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## **Logicube SuperSonix<sup>®</sup> User's Manual**

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1. By website: [www.logicube.com](http://www.logicube.com)
2. By email: [techsupport@logicube.com](mailto:techsupport@logicube.com)
3. By telephone: 1 - (818) 700 8488 ext. 3 between the hours of 7am –5pm PST, Monday through Friday, excluding U.S. legal holidays.

**Table of Contents**

**LOGICUBE SUPERSONIX® USER’S MANUAL ..... I**

**TABLE OF CONTENTS..... V**

**1. INTRODUCTION TO THE LOGICUBE SUPERSONIX ..... 9**

**Introduction ..... 9**

Specifications..... 10

Features..... 10

Using this guide ..... 11

System Description..... 11

**2. GETTING STARTED (FAST START)..... 14**

**Applying power to the Logicube SuperSonix ..... 14**

Calibrating the Color Touch Screen ..... 14

Connecting PATA (IDE) Drives ..... 14

Connecting a SATA Drive..... 16

Connecting other types of drives ..... 18

**The user interface ..... 18**

“Navigating Menu Options” ..... 19

Alphanumeric Keystroke Entry ..... 19

Indicator Lights ..... 19

**3. CLONING MODES AND SETTINGS ..... 22**

**Main Menu Screen ..... 22**

Miscellaneous ..... 22

 ..... 22

 User Selectable Beeper ..... 22

 USB/Firewire ..... 23

 Contrast Adjust ..... 23

	Firmware Upgrade .....	23
	Debug .....	23
	Performing Updates on the (Optional) SAS Adapter .....	24
	Drives .....	26
	.....	26
	About Screen .....	29
	.....	29
	Wizard Mode.....	29
<b>Cloning .....</b>	<b>29</b>	
Cloning to Target drives greater than 2TB .....	30	
Mirror - (MirrorCopy™) Mode .....	30	
MirrorCopy Step-by-Step .....	30	
CleverCopy Mode .....	31	
CleverCopy Step-by-Step .....	32	
Selective Partitions™ Mode.....	33	
Copy Methods within Selective Partitions Mode .....	33	
Selective Partitions™ Step-by-Step .....	34	
Master Manager™ Mode .....	35	
Master Manager Step-by-Step .....	36	
<b>Cloning Windows 7 .....</b>	<b>38</b>	
Background Information.....	39	
Windows 7 non-OEM DVD Installation.....	39	
<b>Cloning Windows Vista .....</b>	<b>40</b>	
Vista Installations.....	41	
Cloning Scenarios and how to handle them .....	41	
A Simple Vista partition with logical drivers .....	41	
Vista with RE (Recovery Environment) .....	41	
XP/Vista dual boot .....	42	
Selective Partitions™ .....	42	
Master Manager.....	42	
Reference .....	43	
2 <sup>nd</sup> . Option - Sysprep Instructions.....	44	
<b>Optional Preference Settings.....</b>	<b>45</b>	
Speed.....	45	
Direction.....	46	
CHS Translation (Set within the LBA Mode of Clever).....	47	
CHS Translation Settings .....	47	
<b>Password Protection .....</b>	<b>48</b>	
Introduction .....	48	

Locking & Unlocking the System .....	48
<b>4. GUID PARTITION TABLE (GPT) DRIVES .....</b>	<b>50</b>
<b>Introduction .....</b>	<b>50</b>
Cloning GPT Drives Step-by-Step .....	50
<b>5. OMNIDIAGNOSTICS .....</b>	<b>53</b>
<b>Introduction .....</b>	<b>53</b>
Enabling OmniDiagnostics .....	53
<b>OmniDiagnostics Features.....</b>	<b>54</b>
On Error .....	54
On Error Step-by-Step .....	54
Scan Target Mode .....	55
Scan Target Mode Step-by-Step .....	55
Repair Target Mode .....	56
Repair Target Mode Step-by-Step.....	56
WipeClean™ Target Mode .....	57
Wipeclean Target Step-by-Step .....	58
<b>6. OPTIONAL PERIPHERALS .....</b>	<b>59</b>
<b>Introduction .....</b>	<b>59</b>
<b>Logicube CloneCard Pro .....</b>	<b>59</b>
Before using.....	60
Using the Logicube CloneCard Pro to Capture a Drive.....	60
Improving Speed of Transfer .....	61
<b>Logicube SAS Adapter .....</b>	<b>61</b>
What's Included with the SAS Adapter .....	62
Installation Setup .....	62
Cloning with the SAS Adapter .....	63
Duplicating SAS to SATA or IDE .....	63
Duplicating SAS to SAS.....	63
Hashing SAS Master and Target Drives.....	65
Optional USB cloning.....	67
<b>7. USB AND FIREWIRE PORTS .....</b>	<b>69</b>
<b>Introduction .....</b>	<b>69</b>
Minimum requirements .....	69
How to use under Windows (for Master Drive Management).....	70
FireWire Connection to Windows (for Drive Management) .....	71
Removing USB devices .....	72
<b>Cloning through the USB port .....</b>	<b>72</b>
Using the SuperSonix with the USB Cloning Software .....	73
Using the Solitaire Turbo USB Client .....	75
Main Menu Screen.....	75

About Screen .....	75
Drive Info .....	75
Cloning Modes .....	75
Mirror Clone (100%) Step-by-Step .....	75
Clever Clone (Clever) Step-by-Step .....	76
Selective Partitions (Selective) Step-by-Step .....	77
Optional Preference Settings .....	79
Verify .....	79
Direction .....	80
CHS .....	80
SPEED .....	81
<b>8. COMPACT FLASH (CF) CARD.....</b>	<b>82</b>
<b>Introduction .....</b>	<b>82</b>
Inserting and Removing the Compact Flash .....	82
<b>Connecting the CF Drive to Windows via USB .....</b>	<b>83</b>
Connecting Through USB Mode .....	83
Removing USB devices .....	84
<b>9. SOFTWARE LOADING INSTRUCTIONS .....</b>	<b>85</b>
<b>Logicube SuperSonix Software Updating Procedures .....</b>	<b>85</b>
Loading Software Using the Compact Flash .....	85
<b>GLOSSARY .....</b>	<b>86</b>
<b>FAQS .....</b>	<b>92</b>
<b>Troubleshooting Guide.....</b>	<b>95</b>
<b>11. INDEX .....</b>	<b>99</b>
<b>Technical Support Information .....</b>	<b>100</b>

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# 1. Introduction to the Logicube SuperSonix

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## Introduction

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Thank you for purchasing the Logicube SuperSonix Hard Drive Duplication device. With proper use, this system will accurately clone HDD for years to come.

The Logicube SuperSonix duplicates or “clones” the contents of one hard drive onto another; a source drive, typically referred to as the Master<sup>1</sup> and a destination drive known as the Target. It is capable of copying data from the Master drive to the Target drive at speeds approaching 8.0 GB/ min. The unit also has the capability to clone data to/from a hard drive installed inside a PC through the USB port.

The Logicube SuperSonix has an intuitive user interface and powerful features that make hard drive cloning fast and easy. It also has an easy-to-use color touch screen. The SuperSonix also features a Wizard function that steps users through basic cloning processes. Logicube’s exclusive CleverCopy™ technology automatically supports all

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<sup>1</sup> The term Master as used does not refer to the master jumper setting on the hard drive.

DOS, Windows 95/98/NT/2000/ME/XP/VISTA/7/8 partitions while MirrorCopy™ mode can perform sector-by-sector copying for all partition types including Mac, Linux, Unix, Sun, and OS2.

The optional OmniDiagnostics™ software adds additional features for finding and repairing hard drive data problems, recovering weak or bad data sectors, and securely erasing personal and confidential information.

### Specifications

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Power Requirements	90 to 230VAC 47 to 63Hz
Operating Temperature	0°to 40°C (32°to 104°F)
Storage Temperature	0° to 60° C (32° to 140° F)
Relative Humidity	20%- 80% (no condensing)
Net Weight	Less than 1lb
Dimensions	6" W x 9" D x 2.6" H
Agency Approvals	RoHs compliant FCC Part 15 Class A, CE

### Features

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- Clones any SATA or PATA (IDE) drive.
- Data transfer rates approaching 8.0 GB/min.
- Master and Target drives can be of different size, make and model.
- Master drive can contain up to 24 partitions.
- Automatically scales FAT16/32, NTFS and Windows 2000/NT/ME/XP/Vista/7 partitions.
- USB 2.0 and IEEE 1394b (FireWire) port connectivity
- Support for eSATA drives (with optional cable) and 1.8" microSATA drives (with optional cable)
- Support for verification of cloned drive using MD5 signature of target drive
- PCMCIA connectivity (optional)
- Optional diagnostics software for drive scanning, repairing, data recovery, and Department of Defense (DoD) specification data wiping.
- Removable Compact Flash (CF) Drive.
- Bi-directional data transfer

### Using this guide

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This user guide is made up of 11 sections:

- Introduction
- Getting Started (Fast Start & Wizards)
- Cloning Modes and Settings
- GUID Partition Table (GPT) Drives
- Omnidiagnostics
- Using the CloneCard Pro
- Using the USB & FireWire Ports
- Compact Flash (CF) Drive
- Software Loading Instructions
- Glossary
- Frequently Asked Questions

Please read Module 1. *Introduction*, and Module 2. *Getting Started* before attempting a drive cloning session. It is recommended that you practice with test or scratch drives to fully appreciate all of the features.

### System Description

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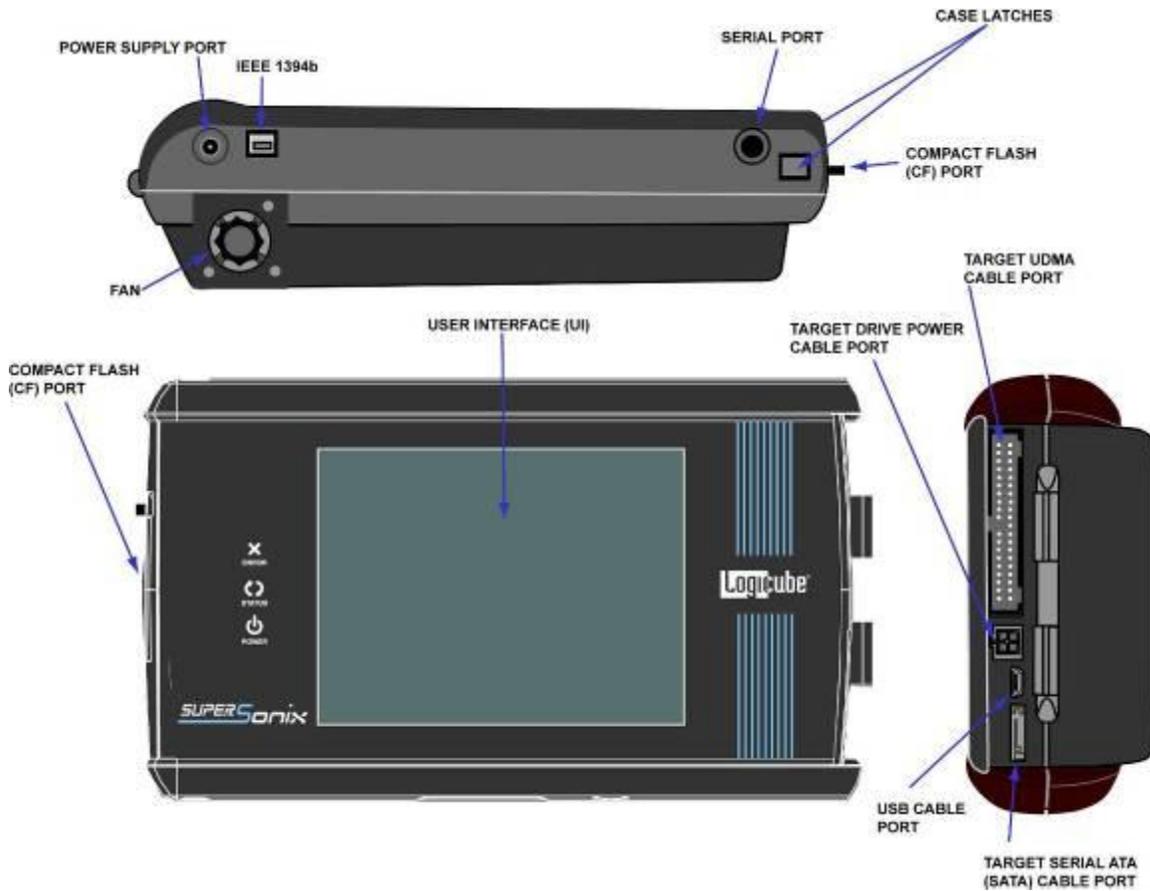
The complete Logicube SuperSonix system includes the following:

- Logicube SuperSonix.
- **NOTE:** The Logicube SuperSonix system does not come with a hard drive. You may use any supported drive of your choice.
- An external 12V DC – 8.0 Amp power supply with AC power cord.
- Two UDMA cables (5" and 9") for connecting the Master and Target drives to the Logicube SuperSonix.
- Two PC-style accessory power cables (one 5" and one 9") for connecting the Master and Target drives to the SuperSonix.
- Two SATA cables, one short and one long, for attaching SATA drives to your Logicube SuperSonix.
- One FireWire cable and one USB cable

- A System CompactFlash card for software updates
- A CD containing the user's manual
- A screwdriver and Mag-Lite® flashlight for opening and looking inside a PC.
- A vacuum-formed carrying case.
- **NOTE:** It is recommended that you always use the carrying case to store and carry the Logicube SuperSonix.

Figure 1 below details the location of the SuperSonix main physical elements. Use this drawing to familiarize yourself with the device.

**Figure 1. Logicube SuperSonix**



**Caution:** Avoid dropping the Logicube SuperSonix or subjecting it to sharp jolts. When in use, place it on a flat surface.

