          0        0
  Write CDB's ................      22         12       34
  Other CDB's ................       0          0        0
  Vendor SPecific CDB's ......       0          0        0
  Undefined CDB's.............       0          0        0
```

Appendix B – Filter Driver Load Orders




Filter Driver Load Order
Filter Driver Load Order
1.0.004
Disk Drives
IC35L040AVER07-0
ST310210A
WDC WD1200JD-00GBB0
QUANTUM ATLAS10K3_18_SCA
SEAGATE ST373405LC SCSI Disk
LEXAR JUMPDRIVE SPORT USB
USB2.0 HS-CF USB Device
CD/DVD Devices
SONY DVD RW DRU-530A
Filter Position
Filter Driver / Object
Upper Class Filter
Diskperf
Upper Class Filter
PartMgr
Upper Class Filter
Pitcher
Upper Class Filter
NTWBPM
Upper Class Filter
Catcher
Device Object
SEAGATE ST373405LC SCSI Disk Device
Version Information
Driver Name:
File Location:
File Description:
File Version:
Product Name:
Product Version:
Company Name:
Copyright:
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http://www.bustrace.com
About
Exit

About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. NIJ's mission is to advance scientific research, development, and evaluation to enhance the administration of justice and public safety. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 U.S.C. §§ 3721–3723).

The NIJ Director is appointed by the President and confirmed by the Senate. The Director establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice, and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

Creating relevant knowledge and tools

1. Partner with State and local practitioners and policymakers to identify social science research and technology needs.
2. Create scientific, relevant, and reliable knowledge—with a particular emphasis on terrorism, violent crime, drugs and crime, cost-effectiveness, and community-based efforts—to enhance the administration of justice and public safety.
3. Develop affordable and effective tools and technologies to enhance the administration of justice and public safety.

Dissemination

4. Disseminate relevant knowledge and information to practitioners and policymakers in an understandable, timely, and concise manner.
5. Act as an honest broker to identify the information, tools, and technologies that respond to the needs of stakeholders.

Agency management

6. Practice fairness and openness in the research and development process.
7. Ensure professionalism, excellence, accountability, cost-effectiveness, and integrity in the management and conduct of NIJ activities and programs.

Program Areas

In addressing these strategic challenges, the Institute is involved in the following program areas: crime control and prevention, including policing; drugs and crime; justice systems and offender behavior, including corrections; violence and victimization; communications and information technologies; critical incident response; investigative and forensic sciences, including DNA; less-than-lethal technologies; officer protection; education and training technologies; testing and standards; technology assistance to law enforcement and corrections agencies; field testing of promising programs; and international crime control.

In addition to sponsoring research and development and technology assistance, NIJ evaluates programs, policies, and technologies. NIJ communicates its research and evaluation findings through conferences and print and electronic media.

To find out more about the National Institute of Justice, please visit:

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