**Caution:** Keep the unit dry. If you need to clean your Logicube SuperSonix, use a lightly damp, lint free cloth. Avoid using soap or other cleaning agents particularly those containing bleach, ammonia, alcohol or other harsh chemicals.

**Caution:** Do not attempt to service the Logicube SuperSonix! Doing so may void the warranty. If your unit requires service, please contact Logicube Technical Support for assistance.

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## 2. Getting Started (Fast Start)

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### Applying power to the Logicube SuperSonix

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#### Calibrating the Color Touch Screen

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The Color Touch Screen recalibration process is very simple and is outlined for you in the procedure below:

1. Place a finger on the touch screen while plugging in the power adapter.
2. Keep your finger on the screen until the unit boots to a screen that reads *Touchpad Calibration. Please touch center of the square with finger (1/5)*.
3. Locate a square at the top of the screen and touch it with your finger.
4. Repeat the previous step four more times. The unit will count each time the square is tapped correctly. It will count (1/5), (2/5), etc.
5. Once the screen has been calibrated, it will reboot to the Main Menu Screen.
6. The SuperSonix will retain the calibration setting until the next recalibration.

The Logicube SuperSonix is able to detect whether a PATA (IDE) or SATA drive is attached to the Master or Target position. The unit is capable of cloning to/from a SATA drive to a PATA drive and vice versa (as well as PATA to PATA and SATA to SATA).

**NOTE:** Never attach both a PATA (IDE) and SATA drive to the Master or Target position. The unit can only handle one drive on each position.

Before applying power perform the steps listed below.

#### Connecting PATA (IDE) Drives

---

1. Open the Logicube SuperSonix by pressing the two latches on the left side of the unit and by lifting the top. You will notice three connections: One for a UDMA cable (PATA or

IDE data cable) and another for a small drive power cable. Underneath is the third connector for the SATA cable.

**Note:** See Figure 2, Connecting a PATA (IDE) Master Drive

2. Connect a Master hard drive and close the Logicube SuperSonix.
3. Plug in the set of 9" cables, to the connections found on the right side of the Logicube SuperSonix.

**Note:** See Figure 3, Connecting a PATA (IDE) Target Drive

4. Connect the Target drive to these cables.

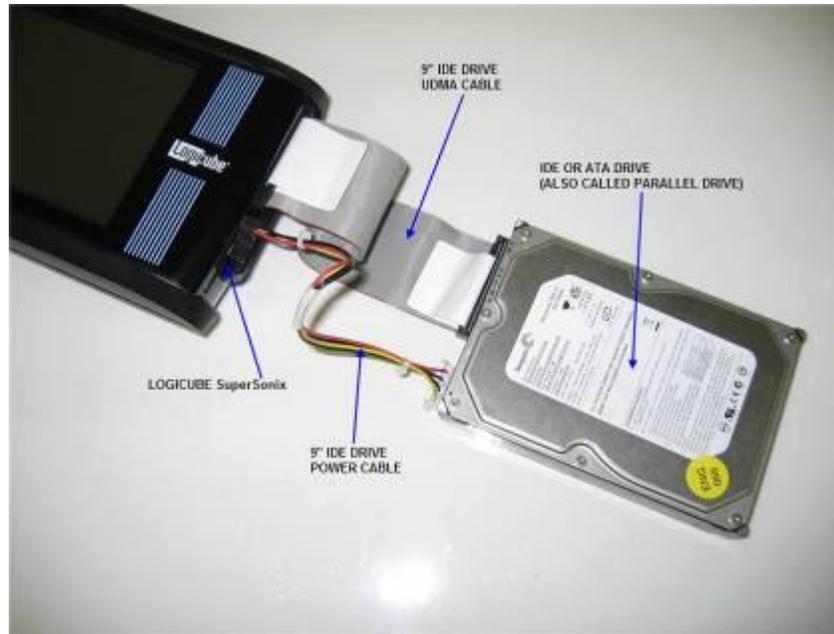
**Note:** The internal drive is always referred to as the **Master** drive and the outside drive is always referred to as the **Target** drive.

5. Connect the external power supply to the Logicube SuperSonix. The unit should turn on and in about 10 seconds, the main screen appears.

**Figure 2. Connecting a PATA (IDE) Master Drive**



**Figure 3. Connecting a PATA (IDE) Target Drive**



### Connecting a SATA Drive

1. Open the Logicube SuperSonix by pressing on the two latches on the left side of the unit and lift the top. You will notice three connections: One for a UDMA cable (PATA or IDE data cable) and another for a small drive power cable. Underneath is the third connector for the SATA cable.

**Note:** See Figure 4, Connecting a SATA Master Drive

2. Connect a Master hard drive and close the Logicube SuperSonix. Make sure that Pin 1 is properly aligned.
3. Plug in the long SATA cable to the connections found on the back of the Logicube SuperSonix.

**Note:** See Figure 5, Connecting a SATA Target Drive.

4. Connect the Target drive to this cable.

**Note:** The internal drive is always referred to as the **Master** drive and the outside drive is always referred to as the **Target** drive.

5. Connect the external power supply to the Logicube SuperSonix. The unit should turn on and in about 10 seconds, the main display appears.

Figure 4. Connecting a SATA Master Drive.



Figure 5. Connecting a SATA Target Drive.



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### Connecting other types of drives

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Logicube sells specialized adapters that allow the following types of drives to be connected to the Logicube SuperSonix:

- 2.5" Laptop drives (also called Notebook drives).
- 1.8" Laptop drives (often found in smaller laptops or netbooks).
- Compact Flash (CF) cards.
- USB drives

Other specialized adapters are also available. If you are unsure about the type of drive that you have, please contact Logicube Technical Support for assistance.

**Note:** Both eSATA and 1.8" microSATA drives are supported with an optional cable available from Logicube.

**Note:** SCSI drives cannot be connected directly to the Logicube SuperSonix.

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### The user interface

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The touch sensitive user interface (UI) has been designed with the professional in mind. It is fast, responsive, and to the point; which means it requires very few entries to achieve the desired result.

Wizard Mode functionality will be discussed here in the Quick Start Section. The other four Icons found on the Main Menu will be explained in Section 4. Cloning Modes and Settings.

**Figure 6. Main Menu**



### “Navigating Menu Options”

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-  - Tap the START icon to begin a cloning operation using the current settings.
-  - Tap the STOP icon in mid operation to abort the process.
-  - Tap the BACK icon from any sub menu to return to the previous menu screen(s)
-  - Tap the MAIN icon any time it is available to return to the main screen.
-  - Tap the OK icon to return to the main screen or to go back to a cloning process set up screen.
-  &  - Tap the respective YES or NO icons in response to any questions that the SuperSonix needs you to answer.

### Alphanumeric Keystroke Entry

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The electronic alphanumeric keyboard is used for labeling drive partitions in Master Manager Mode, entering passwords and other functions.

Tapping **ALT** on the electronic keyboard at any time causes the display to switch between:

**(0,1,2,3,4,5,6,7,8 9, ! @ . % &\*? \_-), (A-Z in capital letters) and (a-z in lower case letters)**

**NOTE:** Drive partition labels must be 11 characters or less.

### Indicator Lights

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The **POWER** indicator light remains on while the Logicube SuperSonix is receiving power.

The **STATUS** indicator is lit during cloning operations and any operation that accesses the Master or Target drive. It will flash as data is transferred from one drive to the other.

The **ERROR** light will turn on if a problem is encountered during cloning or any other operation. If this occurs, check the screen for an error message and instructions on what to do next.



- Tapping the Wizard Mode icon will bring up the Wizard Selection Menu. This menu provides a list of automated actions.

Current SuperSonix Wizard Modes will automatically handle all (Non - FAT, FAT32 & NTFS) and all FAT, FAT32 or NTFS partitions with limited user interaction.

**Figure 7. Wizard Selection Menu**



Irrespective of which selection is made (Windows Drive or Non-Windows Drive) the user will be prompted to select the location of the Master Drive. See Figure 8 for an example of what you can expect to see on the display.

The BACK icon is available to go to the previous screen(s) and the WIZARD MAIN icon will take you directly back to the Wizard Selection Menu.

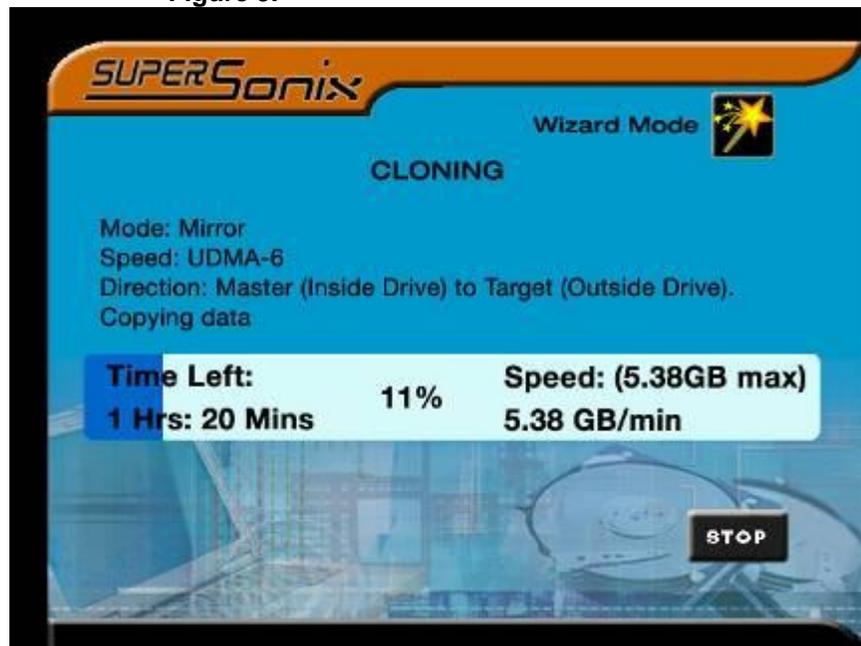
Figure 8.



**Note:** Consider the location of your Master drive prior to selecting 'Inside Drive' or 'Outside Drive' carefully to prevent your Master Drive from being accidentally overwritten.

This screen below represents what a typical clone process will look like during the clone. This is a *Wizard Mode example set for - I want to clone a Windows Drive with Master Drive set to Inside.*

Figure 9.



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### 3. Cloning Modes and Settings

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#### Main Menu Screen

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The main menu screen appears when the Logicube SuperSonix is first powered up. It displays the Title Screen and five icon driven menu options.

Figure 10.



#### Miscellaneous



#### User Selectable Beeper

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Choose between **ON** and **OFF**.



**USB/Firewire**

This Icon will present you with four sub-icons connection choices



Connect via USB to CF



Connect via USB to Master



Connect via FireWire to CF



Connect via FireWire to Master



**Contrast Adjust**

The Up/Down arrows allow the user to set the contrast range between 1 and 32



**Firmware Upgrade**

Place the new Firmware on the root of the system CF card using the USB to CF or FireWire to CF icon. The default Password for upgrading the firmware is *logicube* (all in lower case). The SuperSonix must not be turned off or interrupted during the update process. Once the Firmware upgrade is complete tap  to reboot.



**Debug**

This user selectable feature allows log trace reports to be captured via USB or Serial port to a terminal program like HyperTerminal. Once saved, these reports can be e-mailed to Logicube technical support for advanced hard drive troubleshooting.

**Choose Debug - ON or OFF**

**Debug Trace select - Serial Port or USB Port**

### Performing Updates on the (Optional) SAS Adapter



It is good practice to occasionally verify that your SAS Adapter is running the current BIOS, Kernel, Firmware and Software versions. This is not something that will need to be updated frequently. Tap the SCSI/SAS icon under Miscellaneous to gain access to the icons used to update the Firmware, BIOS, Kernel and Software revisions of the Optional Logicube SAS Adapter.



BIOS Upgrade is used to upgrade the BIOS of the adapters PCB assembly.



Kernel Upgrade is used to upgrade the OS of the adapter.



The Application Upgrade is used to upgrade the Capture Application for the SAS adapter. This update will most likely be performed more frequently than the other update listed in this section.



FPGA Upgrade is used to upgrade the Firmware of the adapters PCB assembly.

Tap the following Icons in succession to display a list of the current programming installed in your SAS Adapter:



A list will display showing which versions of BIOS, Kernel, FPGA (Firmware) and Application Software are currently installed in the SAS adapter.

**Sample Info list:**

Serial number: 1  
 Firmware Rev: 101  
 Bios Rev: 150  
 Kernel Rev: 200  
 Software Rev: 304

Compare the listed revisions to the current versions posted and available on the Logicube website. If updates are necessary all four files will need to be downloaded from the Logicube website and copied to the root directory of a USB flash drive.

**NOTE:** The USB port on the adapter is used to update all SAS Adapter programming even if the USB port cloning option has not been purchased and enabled.

Following the Step-by-Step instructions listed below to update SAS Adapter BIOS using the SuperSonix. Kernel, FPGA and Software are updated similarly.

1. Disconnect the power supply cord from the Logicube SuperSonix.
2. Locate the UDMA cable P/N CBL-037B and attach the end labeled HDD SIDE into the SAS adapter port marked IDE CONNECTOR IN.
3. Connect the other side of the UDMA cable labeled DUPLICATOR SIDE the external IDE port on the Logicube SuperSonix.
4. Locate the cable labeled CBL-002B and connect the end with the large yellow plug to the mating receptacle next to the UDMA cable on the SAS adapter.
5. Connect the other side of the CBL-002B to the external power port of the SuperSonix. Use the power port closest to the UDMA cable.
6. Prepare a USB flash drive with all four SAS Adapter update files on its root directory. (Updated files can be obtained by clicking the download link next to the SAS Adapter on the Logicube website).
7. Insert the USB flash drive into the SAS adapter USB port.
8. Insert the power supply cord to power the SuperSonix.

**NOTE:** The remaining steps provide an example of how to update just the BIOS but they are also applicable for updating Firmware, Kernel and Software.

9. Tap:   
10. Enter the password [logicube] in lower case.
11. You will be prompted to enter a revision number. In this example it is the current BIOS revision number. (This and all current revision numbers are provided in the readme.txt file that accompanied the previously downloaded update files. As of this writing the value for Bios Revision is 150. Entering an incorrect revision value will cause the process to error out.
12. Enter the current revision for the respective item you are updating. If the revision number matches the expected number the update process will begin automatically.

**NOTE:** It is imperative that power be maintained throughout the SAS adapter update. Do not remove power to the SuperSonix until the update process has completed.

**NOTE:** The SAS adapter must be upgraded to software version V304 and the SuperSonix must be at or upgraded to software version V1.70 in order for the SAS Adapter to work correctly. Refer to **Section 8: Software Loading Instructions** for SuperSonix software loading instructions.

**NOTE:** Please refer to **Section 5: Optional Peripherals** for information regarding use of the optional SAS adapters.

### Drives



Master Drive



Target Drive

Select the Drive Info screen by tapping the Drives icon. Another screen will come up asking you to select either the **Master Drive** or **Target Drive** icon.

Make your choice and the unit will access the selected drive and report back the drive's model number, capacity, geometry, if S.M.A.R.T. is supported and other information.

Tap the **More** icon to display a list of partitions located on the selected drive. The list will include file name, type and size.

Return to the Drive Information menu by tapping the **OK** icon at any time. From there you can select either **Back** or **Main** to return to the Main Menu.

Settings



Figure 11.

Mirror, Clever, Selective, Master Manager and MD5 Hash settings are discussed in the Cloning Section. The SAS Menu is covered in Section 5 under Optional Peripherals. Diagnostics are covered in section 4.



MD5 Hash



Create Checksum File

Calculates the MD5 Hash for the entire drive to be Mirror copied and places the Hash value on the System CF card. To create the Checksum file the Master drive must be moved to the Target position

Checksum.txt created successfully.

Md5 Values are:

1368 06C7 231D DF0F A2B6 8B45 AA68 D983

Number of sectors calculated: 100

1. To change the number of sectors that the calculation will be based upon; tap the Total Sector: Whole Drive icon shown in Figure 11b.

**Figure 11b.**



2. This will bring up a touchpad that will allow you to enter the maximum sector value for the calculation. Once value is entered tap OK.
3. Advanced IT users may choose to slow down the process by tapping the Speed icon displayed in Figure 11c.

**Figure 11c.**



4. Tap  (Start) to begin the calculation.
5. To verify the cloned target drive matches the Master drive tap the Verify Target Drive icon.



Verify Target Drive

Calculates the MD5 Hash of the cloned Target drive and compares it to the hash value previously stored on the CF. Once the process is complete the SuperSonix will display both values and also indicate if there is a match.

MD5 Verification Results for (Model: WDC  
WD3201ABYS-01B9A0, Serial  
WD-WCARW3590618):  
MD5 Verified SUCCESSFULLY!

calculated MD5: 1368 06C7 231D DF0F A2B6 8B45  
 AA68 D983  
 expected MD5: 1368 06C7 231D DF0F A2B6 8B45 AA68  
 D983  
 number of sectors calculated: 100

**About Screen**



Select the About Screen icon to view information about the SuperSonix. The serial number of your unit along with the software and firmware versions currently loaded will be displayed. The About screen also lists all options currently enabled on the unit and provides contact information for Logicube Technical Support.

To return to the main menu, simply tap the **OK** icon at any time.

**Wizard Mode**



This menu provides a list of automated actions. Current SuperSonix Wizards will automatically handle (Non - FAT, FAT32 & NTFS) and all FAT, FAT32 or NTFS partition cloning with limited user interaction. See the Getting Started section for Wizard Mode instructions.

**Cloning**

The Logicube SuperSonix provides several different modes of operation for cloning virtually any hard drive quickly and effectively. Here we will discuss the most frequently used cloning modes, and provide step-by-step instructions for each.

We will also cover each of the other optional preference settings found under the Settings menu, and explain what they do and when to use them.

**NOTE:** Each time the Logicube SuperSonix is powered off the cloning mode and preference settings are returned to their factory defaults.

### Cloning to Target drives greater than 2TB

---

Only GPT drives can be cloned to drives greater than 2TB in capacity. If you have an MBR based drive, the largest drive you can clone to is 2TB. For more information about GPT, please see chapter 4: GUID Partition Table (GPT) Drives.

### Mirror - (MirrorCopy™) Mode

---



Mirror

This cloning mode makes a direct, physical (bit-by-bit) copy of the Master drive. It does not adjust any values or perform any translation from drive to drive. It simply copies whatever percentage of the Master drive that is designated.

**NOTE:** Any space left over on the Target drive will be seen as unallocated space. For example, if you are performing a 100% Mirror clone of a 40 GB drive to an 80 GB drive, the remaining 40 GB of space will be unallocated space.

**100% (Default)** – When 100% Clone is selected, the cloning mode menu will display the percentage of the Master drive that will be copied to the Target.



Percentage

100%

This percentage can be adjusted in increments as small as 1% by tapping the Percentage icon and inputting the desired value with the alphanumeric keypad.

The percentage of the Master drive to be mirrored is calculated starting from the first physical sector.

### MirrorCopy Step-by-Step

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1. From within the Settings menu tap .
2. Select the optional preferences Speed and Direction and alter them as needed using their respective icons.

1. **NOTE:** See the Optional Preference Settings section of this chapter for more information on these preference settings.
3. Tap the Percentage icon  to set the percentage of the Master drive to be mirrored.
4. A screen will appear asking you to enter a percentage of the Master drive to clone. Use the electronic keypad to adjust the value between 1 and 100% and tap **OK**.
  1. **NOTE:** A **User Attention Required** message will appear asking: Do you want to set to XX% mirror copy?
5. Tap **YES** to set the percentage to the requested value. Tap **NO** to cancel this step and go back to the previous screen.
6. Tap  (Start) to begin the cloning process.
7. The Logicube SuperSonix will notify you when cloning has completed. You will see a message that reads *Clone Successful! Drive cloned successfully!* along with the maximum speed that the transfer process obtained. Tap and hold down the **STOP** icon at any time to stop and cancel the cloning process.

### CleverCopy Mode

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This mode is recommended for Master drives with only FAT16, FAT32, or NTFS partitions. It clones all partitions on the Master drive to the Target drive and automatically sets the fastest method possible for each partition.

CleverCopy automatically scales all FAT32 and NTFS partitions to fill the Target drive in its entirety, and makes all the necessary adjustments to ensure a valid and bootable Target drive. It can also scale FAT16 partitions up to 2GB.

**NOTE:** When CleverCopy scales down an NTFS partition, it can only scale it to 55% of the original size.

This mode should only be used if all partitions on the Master drive are FAT, FAT32, or NTFS file systems.

Any partition that is not FAT, FAT32, or NTFS may still be resized, but may corrupt the partition. If you encounter a Master drive with any partition that is not a FAT, FAT32, or NTFS file system, it is recommended to use either MirrorCopy mode or Selective Partitions mode. If using Selective Partitions mode, choose Mirror mode for any non FAT, FAT32, or NTFS partition. See the section **Selective Partitions mode** later in this chapter for more information on Selective Partitions.

**Important Note:** In some OEM installations of Windows, the Recovery or Utility partition(s) may be in a FAT, FAT32, or NTFS file system. Most of these Recovery or Utility partitions require to be cloned to the target drive exactly the same size or to the same sectors. When these partitions are encountered, it is recommended to use either MirrorCopy mode or Selective Partitions mode. If using Selective Partitions mode, choose Mirror mode for any Recovery or Utility partition. See the section **Selective Partitions mode** later in this chapter for more information on Selective Partitions.

### **CleverCopy Step-by-Step**

---

1. From within the Settings menu tap  the CleverCopy icon.
2. Select the optional preferences-Speed, LBA Mode, and Direction and alter them as needed using their respective icons.

**NOTE:** See the Optional Preference Settings section of this chapter for more information on these preference settings.

3. Tap  (Start) to begin the cloning process.

The Logicube SuperSonix will notify you when cloning has completed. You will see a message that reads *Clone Successful! Drive cloned successfully!* along with the maximum speed that the transfer process obtained. Tap and hold down the **Stop** icon to stop and cancel the cloning process.

## Selective Partitions™ Mode

---



Selective Partitions is the most elaborate and flexible cloning mode. It provides the highest level of control over the cloning process, allowing you to individually select one or multiple Master drive partitions. It also allows you to choose a unique copy method for each.

**NOTE:** Not all copy methods are available for all partition types.

### Copy Methods within Selective Partitions Mode

**Clever** – Allows the Logicube SuperSonix to determine the best (and usually fastest) way to clone a selected partition. It works with FAT16, FAT32 and NTFS partitions.

**Mirror** – This setting clones the full contents of the selected partition without any partition scaling. (This setting is similar to 100% Clone mode, which mirrors the entire Master drive.)

**NOTE:** Partition Mirror is available for any partition type, and is the only method available to partitions that are unrecognized by CleverCopy mode.

**Keep Size** – Uses the CleverCopy algorithm but maintains the partition size during the clone.

**Defragment** – Using an advanced defragmentation algorithm, this copy method creates a Target partition with contiguous files and no gaps. This method is only available on partitions with FAT16 and FAT32 file systems.

**NOTE:** The Logicube SuperSonix will resort to defragment mode if the given partition is FAT16 and a cluster size change is required to create a valid Target partition.

**Convert** – Will convert the selected partition from FAT16 to FAT32 format on the fly. This method is available for FAT16 partitions only.

**NOTE:** Use only when the given partition is to be used with Windows 98/ME or Windows 2000. The 4.00.950 and 4.00.950a versions of Windows 95, Windows NT 3.x and 4.0, and some versions of MS-DOS are incompatible with FAT32 partitions.

### Selective Partitions™ Step-by-Step

1. From within the Settings menu tap  the Selective Icon.
2. Select the optional preferences - Speed and Direction and alter them as needed using their respective icons.

**NOTE:** See the Optional Preference Settings section of this chapter for more information on these preference settings.

3. Tap  (Start). After a few seconds the Logicube SuperSonix will display a list of all the partitions found on the Master drive.
4. Note that to the right of each partition label, you will see a designator for the partition type:
  - FAT16
  - FAT32
  - NTFS
  - CQ - Compaq partition
  - ?? - Unknown partition
5. Select partitions to clone by tapping the respective partition's info bar within the partition list. Repeated taps will cause the copy method to toggle between the different copying methods available. Repeat your selection for each partition you wish to clone.

**NOTE:** If no copy method is selected a Notification message will appear indicating - You must select a partition to clone!. Tapping <OK> takes you back to the Selective Copy start screen.

6. Tap the <OK> icon to continue.
7. If the Master drive is a GPT with Windows 7, a User Attention screen will appear. Tap the YES icon if the Master drive is a GPT drive. Tap the NO icon if the Master drive is an MBR drive. This screen will not appear with any other Operating System.

**NOTE:** MBR is more common than GPT. For more information about GPT, please see chapter 4: GUID Partition Table (GPT) Drives.



8. The status screen will appear and cloning will begin.
9. The Logicube SuperSonix will notify you when cloning has completed. Tap the Back icon to return to the main menu.

### Master Manager™ Mode

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Master Manager mode is useful in the creation of a multi-partition Master drive. Many IT technicians prefer to store multiple partitions (e.g. one for accounting, one for marketing, etc.) on a single Master drive. When a new PC is to be configured or a drive crash occurs, all the technician needs to do is select that partition and clone it.

The Master Manager mode is also useful for creating backups of drive partitions containing important data. The Logicube SuperSonix can hold up to 24 partitions on one Master drive. Drives greater than 2TB in capacity have been successfully tested with the Master Manager mode.

**NOTE:** At this time, drives with the Windows 7 Operating System is not supported in the Master Manager mode.

**IMPORTANT NOTE:** Software version 1.83RC26 and above uses GPT for the Master Manager drive to support drives greater than 2TB. Older Master Manager drives created prior to software 1.83RC26 will see a message stating:

**“Modification to an MBR based Master Manager drive format is not supported by this release”**

You will need to use a new drive as a Master Manager drive. You can still use the old Master Manager drive to push images to a Target drive.



### Master Manager Step-by-Step

**NOTE:** To create a Master drive using Master Manager, you must start with an unformatted drive.

Use the Erase All Partitions feature  located within Master Manager preferences to erase any drive you intend to use for the creation of a Master Manager. This step is only necessary if the drive has already been formatted and should be used carefully. It is recommended that you remove drives with critical information from the SuperSonix when assigning drive position prior to using the Erase All Partitions feature.

1. From within the Settings menu Tap  the Master Manager Icon.
2. Select the optional preferences Speed and Direction and alter them as needed using their respective icons.
3. **NOTE:** See the [Optional Preference Settings](#) section of this chapter for more information on these preference settings.
4. Tap  (Start). After a few seconds the Logicube SuperSonix will display a list of all the partitions found on the Master drive.

Note that to the right of each partition label, you will see a designator for the partition type:

- FAT16
- FAT32
- NTFS

- CQ - Compaq partition
  - ?? - Unknown partition
5. Select only one partition to clone at a time in Master Manager mode. Make your selection by touching the partitions' info bar within the partition list. Repeated taps will cause the clone method to toggle between the different methods available. Depending on the file type your choices may be: (CleverCopy, Defragment, Mirror ).

**NOTE:** Refer to the [Copy Methods](#) section of this chapter for more information.

6. Tap the OK icon. After a few seconds the Logicube SuperSonix will display a list of all Master partitions (if any) that are large enough to hold the data to be cloned from the Target drive.

**NOTES:**

- If the User Attention Screen stating "Modification to an MBR based Master Manager drive format is not supported by this release" appears, you will need to use a new drive as a Master Manager drive. You can still use the old Master Manager drive to push images to a Target drive.
  - Existing Master drive partitions that are too small to hold the amount of data selected from the Target drive will not appear on the LCD display. Choose the Master partition you wish to overwrite, or scroll down and select the "Add New Partition" option.
7. Tap the OK icon when you are ready to begin cloning.
  8. The status screen will appear and cloning will begin.
  9. The Logicube SuperSonix will notify you when cloning has been completed. Tap the Back icon to return to the main menu. Repeat the process one partition at a time until the new Master Manager drive contains all of the partitions you require.
  10. With the alphanumeric keypad, you can change the name or label of a chosen partition. Within the cloning menu tap the



Change Volume Label icon  select Master Drive, select the partition you wish to name, then tap OK. The alphanumeric keypad screen will appear. Enter the new label (you can toggle between lower case, upper case and numeric screens by tapping ALT) and then tap OK.

**NOTE:** A partition label can be a maximum of 11 characters long. No spaces are allowed.

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## Cloning Windows 7

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With the release of the Windows 7 Operating System, Microsoft has added some security features to protect the integrity of the partition. These features can cause problems when cloning Windows 7 with CleverCopy mode.

This section will discuss the best ways to clone Windows 7 hard drives.

### **Mirror Copy Mode**

The OmniClone Xi supports the cloning of Windows 7 drives in the standard Mirror Copy Mode. No special instructions are required.

### **Clever Copy Mode**

In certain scenarios special instructions must be followed in order to successfully clone Windows 7 drives using CleverCopy mode with the OmniClone Xi.

### **Master Manager Mode**

At this time, drives with the Windows 7 Operating System are not supported in the Master Manager mode.

### **SCENARIO 1: When the Master and Target drives are the same size**

With this scenario, you can use CleverCopy mode to clone the Windows 7 hard drive. Since the Master and Target drives are the same size, the size of the partitions should remain the same. If CleverCopy mode does not work, try using

Selective Partitions mode and follow scenario 3 below.

**SCENARIO 2: When the Target drive is larger than the Master drive and Windows 7 is a non-OEM installation**

Most non-OEM Windows 7 installations will have two partitions. The first partition is a 100 MB 'System Restricted' partition followed by the Operating System partition. The following steps are necessary for creating correct and bootable clones:

1. Use Selective Partitions mode.
2. The Logicube SuperSonix will report two partitions. They should be cloned as follows:
  - a. 100 MB NTFS: Mirror (Keep Size may be used as a second option)
  - b. 'N' GB NTFS (Operating System partition): CleverCopy

**SCENARIO 3: When the Target drive is larger than the Master drive, and Windows 7 is an OEM installation**

This scenario is seen in most OEM installations of Windows 7. PC manufacturers place a recovery partition on the disk so users can restore the PC to its original, factory installation. The following steps are recommended to create a bootable clone:

1. Use Selective Partitions™ mode.
2. The Logicube SuperSonix will report two or more partitions. One of the partitions may be labeled 'Recovery'. They should be cloned as follows:
  - a. Any partition except for the Operating System (Recovery, Utility, System Restricted, etc.): Mirror (Keep Size may be used as a second option)
  - b. 'N' GB NTFS (Operating System partition): CleverCopy.

---

### Background Information

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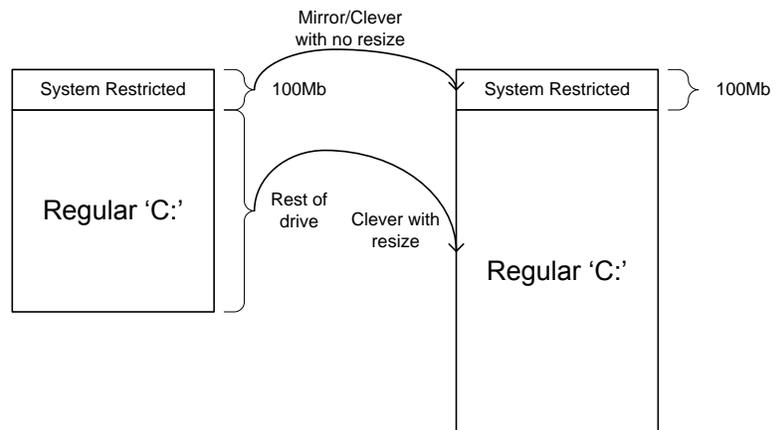
#### Windows 7 non-OEM DVD Installation

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When installing Windows 7 from a non-OEM DVD, the default partition layout will look like the following:

- A special 'System Restricted' partition 100 MB in size
- The Regular OS partition follows

In order to create a bootable clone, it is necessary to keep the 'System Restricted' partition the same size as what is on the Master drive. Resizing 'C:' (OS partition) works well.



The 'system restricted' partition contains the Windows 7 bootloader and it knows about 'c:' seemingly by an absolute offset, therefore it is necessary to keep the starting location of 'C:' within the drive the same. The same reasoning goes for the other scenarios above; this is why we always keep the starting offset of 'C:' the same as the master drive.

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## Cloning Windows Vista

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With the release of the Windows Vista operating system in late 2006, Microsoft has added some security features to protect the integrity of the partition. These features can cause problems when cloning Vista with CleverCopy mode.

This section will discuss the best ways to clone Windows Vista hard drives. These instructions apply to all flavors of Windows Vista (Windows Home Basic, Windows Home Premium, Windows Business and Windows Ultimate).

**NOTE:** Software dated 2008 or later and NTFS CleverCopy mode need to be installed on the SuperSonix in order to CleverCopy Windows Vista.

### **Vista Installations**

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The following Vista installations are supported by CleverCopy mode:

- Upgrade of a Windows XP SP2 drive.
- Dual Boot scenario with Windows XP on the second partition.
- Installation on a blank drive.

As of this writing, the following Windows Vista scenarios are not yet supported by CleverCopy mode, but valid target drives can be cloned with Mirror Clone mode:

- BitLocker™ technology – a new drive encryption scheme by Microsoft.
- Other multi-boot scenarios (i.e. with Linux).
- The Windows Longhorn Server

**NOTE:** New software updates are constantly being developed. Please check with [www.logicube.com](http://www.logicube.com) periodically for new software updates.

## **Cloning Scenarios and how to handle them**

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### **A Simple Vista partition with logical drivers**

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No extra treatment is required to clone a simple Vista partition.

### **Vista with RE (Recovery Environment)**

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Assuming the RE partition is Hidden (type 0x27) as is specified by Microsoft, no special handling is required to yield bootable target drives. The SuperSonix will detect and copy the hidden RE partition correctly followed by a CleverCopy of the Vista bootable partition.

If the Recovery partition is of a simple (type 0x07) (non-hidden partition), a different cloning method is necessary. Ref. Figure 12.

Choose Selective Partitions™ mode on the SuperSonix and assign the “Keep Size” method to the first (RE) partition, and regular Clever method to the Vista OS partition:



Fig 12. Selective partition Table

### XP/Vista dual boot

**XP partition comes before Vista partition:** Use the Selective Partitions™ mode on the SuperSonix unit. Set the clone method to “Keep Size” for the XP partition and CleverCopy for the Vista OS partition. Reference Fig 3 above.

**Vista partition comes before XP partition:** Use CleverCopy mode. No extra treatment is needed.

### Selective Partitions™

Selective Partitions™ will work correctly with Master Manager drives provided they have been built according to the directive defined at the beginning of the Master Manager section above. It will also work correctly with Vista drives that have multiple partitions. No special handling is required.

### Master Manager

In order to create a valid Master Manager™ drive with Vista partitions, it is absolutely necessary to apply the Bcdedit treatment to each Master drive prior to cloning.

It is OK to mix Vista and Non-Vista images on the same Master Manager™ drive.

**NOTE:** When building a Master Manager drive with Windows XP, 98 & 2K operating system partitions, you must edit the BCD (Boot Configuration Data) if Vista will be one of the partitions on the Master Drive you are creating.

If so, follow the Master Drive BCD Vista Preparation below.

### Master Drive BCD Vista Preparation

Edit the BCD (Boot Configuration Data) file in the following way:

1. Boot the Master drive and log in as a user with administrative rights.
2. Click the Start icon (the Microsoft Orb) and type **cmd.exe** at the search window. The **cmd.exe** application will show up at the top of the box. Right-click it and run it as an administrator (or with elevated rights). A DOS window will open.
3. Now type the following commands in the DOS Window:

**Bcdedit /set {bootmgr} device boot <enter>**

**Bcdedit /set {default} device boot <enter>**

**Bcdedit /set {default} osdevice boot <enter>**

**Bcdedit /set {memdiag} device boot <enter>**

**Bcdedit /set {ntldr} device boot <enter>**

(this line is only necessary for drives with XP/Vista dual boot setup)

4. If typed correctly (with admin rights!), the response will be successful in each case. These commands change the BCD file in a way that allows Vista to boot even if some of the drive's geometry has changed. It will not cause a rollback, will not request the license key again, or perform a SID change pass.
5. Now shut down the computer and disconnect the Master drive. Your Master drive is now ready for cloning.

### Reference

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#### 1<sup>st</sup>. Option - Master Drive BCD Vista Preparation

Edit the BCD (Boot Configuration Data) file in the following way:

1. Boot the Master drive and log in as a user with administrative rights.
2. Click the Start icon (the Microsoft Orb) and type **cmd.exe** at the search window. The **cmd.exe** application will show up at the top of the box. Right-click it and run it

as an administrator (or with elevated rights). A DOS window will open.

- Now type the following commands in the DOS Window:

**Bcdedit /set {bootmgr} device boot <enter>**

**Bcdedit /set {default} device boot <enter>**

**Bcdedit /set {default} osdevice boot <enter>**

**Bcdedit /set {memdiag} device boot <enter>**

**Bcdedit /set {ntldr} device boot <enter>**

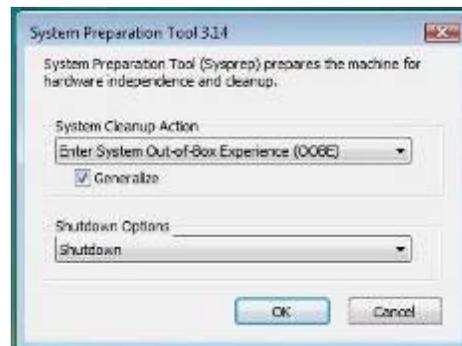
(this line is only necessary for drives with XP/Vista dual boot setup)

- If typed correctly (with admin rights!), the response will be successful in each case. These commands change the BCD file in a way that allows Vista to boot even if some of the drive's geometry has changed. It will not cause a rollback, will not request the license key again, or perform a SID change pass.
- Now shut down the computer and disconnect the Master drive. Your Master drive is now ready for cloning.

## 2<sup>nd</sup>. Option - Sysprep Instructions

This process "rolls back" the Master drive to the stage in the installation process just before entering the product license keys. To run:

- Boot the Master drive and log in as a user with administrator rights.
- Click the Start icon (the Microsoft Orb) and type **c:\windows\system32\sysprep\sysprep.exe** at the **search** edit box. The **Sysprep.exe** file will be displayed at the top of the box. Right-click it and run it as an administrator (or with elevated rights).
- Set the Cleanup Action to OOBE, and choose to Shutdown after the roll back, as shown in the following screenshot:



4. The “Generalize” switch is optional. It will not affect the success of the cloning process, but is recommended for the following reasons:
  - It will invoke the PnP mechanism of Vista upon booting the cloned targets. This is a good feature if the targets are to be placed in PCs of widely varying hardware devices (e.g. Video cards, network cards, motherboards, CPUs etc.).
  - It will force application of new SID values system-wide. This is desirable if two or more of the cloned drives will “live” in the same Active Directory domain.
5. The computer will turn off. Remove the Master drive, and do not boot it again. Your Master drive is now ready for cloning.

---

## Optional Preference Settings

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In addition the different cloning modes, there are preference settings that can be used to adjust the behavior of the cloning operation. Each of these preference settings is accessible within each cloning mode menu. Cloning modes are accessible from the main Settings menu.

**NOTE:** Not all preference settings are available in every cloning mode.

**NOTE:** Logicube strongly recommends against using a hard drive that has been shown to have bad sectors as new defects are likely to develop.

### Speed

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The speed setting provides the option to manually set the speed at which an operation will be performed at.

**UDMA-6** - The software performs a test procedure to determine the fastest setting that the drives will

tolerate while streaming data from one to the other. When set to UDMA-6, all lower speed grades will be tested (UDMA 0-6, PIO Auto, Medium & Slow).

**UDMA-5** - The software performs a test procedure to determine the fastest setting that the drives will tolerate while streaming data from one to the other. When set to UDMA-5, all lower speed grades will be tested (UDMA 0-5, PIO Auto, Medium & Slow).

**UDMA-4** - The software performs a test procedure to determine the fastest setting that the drives will tolerate while streaming data from one to the other. When set to UDMA-4, all lower speed grades will be tested (UDMA 0-4, PIO Auto, Medium & Slow).

**UDMA-3** - Force the unit to use at most this speed. Set the unit to this mode in some rare situations where one or both drives do not support the higher speeds, and “misbehave” during automatic speed benchmarking.

**UDMA-2** - Same as **UDMA-3**.

**UDMA-1** - Same as **UDMA-3**.

**UDMA-0** - Same as **UDMA-3**.

**PIO-Auto (PIO-4)** – Force the unit to use this as the highest speed (PIO-4). Set the unit to this mode in some rare situations where one or both drives do not support higher speeds, and “misbehave” during speed benchmarking.

**PIO-Medium** – This is a fixed value that almost all drives will tolerate. It will result in copying speeds from about 200 to over 500 MB per minute depending upon the characteristics of the drives.

**PIO-Slow** – This is a speed value that all drives will be able to tolerate. It supports copying speeds from 100 to over 300 MB per minute depending on the characteristics of the drives.

**NOTE:** Use the MEDIUM or SLOW modes if you encounter drive “time-outs” or if you are cloning older drives. Many 2.5” notebook drives require this setting.

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### Direction

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The Direction preference setting allows you to switch the cloning direction between the Master and Target drives. This setting is particularly useful when you need to backup a hard drive located inside a PC.

**M -> T** (Default) – Master to Target. In this setting, data will be copied from the Master (internal) drive to the Target (external) drive.

**T -> M** – Target to Master. Copies data from the Target (external) drive to the Master (internal) drive.

**NOTE:** Use this feature with care as your Master hard drive can be overwritten and all the original data on it will be lost!

### **CHS Translation** (Set within the LBA Mode of Clever)

---



CHS Mode sets the geometry (**C**ylinder, **H**ead and **S**ector) translation used on the Target drive. CHS information is stored in the partition table of the hard drive and is used by the BIOS to determine from which partition to boot.

The correct setting will depend upon the capacity of the Target drive and on the BIOS of the PC in which it will be used. Check with the hard drive and PC manufacturer to determine which CHS mode is best as different BIOS systems use different translation methods for large capacity drives.

#### **CHS Translation Settings**

---

The following are the CHS modes supported by the SuperSonix:

**LBA** (Default) – This CHS Mode will work for most hard drive and PC combinations and should be used unless otherwise indicated.

**Large** – Also known as Extended CHS (ECHS) mode. It is used on some Compaq and Samsung computers, some IBM PC's, Thinkpad laptops, some newer Dell laptops, and possibly other computers. It should also be used whenever a Phoenix BIOS version 4.0 or earlier is encountered.

**LBA 8.5** and **LRG 8.5** – These settings force all partitions to remain below the 8 GB mark. This is useful with Legacy motherboards that cannot support drives larger than 8.5 GB.

**LBA-1**, **LBA-2**, **LRG-1** and **LRG-2** – These settings instruct the Logicube SuperSonix to “shave off” one

or two cylinders from the total drive size when constructing the Target partition tables.

**NOTE:** It is important to use -1 or -2 settings for all Windows 2000 and Windows XP installations. These operating systems use the unallocated space to store certain tables required for Active Directory and sometimes for Dynamic Partitioning.

**NOTE:** Most of the time, blocking out one cylinder is enough but two may need to be blocked out to achieve good results.

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## Password Protection

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### Introduction

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The password protection feature "locks" the Logicube SuperSonix so that it cannot be used unless a password is entered. When the password is enabled, the unit will boot up to a "Please Enter password to unlock the unit" screen. Once the correct password is entered with the electronic alphanumeric keypad, the Logicube SuperSonix will come up to the Main Screen. At that point all screens can be accessed.

### Locking & Unlocking the System

---

1. Power up the Logicube SuperSonix
2.  Tap the Install Options icon under Miscellaneous.
3. When prompted, use the electronic keyboard to enter the word **Logicube** with a capital **L** in the space below the message "Please enter the option upgrade code to install option".

**Note:** The ALT key on the electronic keyboard can be used to toggle between Upper & Lower case, Numbers & special characters.

4. You will now see the message "Please enter the password for unit lock function". Enter a password of your choice.

**Note:** Passwords are case sensitive and the maximum number of characters is 20.

5. When prompted with "Please re-enter the password to confirm". Enter the password you created above again.
6. The Logicube SuperSonix will now boot to a screen which prompts you to enter a password to unlock the unit. If the correct password is entered, the unit will display a Screen asking: Do you want to permanently unlock the unit? If <YES> is selected the unit won't require the password every time the unit's power is cycled.

If <NO> is selected the unit will require the password every time the unit's power is cycled. If the wrong password is entered, the unit will ask for the correct password again.

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## 4. GUID Partition Table (GPT) Drives

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### Introduction

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The GUID Partition Table (GPT) was introduced as part of the Unified Extensible Firmware Interface (UEFI) initiative. GPT provides a more flexible way of partitioning disks compared to the older Master Boot Record (MBR) scheme.

GPT also allows drives larger than 2TB in capacity to be bootable. However, GPT can also be used in drives less than 2TB in capacity.

SuperSonix supports cloning GPT drives with software version 1.83RC26 and newer.

SuperSonix can clone an MBR drive to another drive and the resulting drive will be MBR. SuperSonix can also clone GPT drives to another drive and the resulting drive will be GPT. SuperSonix does not convert from MBR to GPT or vice versa.

SuperSonix supports GPT with Windows 64-bit Operating Systems. To clone a GPT drive, Selective Partitions must be used.

### Cloning GPT Drives Step-by-Step

---

1. From within the Settings menu tap  the Selective Icon.
2. Select the optional preferences - Speed and Direction and alter them as needed using their respective icons.

**NOTE:** See the Optional Preference Settings section of this chapter for more information on these preference settings.

3. Tap  (Start). After a few seconds the Logicube SuperSonix will display a list of all the partitions found on the Master drive.

4. Note that to the right of each partition label, you will see a designator for the partition type.
5. Select partitions to clone by tapping the respective partition's info bar within the partition list. Repeated taps will cause the copy method to toggle between the different copying methods available. Repeat your selection for each partition you wish to clone.

For each of the non-Operating System partitions, choose MIRROR.

For the Operating System partition, choose CLEVER.

**NOTE:** If no copy method is selected a Notification message will appear indicating - You must select a partition to clone!. Tapping <OK> takes you back to the Selective Copy start screen.

6. Tap the <OK> icon to continue.

A User Attention screen will appear. Tap the YES icon since the Master drive is GPT.



Note: If the Master drive has an image with a GPT partition and by selecting NO for MBR partitioning then target drive will NOT boot. If the Master drive has an image with an MBR partition and by selecting YES for GPT partitioning then target drive will NOT boot.

7. The status screen will appear and cloning will begin.
8. The Logicube SuperSonix will notify you when cloning has completed. Tap the Back icon to return to the main menu.

**POST CLONING NOTES:**

- If the Target drive does not boot up, a third party utility or 'shell' is needed to allow the Target drive to boot once. Typically, these utilities can be placed on a bootable CD or a bootable USB drive. Logicube cannot recommend a specific third party utility.
- After the utility or shell is used, the Target drive will be bootable once. Boot the Target drive and in Windows, perform the following steps:
  1. Click the START icon.
  2. In the Search window, type "cmd" (without the quotes).
  3. In the search results above the Start icon, click "cmd" or "cmd.exe". A window will appear with the command prompt.
  4. Type to following commands listed below. In the example below, "Z" is the volume or drive letter the Operating System is currently on.

**mountvol z:\S**

**bcdedit /set {bootmgr} device partition=z:  
bcdedit /set {memdiag} device partition=z:**

**bcdedit /set {default} device partition=c:  
bcdedit /set {default} osdevice partition=c:**

---

## 5. OmniDiagnostics

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### Introduction

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The Logicube SuperSonix has optional software packages that are not part of the standard unit. Foremost of these is **OmniDiagnostics**, a set of features that aid in the recovery and repair of drives with bad or weak data sectors, and in the secure erasure of sensitive data.

#### Enabling OmniDiagnostics

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All optional software packages are already inside your Logicube SuperSonix (and are automatically updated when you install a newer software version). To use an option like OmniDiagnostics, it first needs to be enabled.

To enable OmniDiagnostics on your Logicube SuperSonix, contact Logicube to purchase a license key that is unique to your unit. Once you have obtained the license key, follow this procedure to enter it into your Logicube SuperSonix

1. From the main menu tap  the Miscellaneous icon.
2. From inside the Misc. Menu tap  the Install Options Icon.
3. Use the electronic input keyboard that displays to enter the OmniDiagnostics activation code that you received from Logicube.
4. If all symbols have been entered correctly, the Logicube SuperSonix will reboot to the main menu.
5. To verify that OmniDiagnostics has been activated, select the About icon from the main menu. You will now see OmniDiagnostic listed as an installed option.

**NOTE:** Once the license key is entered, an optional software package is permanently enabled. The key will not need to be entered again, unless the Firmware or the BIOS are changed on the Logicube SuperSonix itself.

**NOTE:** Loading new software updates will not disable the OmniDiagnostics option.

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## OmniDiagnostics Features

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### On Error

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The On Error setting determines the behavior of the unit in the case where bad spots are detected on the Master drive. This setting has four options, which include:

**Abort** - This mode will cause the Logicube SuperSonix to halt if an error such as a bad suspect drive sector is encountered.

**Skip** - This is the default setting. Skip will allow the Logicube SuperSonix to continue by stepping over the bad sector.

**Retry** - Retry option will instruct the Logicube SuperSonix to make several attempts to read data from the damaged area of the drive.

**Recover** - Recover will attempt to recover as many bytes of data as possible from each bad sector that is encountered

**Note:** Data in any skipped sectors will NOT be copied to the Target drive.

### On Error Step-by-Step

---

1. From within the Settings Menu tap  the Diagnostics icon.
2. Locate and tap the “On Error Skip” icon  A menu screen appears with the following options; Abort, Skip, Retry, Recover
3. Tap the option setting you desire (it will be highlighted when you select it) and tap the back icon. The SuperSonix will now perform the action you’ve selected whenever an Error is encountered during cloning.

4. Modify the other Setting preferences – Mode, Verify, Direction, CHS Mode, and Speed - as needed.
5. Tap the Start  icon. The cloning operation will begin and a status screen will appear.
6. The Logicube SuperSonix will notify you when cloning is complete. Tap the Back icon to return to the main menu.

### Scan Target Mode

---



Scan Target mode scans the Target drive for weak and bad data sectors. It uses the Read-Verify command of the ATA specification to detect bad or weak spots on the Target drive. When a suspect area of the drive is detected, a sector-by-sector analysis is performed.

If a given sector is read incorrectly one or more times out of 10 tries, it is considered to be weak. If it is read incorrectly 10 times out of 10, it is considered to be bad.

Any drive that shows weak sectors should be returned to the manufacturer or retired due to the higher risk of potential data loss.

When using Scan Target mode, there are two levels of scanning speed to choose from:

- **Fast** (Default) – This is the fastest.
- **Thorough** – This is the most thorough level and provides the most detailed scan of the drive.

**Important Note:** The Thorough operation writes patterns to some sectors, which can cause data corruption. Use this setting only when data loss is not an issue.

### Scan Target Mode Step-by-Step

---

1. From within the Settings Menu tap  the Diagnostics icon.

2. Locate and tap  the Scan Target icon. A menu screen with a Speed icon appears giving the user the option to change the speed from Fast to Thorough.
3. Use the  Speed icon to select between the Fast and Thorough settings.
4. **Fast** (Default) – This is the fastest.
5. **Thorough** – This is the most thorough and provides the most detailed scan of the drive.
  - i. **Important Note:** The Thorough operation writes patterns to some sectors, which can cause data corruption. Use this setting only when data loss is not an issue.
6. Tap  the Start icon to begin scanning. A status screen will appear.
7. When finished, the Logicube SuperSonix will notify you if the scan was successful and provide a summary report containing the number of Bad Sectors, Weak Sectors and Weak Spots.
8. After reviewing the summary, tap  the <OK> icon to return to the Scan Target Menu.

### Repair Target Mode

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Repair Target mode scans the Target drive using a Logicube exclusive algorithm in an attempt to repair all weak and bad sectors encountered. Please note that this process can take a long time.

**Note:** The Repair Target operation directly manipulates the contents of the Target drive with no effort being made to retain the original data.

### Repair Target Mode Step-by-Step

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1. From within the Settings menu tap  the Diagnostics icon.

2. Locate and tap  the Repair Target icon..
3. A message will appear stating that Continuing will OVERWRITE portions of your Drive. Followed by the question: Are you sure? If you are prepared to continue, choose "<Yes>". If you wish to abort the operation, choose "<No>".
4. If "<Yes>" is chosen, the Repair Target operation will begin and a status screen will appear.
5. When finished, the Logicube SuperSonix will notify you and provide a summary containing the number of Bad Sectors, Weak Sectors, Weak Spots, Repaired and Unrepaired sectors.
6. After reviewing the summary, tap the Back icon to return to the main menu.

### WipeClean™ Target Mode

---



The WipeClean Target mode erases all data on the Target drive. This may be required when discarding drives that contain sensitive information to which you do not want others to have access, e.g. financial information, trade secrets, etc.

WipeClean writes a pattern over the whole Target drive  $2 \times n + 1$  times, where  $n$  is the selected number of iterations of all 0's and all 1's. The last pass then writes random values to every byte of the drive.

Use  the Passes icon to enter the desired value for  $n$ .

For example, if you set the number of iterations (the value of  $n$  in the above formula) to 1 through the use of the Passes icon XXXX, WipeClean will perform a total of three passes, first writing all 0's then again writing all 1's. Then one more pass will be made this time writing random values.

By default, WipeClean is set to erase data according to Department of Defense (DoD) specification M-5220.

Set the number of passes to 0 for a single pass of the chosen pattern. This method is acceptable for

quickly wiping a drive where removal of sensitive information is not an issue.

Use the  Value Icon to change the value written during the last pass of the wipe. Your choices are:

- 0xf6(The DoD default)
- 0x00
- 0xff
- Random

(The Random setting will fill the Target drive with a pseudo random pattern.)

### Wipeclean Target Step-by-Step

1. From within the Settings Menu tap  the Diagnostics icon.
2. Locate and tap  the WipeClean Target icon.
3. You will now see preference settings for Passes, Value and Speed. Adjust these as needed for each setting.
4. Tap  the Start icon.
5. A message will appear stating that the unit is accessing the target drive. The erase process will then start and display the Mode, Speed, number of passes requested and the final pattern to be written.
6. The Logicube SuperSonix will notify you when erasing is complete.

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## 6. Optional Peripherals

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### Introduction

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Logicube has many different adapters and other peripherals that allow you to tackle almost any drive capturing job. This section focuses on two particular devices – the CloneCard Pro and the SAS Adapter.

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### Logicube CloneCard Pro

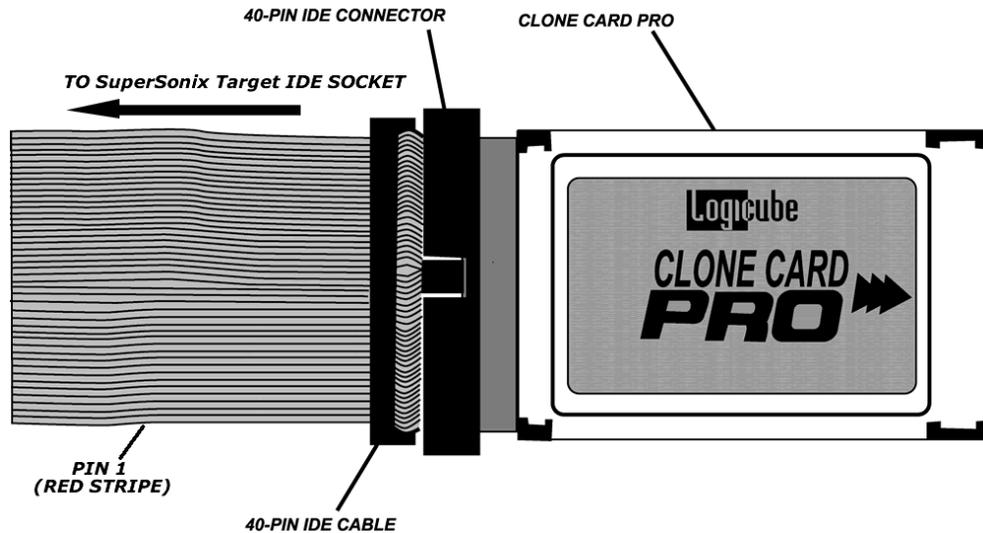
---

The CloneCard Pro is an optional accessory for the Logicube SuperSonix. It is an intelligent PCMCIA adapter designed to provide fast cloning to and from laptops via the PCMCIA slot. When used properly, it will support up to 104 MB/min transfer speed.

The CloneCard Pro is a real time-saver when a laptop drive needs to be cloned and it is undesirable to remove the internal hard drive from the PC. It is designed to work in both PCMCIA (16-bit) and CardBus (32-bit) systems.

In general, the user would boot the laptop from the supplied CD-ROM and run a client program. This client program detects the PCMCIA chipset inside the laptop and will enable communication to the CloneCard Pro. Now the Logicube SuperSonix can be connected to the external cable of the card, and operation commences as if the Logicube SuperSonix is connected to the Target hard drive. All Logicube SuperSonix modes and options are operational as though an actual drive is connected, with the exception of the speed of transfer.

**Figure 13. Clone Card Pro**



### Before using

Logicube provides a bootable CD-ROM which runs off the FREEDOS operating system. Follow the loading directions that come with our CloneCard Pro.

### Using the Logicube CloneCard Pro to Capture a Drive

Cloning with the CloneCard takes just a few steps.

1. Insert the CloneCard Pro into one of the PCMCIA slots on the laptop you are about to clone (make sure to remove all other PCMCIA cards).
2. Insert the CD-ROM into the laptop CD drive
3. Turn laptop on. Ensure that the laptop is set to boot from a CD-ROM. This is done through the setup screens that typically can be accessed by pressing F2, F10, or <DEL> key during initial boot (consult your laptop manual regarding how to set the boot order).
4. The CD-ROM is configured to run the client application (CCclient.exe or pcmcia.exe) automatically.
5. Connect the Logicube SuperSonix to the flat cable provided with the CloneCard Pro.
6. Make all the necessary settings on your SuperSonix.

**Do not use one of the SuperSonix included PATA drive cables. They are incompatible with the CloneCard Pro!**

7. Set the Speed setting to PIO-Medium. No settings are available on the client program.
8. Press the **START** icon and wait for the process to complete.

### **Improving Speed of Transfer**

---

Several settings in the CMOS setup screens can potentially improve the speed of transfer.

**PCI latency timer** - Try to reduce the value of this number as much as possible.

**PCI write buffer** - Set to enable to improve writing speed to the local drive.

**PCI zero-wait states** - Enable to decrease PCI cycle time.

**PCI delay transaction** - Disable to decrease PCI cycle time.

**PCI dynamic bursting** - Set to yes.

**Enable 32-bit access to hard drive** - We test for that, and if available, we use it to improve transfer speed, so no action is required on behalf of the user.

**NOTE:** Some of these settings may not be present on your machine. Also, some of these settings may cause other peripherals to not function properly, so use with caution, and always change one setting at a time.

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## **Logicube SAS Adapter**

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The SAS Adapter is designed to attach directly to the Logicube SuperSonix. Functionally the adapter allows for external connection and Mirror cloning of SAS & USB connected master drives to internal IDE or SATA drives through the IDE port of the SuperSonix.

**NOTE:** USB cloning capability is Optional and this type of clone is always performed outside to inside.

Additionally the SAS adapter can Mirror clone from one SAS drive to another SAS drive external to the SuperSonix.

Figure 14.



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**What's Included with the SAS Adapter**

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- Qty. (1) F-ADP-SAS Adapter
- Qty. (1) CBL-037B IDE Ribbon Cable
- Qty. (1) CBL-002B Power Cable
- Qty. (1) CBL-SAS-001-A SAS Data/Power Cable

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**Installation Setup**

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1. Disconnect the power supply cord from the Logicube SuperSonix.
2. Locate the IDE ribbon cable P/N CBL-037B and plug the end labeled HDD SIDE into the SAS adapter port marked IDE CONNECTOR IN.
3. Connect the other side of the ribbon cable labeled DUPLICATOR SIDE to the external IDE port on the SuperSonix.
4. Locate the cable labeled CBL-002B and connect the end with the large white plug to the mating receptacle next to the IDE ribbon cable on the SAS adapter.
5. Connect the other side of the CBL-002B to the external power port of the SuperSonix. Use the power port closest to the ribbon cable.

## Cloning with the SAS Adapter

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### Duplicating SAS to SATA or IDE

---

To clone a SAS drive connect one side of cable CBL-SAS-001-A to the SAS hard disk drive and plug the other side (which splits and forms the shape of a 'Y') into the SAS data and power ports located on the SAS adapter above the label MASTER and proceed to step 1.

1. Install a SATA or IDE hard drive inside the Logicube SuperSonix as defined in section 2 Getting Started.

**NOTE:** For 100% Mirror clones the target drive should be at least as large as the drive to be captured.

2. Insert the power supply cord to turn on the Logicube SuperSonix. The LED located on top of the SAS adapter near the RESET button will illuminate green indicating the adapter is receiving power correctly.
3. At this point you can perform a drive info check to verify that the SuperSonix recognizes the SAS drive connected through the SAS adapter.
4. Perform a normal Outside to Inside Mirror Clone by following the Step-by-Step Mirror mode instructions under CLONING MODES AND SETTINGS.

**NOTE:** Ensure that the Mirror clone Direction is set to T->M or the clone process will error out.

**NOTE:** Capture from HPA and DCO areas are not supported.

**NOTE:** Master Manager, Selective Partitions, WipeClean, Repair and CleverCopy are not currently supported.

**NOTE:** Cloning data to a SAS drive in the Master position is not supported.

### Duplicating SAS to SAS

---

To Mirror clone one SAS drive to another SAS drive connect one side of cable CBL-SAS-001-A to the

Master SAS hard disk drive and plug the other side (which splits and forms the shape of a 'Y') into the SAS data and power ports located on the SAS adapter above the label MASTER. Repeat the connection process for the SAS Target drive connecting the SAS data and power cables to the port located on the SAS adapter above the label MASTER. Proceed to step 1.

**NOTE:** For 100% Mirror clones the Target SAS drive should be at least as large as the drive to be captured.

**NOTE:** Cloning of HPA and DCO areas are not supported.

**NOTE:** Master Manager, Selective Partitions, WipeClean, Repair and CleverCopy are not currently supported.

**NOTE:** Both drives will turn on during a Drive Info. Check or during any operations.

**NOTE:** Cloning data to a SAS drive in the Master position is not supported.

1. Insert the power supply cord to turn on the Logicube SuperSonix. The LED located on top of the SAS adapter near the RESET button will illuminate green indicating the adapter is receiving power correctly.
2. From the main menu tap the Settings icon followed by the SAS Menu icon.



The following three icons will appear. See Fig.15.

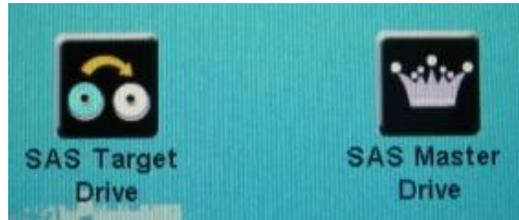
**Figure 15.**



3. You can perform a drive info check to verify that the SuperSonix recognizes either of the SAS drives connected through the SAS adapter. Press the SAS Drive Info icon and

select one of Tap two drive choices shown in Figure 16.

Figure 16.



4. Tap the SAS to SAS Mirror icon  shown in Fig. 15 to proceed with a SAS to SAS Mirror clone. Two icons like to ones in Figure 17 will be displayed.

Figure 17.



5. Tap the Percentage icon  to change the percentage of the Master drive to clone. Use the electronic keypad to adjust the value between 1 and 100% and press <OK>.

**NOTE:** A **User Attention Required** message will appear asking: Do you want to set to XX% mirror copy?

6. Tap <YES> to set the percentage to the requested value.
7. Tap  (Start) to begin the cloning process.

### Hashing SAS Master and Target Drives

To calculate the MD5 Hash of a Master drive and compare it to the Hash value of a cloned Target drive perform the following:

1. Tap the SAS Hashing icon  and two icons like the ones in Fig. 18 will be displayed.

**Figure 18.**



2. Select the Hash SAS Master icon to calculate and store the MD5 hash value of the Master drive. To change the number of sectors that the calculation will be based upon; Tap the Total Sector: Whole Drive icon shown in Fig.19.

**Figure 19.**



3. This will bring up a touchpad that will allow you to enter the maximum sector value for the calculation. Once value is entered press OK.
4. Tap  (Start) to begin the calculation.
5. To verify the SAS target matches the Master drive tap the Verify SAS Target icon.

**Figure 20.**



6. Advanced IT users may choose to slow down the clone process by tapping the Speed icon displayed in Figure 21.

**Figure 21.**



**NOTE:** The SAS Adapter will not clone below speed UDMA-0. Do not use PIO speeds.

**NOTE:** The hash calculation of a cloned drive is calculated based on the sector range that was previously stored as a file called checksum.txt therefore it is not necessary to specify a sector range when verifying a Target drive.

If the MD5 hash value matches the previously stored value for the Master drive the SuperSonix will display a large check mark indicating a pass condition along with both MD5 hash values.

Example:

```
MD5 Verification Results for (Model: WDC D3201ABYS-01B9A0, Serial WD-WCARW3590618):
MD5 Verified SUCCESSFULLY!
calculated MD5:
1368 06C7 231D DF0F A2B6 8B45 AA68 D983
expected MD5:
1368 06C7 231D DF0F A2B6 8B45 AA68 D983
number of sectors calculated: 100
```

### Optional USB cloning

---

In order to use the USB port located on the Logicube SAS Adapter, the USB cloning option must have been purchased and the feature enabled on the cloning device to which the adapter is connected. To verify the USB cloning feature has been enabled, turn on the Logicube SuperSonix and tap the About icon on the main menu. If *SAS Adapter USB Option* is visible under Options installed; you can tap the BACK icon and continue to the next step. If *SAS Adapter USB Option* is not in the list the feature has not been enabled. To verify if the option has been purchased contact Logicube Technical Support and provide the S/N of the cloning device listed at the top of the About screen. Once you have obtained an activation code follow the activation instructions listed below to enable the USB cloning feature.

Tap Misc., Install Options, [Enter the code] and tap OK. You may need to tap ALT on the touch screen to toggle between Upper/Lower case letters and numbers.

Once complete the About screen will read: *Options installed: SAS Adapter USB Option* along with any other options that may be installed.

- To clone a USB powered HDD connect a USB cable between the USB Drive and the SAS adapter connector labeled USB PORT and proceed to step 1 of the appropriate Duplicate Using section for your device.
- To clone a USB thumb drive connect the USB thumb drive directly into the SAS connector labeled USB PORT and proceed to step 1 of the Duplicate Using SuperSonix section above.

**NOTES:** The RESET button on the side of the SAS adapter located next to the USB PORT is not active at this time and is reserved for future enhancements.

USB functionality via the SAS adapter is tied to the S/N of the cloning device that receives the activation code. Once the USB option is activated, the USB cloning feature can only be used in conjunction with that specific cloning device.

A SAS/USB enabled SuperSonix may be able to clone flash media cards by using a USB multi card reader in conjunction with the SAS adapter. Note that this functionality has not been fully verified and is not guaranteed.

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## 7. USB and FireWire Ports

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### Introduction

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The integral USB and FireWire (1394B) ports on your Logicube SuperSonix provides connectivity of your CF drive or Master hard drive (the unit's internal drive) to any PC with active USB and/or FireWire ports. Both USB 1.1 and USB 2.0 are supported.

USB connectivity can be used in two modes of operation: Drive Management mode and cloning mode. FireWire connectivity is supported for Drive Management mode. Drive cloning through FireWire will be supported in a future software update.

#### Minimum requirements

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- A Logicube SuperSonix unit with integral USB / FireWire ports.
- A 586 or better PC compatible computer with CD-ROM drive.
- An active USB port and/or an active FireWire (1394) port.
- Microsoft Windows 98SE/ME/2000/XP/Vista/7 operating system (for drive access under Windows).

**NOTE:** WIN98 USB drivers can be found on the CD-ROM included with the SuperSonix.

- A bootable CD for DOS capturing mode, (optional).

**Figure 22. USB Port on Logicube SuperSonix****How to use under Windows (for Master Drive Management)**

Please refer to Figure 22 above:

1. Make sure that the desired drive is attached to the SuperSonix
2. Make sure your PC is running Win98 or above.
3. With power applied to SuperSonix connect the USB cable (provided) to a PC USB slot on one end. Do not attach the other end to the SuperSonix yet.
4. From the Main Screen of the SuperSonix, tap the Miscellaneous Icon.
5. Tap the USB / FireWire Icon
6. Tap the USB to Master Icon. The SuperSonix will now power up the chosen drive.
7. After a few seconds, a prompt will appear "Engaging Master Drive to USB"
8. It is now safe to attach the USB cable to the SuperSonix. You should now see some activity on your PC screen, which depends on the operating system.

9. If running ME/2000/XP/Vista/7 your drive will automatically be mounted and drive letters assigned to all recognizable partitions.
10. If running 98/98SE you will be prompted to install drivers. At the “have disk...” prompt please point the PC to the drivers floppy (provided), and the installation should complete smoothly.
11. The chosen drive is now visible on Windows as an external drive. Any partitions that can be accessed by your Operating System will be assigned a Drive Letter.

**FireWire Connection to Windows (for Drive Management)**

**Figure 23. FireWire Port on Logicube SuperSonix**



Please refer to Figure 23 above:

1. Make sure that the desired drive is attached to the SuperSonix
2. Make sure your PC is running Win98 or above.
3. With power applied to SuperSonix, connect the FireWire (1394) cable (provided) to a PC FireWire slot on one end. Do not attach the other end to the SuperSonix yet.
4. From the Main Screen of the SuperSonix, tap the Miscellaneous Icon .
5. Tap the USB / FireWire Icon.
6. Tap the FireWire to Master Icon. The SuperSonix will now power up the chosen drive.
7. After a few seconds, a prompt will appear “Engaging Master Drive to FireWire”
8. Its now safe to attach the FireWire cable to the SuperSonix. You should now see some activity on your PC screen, which depends on the operating system.

9. If running ME/2000/XP/Vista/7 your drive will automatically be mounted and drive letters assigned to all recognizable partitions.
10. If running 98/98SE you will be prompted to install drivers. At the "have disk..." prompt please point the PC to the drivers floppy (provided), and the installation should complete smoothly.
11. The chosen drive is now visible on Windows as an external drive. Any partitions that can be accessed by your Operating System will be assigned a Drive Letter.

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### Removing USB devices

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Before physically disconnecting the USB cloning adapter and/or shutting down power to the Logicube SuperSonix, the unit has to be properly "unmounted" from Windows. To do that:

1. Locate the USB icon in the system tray (typically at the bottom right of screen).
2. Click the icon once.
3. Wait for Windows to bring up a message that it is safe to remove the device. (Different versions of windows will behave slightly differently).

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### Cloning through the USB port

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This mode allows the user to clone drives through the USB port of a PC. The PC drive can be the Master or Target drive. Both USB 1.x and 2.0 are supported. Typically, the user will boot the computer from the provided Boot CD. The CD is equipped with USB drivers, and our client application that communicates with the hard drive inside the Logicube SuperSonix unit.

The CD-ROM requires a keyboard and/or mouse to be useable. It is able to work with either PS/2 or USB keyboard/mouse.

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### Using the SuperSonix with the USB Cloning Software

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1. Attach a SATA or PATA (IDE) drive of your choice to the inside position of the SuperSonix.
2. Apply power to the SuperSonix and let it load to the main screen.
3. From the main screen of the SuperSonix, tap the Miscellaneous Icon.
4. Tap the USB / Firewire icon.
5. Tap the USB to Master icon. The SuperSonix will attempt to power up and read the Master drive (the drive in the inside position).
6. After a few seconds, a message will appear: Engaging Master Drive to USB... Press O.K. to abort
7. Attach the included USB cable to the SuperSonix using the mini-USB end. The mini-USB port is located on the outside of the SuperSonix in between the SATA and drive power ports. Attach the other end of the USB cable to the USB port on the computer.
8. Boot the PC using the USB Cloning Software CD-ROM. The CD-ROM is configured to load the USB drivers and run our client application. Please note that on some computers, you can select to boot via CD-ROM through one of the Function keys (For example, F12) while other computers require you to go into BIOS and set the CD-ROM to boot first.
9. The CD will boot to a menu that contains ten different boot choices:

0. (Dell USB) Boot with XMS driver
1. (Dell USB) Boot with XMS driver and EMM386
2. (Dell USB) Boot with alternative XMS driver
3. (Dell USB) Boot with XMS and CD-ROM drivers
4. (Dell USB) Boot with alternative XMS and CD-ROM drivers
5. (Non-Dell) Boot with XMS driver
6. (Non-Dell) Boot with XMS driver and EMM386
7. (Non-Dell) Boot with alternative XMS driver
8. (Non-Dell) Boot with XMS and CD-ROM drivers
9. (Non Dell) Boot with alternative XMS and CD-ROM drivers

**Note:** Although the first five choices state “Dell USB” and the last five choices state “Non-Dell”, any choice may work with the computer you are connecting with. For example, choices 0 through 4 may work with HP computers. Different computers will

require different methods of loading. You may have to try all the choices to find the best solution for your computer.

10. When the proper boot choice is selected, the boot disk will automatically create a Ramdrive. The Ramdrive will come up as the last drive letter, (or C: if the hard drive is formatted with a non – FAT partition). You should see a screen that shows:

Welcome to Logicube Solitaire Turbo USB Client!  
Version 1.32, Build Jul 31 2006 10:25:52

© Copyright 1999-2003 by Logicube, Inc.  
All rights reserved.  
Disassembly or decompilation prohibited.

Please make sure that the Logicube USB Cloning Adapter  
is powered and ready!

Press any key to continue..

**NOTE:** If the boot process hangs and you do not see the message above, reboot the computer and try one of the other choices seen in step 9.

11. Press any key to continue. The Solitaire Turbo USB Client software should load and the Solitaire Turbo USB Client screen should appear.

**NOTE:** The USB port you are using must be enabled. There are some computers or specialized devices that have the USB ports disconnected or disabled. If the computer and CD-ROM configuration cannot detect the USB connection, the following message will appear:

BIOS reports NO USB Drive is present!  
The USB Drive is not connected!  
Please re-check the USB connection and the Logicube USB Adapter!  
Press the Escape key to exit or any other key to retry

At this point, you can try a different USB port, or even one of the other different choices from the CD-ROM (as seen in step 9).

**NOTE:** It is possible that none of the 10 pre-configured boot options on the CD will work due to the computer requiring a different boot configuration. When none of the 10 pre-configured boot options work, the hard drive inside the computer will need to be removed and attached directly to the SuperSonix.

## Using the Solitaire Turbo USB Client

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### Main Menu Screen

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The main menu screen displays the Title Screen and two menu options: **About** and **Drives**.

### About Screen

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Select the About Screen by clicking the Back button. It will display the serial number of your unit along with the software and firmware versions that are loaded. In addition, the About screen lists all options currently enabled on the unit and provides contact information for Logicube Technical Support. To return to the main menu, simply press the Back button at any time.

### Drive Info

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Select the Drive Info screen by clicking the Select button. Another screen will come up asking you to select either the **<Turbo>** or **<PCDrive>** drive. Click the Back button to access the drive inside the SuperSonix. Click the Select button to access the drive inside the computer.

The unit will then access the drive selected and report back the drive's model number, capacity, geometry and other information.

Scroll down to the end of the drive information list to access the **<See more>** option. Click the Select button to display all of the partitions located on that drive.

To return to the main menu, click the Back button at any time.

## Cloning Modes

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### Mirror Clone (100%) Step-by-Step

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This cloning mode makes a direct, physical copy of the Master drive. It does not adjust any values or perform any translation from drive to drive. It simply copies whatever percentage of the Master drive that is designated.

1. From the Main Menu Screen, click the SET button to enter the Settings menu.
2. The white arrow should be pointing to Mode. Click the SELECT button to change the mode.
3. Use the green arrow buttons to scroll through the different modes. Once the white arrow is pointing to "100%.." click the Select

- button. A screen will appear telling you to use the arrow buttons to dial a number.
4. By default, this is set to 100%, which will clone the entire Master drive. Unless you need to clone just part of the drive, leave this at 100% and click the Select button.

**IMPORTANT NOTE:** When setting the percentage to below 100%, ensure that all the data on the drive is within that percentage selected. Some drives may have data in the last few sectors of the drive which will not be copied if the percentage is set to anything lower than 100%.

5. The screen should now show: "Mode..: 100 %"
6. Scroll (using the green up and down arrows) through the other settings and make any necessary changes. The rest of the settings are explained later in this document in the section called **Optional Preference Settings**.
7. Click the START/STOP button (Clone Now!). A confirmation screen will appear showing the percentage selected and the direction. Turbo->PC will copy from the SuperSonix to the computer, while PC->Turbo will copy from the computer to the SuperSonix. If you need to change any setting, click the BACK button. Otherwise, click the SELECT button to begin the cloning process.
8. A confirmation screen will appear stating: Continuing will overwrite your Turbo drive (or PC local drive depending on which direction was chosen). Are you sure?
9. Click the SELECT button for <Yes> or click the BACK button for <No>.
10. The USB Cloning Software will notify you when the cloning process has completed. Click the BACK button to return to the main menu.

### **Clever Clone (Clever) Step-by-Step**

---

This cloning mode clones all partitions on the Master drive to the Target drive and automatically sets the fastest method possible for each partition.

CleverClone automatically scales all FAT32 and NTFS partitions to fill the Target drive in its entirety, and makes all the necessary adjustments to ensure a valid and bootable Target drive. It can also scale FAT16 partitions up to 2GB.

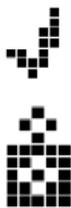
**NOTE:** When CleverClone scales down an NTFS partition, it can only scale it to 55% of the original size.

1. From the Main Menu Screen, click the SET button to enter the Settings menu.
2. The arrow should be pointing to Mode. If it does not say: "Mode...: Clever" click the Select button to change the mode.
3. Use the green arrow buttons to scroll through the different modes. Once the white arrow is pointing to "Clever" click the Select button.
4. The screen should now show: "Mode...:Clever"
5. Scroll (using the green up and down arrows) through the other settings and make any necessary changes. The rest of the settings are explained later in this document in the section called **Optional Preference Settings**.
6. Click the START/STOP button (Clone Now!). A confirmation screen will appear showing the percentage selected and the direction. Turbo->PC will copy from the SuperSonix to the computer, while PC->Turbo will copy from the computer to the SuperSonix. If you need to change any setting, click the BACK button. Otherwise, click the SELECT button to begin the cloning process.
7. The USB Cloning Software will notify you when the cloning process has completed. Click the BACK button to return to the main menu.

### **Selective Partitions (Selective) Step-by-Step**

This is the most elaborate and most flexible mode. It allows the highest level of control over the cloning process.

Selective mode allows you to select one or multiple partitions to clone. It also allows you to choose a unique copy method to use for each. The available methods are:



**CleverCopy** – Allows the OmniClone Xi determine the best (usually fastest) way to clone. It works with all FAT16/FAT32 and NTFS type partitions.

**Mirror** - This setting clones the full contents of the selected partition without any partition scaling. (This setting is similar to 100% MirrorCopy mode, which mirrors the entire Master drive.)



**NOTE:** Partition Mirror is available for any partition type, and is the only method available to partitions that are unrecognized by CleverCopy mode.

**Defragment** - Using an advanced defragmentation algorithm, this copy method creates a Target partition with contiguous files and no gaps. This method is only available on partitions with FAT16 and FAT32 file systems.



**Convert FAT16 to FAT32** – Will convert the selected partition from FAT16 to FAT32 format on the fly. This mode is available for FAT16 partitions only. Use only when the given partition is to be used with Windows 98, ME, 2000, or XP. The 4.00.950 and 4.00.950a versions of Windows 95, Windows NT 3.x and 4.0, and all versions of MS-DOS are incompatible with FAT32 partitions.

1. From the Main Menu Screen, click the SET button to enter the Settings menu.
2. The arrow should be pointing to Mode. Use the green arrow buttons to scroll to **Direction**.
3. Set the direction by clicking the SELECT button based on how you want to clone the drive. Turbo->PC will copy from the SuperSonix to the computer, while PC->Turbo will copy from the computer to the SuperSonix.
4. Scroll (using the green up and down arrows) through the other settings and make any necessary changes. The rest of the settings are explained later in this document in the section called **Optional Preference Settings**.
5. Use the green arrow buttons to scroll back up to **Mode..:** The white arrow should be pointing to Mode.
6. Click the SELECT button to change the mode.
7. Use the green arrow buttons to scroll through the different modes. Once the white arrow is pointing to "**Selective**" click the Select button. This will start scanning the Master drive (whether in the SuperSonix or in the computer) and a list of partitions will be displayed on the screen.

**NOTE:** To the right of each partition name, you will see a two-character designator for the partition type:

- 16 - FAT16 partition
- 32 - FAT32 partition
- NT - NTFS partition
- CQ - Compaq partition
- DE - Dell utility partition

- PH – Phoenix Recovery partition
  - ?? - Unknown partition
8. Choose a partition to clone and use the Select button to toggle between the different copying methods available. Repeat this step for each partition you wish to clone.

**NOTE:** If no copy method is selected, the partition will not be cloned.

9. Click the START/STOP button (Clone Now!). A confirmation screen will appear showing the percentage selected and the direction. Turbo->PC will copy from the SuperSonix to the computer, while PC->Turbo will copy from the computer to the SuperSonix. If you need to change any setting, click the BACK button. Otherwise, click the SELECT button to begin the cloning process.
10. A confirmation screen will appear stating: Continuing will overwrite your Turbo drive (or PC local drive depending on which direction was chosen). Are you sure?
11. Click the SELECT button for <Yes> or click the BACK button for <No>.
12. The USB Cloning Software will notify you when the cloning process has completed. Click the BACK button to return to the main menu.

### Optional Preference Settings

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In addition the different cloning modes, there are preference settings that can be used to adjust the behavior of the cloning operation. Each of these preference settings is accessible through the Settings menu, which can viewed at any time from anywhere in the menu system by clicking the SET button.

**NOTE:** Not all preference settings are available in every cloning mode.

#### Verify

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The Verify preference allows you to choose whether the Solitaire Turbo USB Client and SuperSonix scans the Target drive for bad or weak sectors. With Verify activated, the target drive will be scanned during the cloning process. If a bad or weak sector is detected, the cloning process is aborted.

**IMPORTANT NOTE:** This setting does not perform data verification.

Verify Settings:

- **No Verify (Default)** - No target drive scan is performed.
- **1% Verify** - Only the first 1% of the data sectors are scanned. This is faster but less thorough than using the All setting.
- **100% Verify** - Every data sector on the Target drive to which data has been written is checked.

### Direction

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The Direction preference setting allows you to switch the cloning direction between the SuperSonix (labeled as <Turbo> on the Solitaire Turbo USB Client) and the computer's hard drive (labeled as <PCDrive> on the Solitaire Turbo USB Client).

**Turbo->PC** will copy from the SuperSonix to the computer

**PC->Turbo** will copy from the computer to the SuperSonix

**NOTE:** Use this feature with care as your Master hard drive can be overwritten and all the

original data on it will be lost!

### CHS

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CHS Mode sets the geometry (**C**ylinder, **H**ead and **S**ector) translation used on the Target drive. CHS information is stored in the partition table of the hard drive and is used by the BIOS to determine from which partition to boot.

The correct setting will depend upon the capacity of the Target drive and on the BIOS of the PC in which it will be used. Check with the hard drive and PC manufacturer to determine which CHS mode is best as different BIOS systems use different translation methods for large (over 528 MB) capacity drives.

### CHS Translation Settings

Following are the CHS modes supported by the SuperSonix and Solitaire Turbo USB Client:

- **LBA (Default)** – This CHS Mode will work for most hard drive and PC combinations and should be used unless otherwise indicated.

- **Large** – Also known as Extended CHS (ECHS) mode. It is used on all Compaq and Samsung computers, some IBM PC's, IBM Thinkpad laptops, some newer Dell laptops, and possibly other computers. It should also be used whenever a Phoenix BIOS version 4.0 or earlier is encountered.
- **LBA 8.5** and **Large 8.5** – These settings force all partitions to remain below the 8 GB mark. This is useful with Legacy motherboards that cannot support drives larger than 8.5 GB.
- **LBA-1, LBA-2, Large-1** and **Large-2** – These settings instruct the Logicube SuperSonix or Solitaire Turbo USB Client to “shave off” one or two cylinders from the total drive size when constructing the Target partition tables.

**NOTE:** It is important to use -1 or -2 settings for all Windows 2000 and Windows XP installations. These operating systems use the unallocated space to store certain tables required for Active Directory and sometimes for Dynamic Partitioning. Most of the time, blocking out one cylinder is enough but two may need to be blocked out to achieve good results.

#### **SPEED**

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This setting cannot be changed. Since the SuperSonix is connected to the computer via a USB connection, the only available speed setting is USB.

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## 8. Compact Flash (CF) Card

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### Introduction

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The Logicube SuperSonix comes with a Compact Flash (CF) Drive that is inserted in a CF slot at the bottom of the unit. This drive is used for loading software on the Logicube SuperSonix but it can also store Debug Log Trace Reports for troubleshooting purposes.

NOTE: Please check our website periodically at [www.logicube.com](http://www.logicube.com), any new CF functions will be posted there.

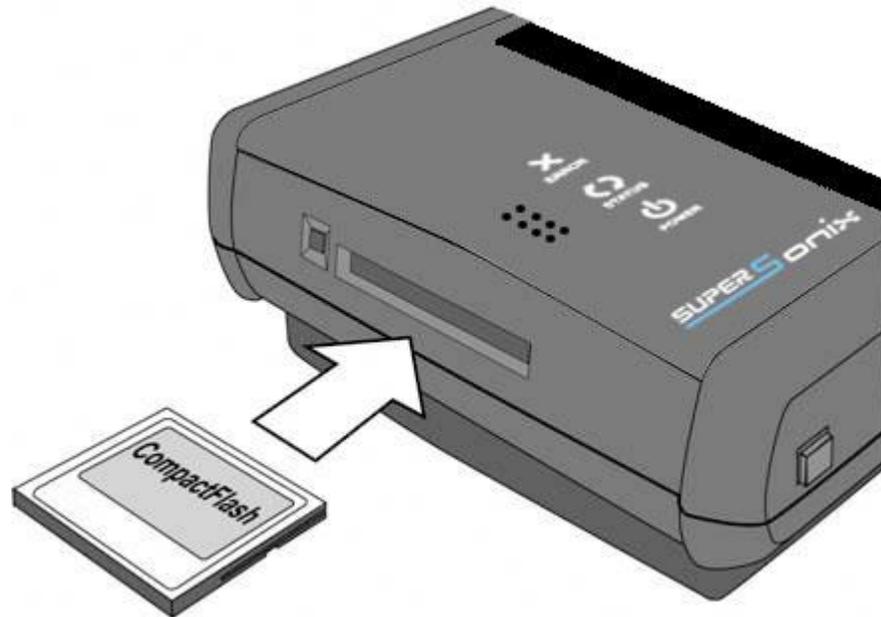
To load new software from the CF Drive, please refer to the procedure “**Loading Software Using the Compact Flash**” which is found in **Chapter 8: Software loading Instructions**.

#### **Inserting and Removing the Compact Flash**

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Please refer to Figure 24 below.

1. At the bottom of the Logicube SuperSonix is a Compact Flash (CF) slot. Make sure that it is clear.
2. Hold the CF Drive so that the Logicube label faces up.
3. Slide the CF Drive into the CF slot. As it slides into place, the eject button will slide out.
4. To remove the CF Drive, simply press in the eject button. The drive will slide out.

**Figure 24. Compact Flash (CF) Port Detail.**

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## Connecting the CF Drive to Windows via USB

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This is necessary to load new software files to the CF Drive. There are two methods to connect the Compact Flash (CF) Drive to Windows through the USB Port. One is via USB Mode and the other is through the Software Setup Menu.

### Connecting Through USB Mode

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1. Make sure your PC is running in Windows 98 or above.
2. Please remove both IDE and/or SATA cables from the Target Drive connectors at the back of the Logicube SuperSonix unit.
3. Connect the USB cable (provided) to a PC USB slot on one end. Do not attach the other end to the Logicube SuperSonix yet.
4. From within the Miscellaneous menu press the USB/Firewire icon.
5. You will see four options that allow you to connect the Master drive or CF card using either USB or Firewire. For the purpose of this tutorial, choose the USB to CF option.

6. Attach the USB cable to the Logicube SuperSonix. You should now see some activity on your PC screen, which depends on the operating system.
7. If running ME/2000/XP your drive will automatically be mounted and a drive letter will be assigned to it.
8. If running 98/98SE you will be prompted to install drivers. At the "have disk..." prompt please point the PC to the drivers floppy (provided), and the installation should complete smoothly.
9. The CF Drive is now visible on Windows as an external drive. You can copy software update files, or anything else to/from the drive.

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### Removing USB devices

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Before physically disconnecting the USB cloning adapter and/or shutting down power to the Logicube SuperSonix, the unit has to be properly "unmounted" from Windows. To do that:

1. Locate the USB icon in the system tray (typically at the bottom right of screen).
2. Click the icon once.
3. Wait for Windows to bring up a message that it is safe to remove the device. (Different versions of Windows will behave slightly differently).

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## 9. Software Loading Instructions

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### Logicube SuperSonix Software Updating Procedures

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New and improved software will appear from time to time on our web site at [www.logicube.com](http://www.logicube.com). It is possible to update the operating software in the field by a user using the Compact Flash Card.

**NOTE:** Logicube provides a CD Rom that contains a backup copy of the Logicube SuperSonix software. This software is already loaded on your unit.

#### Loading Software Using the Compact Flash

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The new software (a single file always called sSonix.bin) has to be placed on the root directory of the Compact Flash (CF). If a CF reader/writer is available on your computer, sSonix.bin simply needs to be copied to the root directory, possibly overwriting the older version that's already there.

Another file called ssfpga.rpd also needs to be on the root directory of the Compact Flash Card.

**NOTE:** If a reader is not present, the Logicube SuperSonix itself, in conjunction with the USB cable can be configured to behave like a CF reader/writer. Please refer to "**Connecting Through the Software Setup Menu**" in **Chapter 7: Compact Flash (CF) Drive**.

Once the new sSonix.bin file is present on the CF, it is a simple matter to make it "re-flash" the unit:

1. Insert the CF card with the updated software into the SuperSonix
2. Power up the unit and wait for the main menu to appear. The unit has now updated itself with the new software
3. To check the version and date of this software press the "About" icon at the main menu screen. 9. Reference

### **BIOS (Basic Input/Output System)**

Built-in software on a motherboard that contains the instructions required for a PC to boot, control the hard drives, keyboard, monitor and serial communications, and perform other low level functions.

### **CardBus**

An advanced PCMCIA specification, which operates at speeds several times faster than a standard PCMCIA card. The technology is used primarily in laptop computers where the CardBus module fits into the same type of slot as the standard PCMCIA card.

### **CHS (Cylinder, Head, Sector)**

The normal or default translation mode used by a PC for hard drives that are 504 MB or smaller in capacity. CHS is the only translation mode available in older BIOS (generally any made prior to 1994). It will only show a maximum drive size of 504 MB no matter how large it's true capacity.

### **Cloning, Hard Drive**

The process of copying the contents of one hard drive to another with the intent of making an exact duplicate.

### **Cluster**

The smallest logical measurement of file storage space on a hard drive. Every file stored on a drive takes up one or more clusters of storage. The clusters associated with a file are kept track of in the drive's File Allocation Table (FAT). The maximum number of available clusters on a drive depends on the available size of the FAT table.

**CRC (Cyclic Redundancy Checking)**

A method of checking for errors in data transmitted from one device to another, e.g. from one hard drive to another. With CRC the sending device applies a 16- or 32-bit polynomial to a block of data to be transmitted and then appends the result to the block. The receiving device applies the same polynomial to the data block and compares that result with the original. If the two values agree, then the data has been transmitted without error. If the values don't match, then the sender is notified to resend the block of data.

CRC ensures detection of 99.998% of all possible errors.

**Defragment**

The process of taking noncontiguous fragments of a data file stored on a hard drive and rearranging them into one contiguous group, resulting in reduced data access times and more efficient use of hard drive space.

Fragmentation occurs naturally over time as files are created, deleted, and modified. Some operating systems come with a utility for defragmenting drives. Third party defragment utilities are also available.

**DMA (Direct Memory Access)**

A method of transferring data from one computer device to another directly through main memory without passing it through the CPU.

**EIDE (Enhanced Integrated Drive Electronics)**

A high-speed electronic interface used for transferring data between a computer and the computer's hard drive. The theoretical maximum IDE transfer rate is 16.6 MB/sec depending on the hard drive speed, the transfer mode and the operating system.

**FAT (File Allocation Table)**

A table that an operating system uses to locate data stored on a hard drive. The FAT system for DOS 4.0 and above, and for older versions of Windows 95 is called FAT16. The FAT table for Windows 95 OSR2 or newer, Windows 98 and Windows ME is called FAT32. FAT16 allows for a maximum of 65,536 clusters while FAT32 allows for enough clusters to support up to two terabytes of data.

**Geometry, Hard Drive**

Hard drive geometry is the set of physical characteristics that belongs to a particular drive, specifically:

1. The number of platters and cylinders
2. The number of tracks per cylinder
3. The number of sectors per track, and
4. The size of each sector (in bytes)

**IDE (Integrated Drive Electronics)**

An electronic interface used for transferring data between a computer and the computer's hard drive. Most new computers use an advanced version of IDE called Enhanced Integrated Drive Electronics (EIDE).

**Large**

Also called Extended CHS (ECHS) in some BIOS versions, Large is a BIOS translation mode that extends the 504 MB drive size barrier of the standard CHS mode to 4.2 GB.

**LBA (Logical Block Addressing)**

A translation mode that converts the cylinder, head, and sector specifications of a hard drive into logical addresses that can be processed by the BIOS. LBA supports drives up to 32 GB or larger depending upon the limitations of the BIOS. To use, it must be supported by both the BIOS and the drive.

**Master Drive, Logicube SuperSonix**

The hard drive from which the Logicube SuperSonix is copying data to the Target drive. The Master drive is commonly the one placed inside the Logicube SuperSonix.

Not to be confused with IDE Master/Single Drive.

**Master/Single Drive, IDE**

The primary or controlling device connected to an IDE interface. The second device connected to an IDE interface is called the Slave drive. Whether a device is the Master or the Slave is determined by jumper settings on the device, itself.

Not to be confused with [Logicube SuperSonix Master Drive](#).

**NTFS (New Technology File System)**

The standard file system of the Windows NT operating system. It offers a number of performance, extensibility, and security improvements over the File Allocation Table ([FAT](#)). Partitions created using NTFS are not accessible from other operating systems such as DOS.

**Parallel Port**

An interface for connecting to a computer or an external device such as a printer. Often called a Centronics interface after the company that engineered the original specification.

A newer standard is the Enhanced Parallel Port (EPP), which supports bi-directional communication and transfer rates up to ten times faster than a standard parallel port.

**Partition**

A way of dividing physical hard drive space into logically separate segments, which an operating system treats as individual hard drives. Partitioning is particularly useful when multiple operating systems are loaded on one drive. For example, creating one partition for Windows NT, another for UNIX and so on.

**PC Card**

See [PCMCIA](#)

**PCMCIA (Personal Computer Memory Card International Association)**

A credit card-sized memory or I/O device that fits into a PC, usually a laptop computer. Also known as a [PC Card](#). There are 16-bit and 32-bit ([CardBus](#)) varieties. Common applications for PCMCIA cards include RAM, modems, network adapters and hard drives.

**PIO (Programmed Input/Output)**

A method of transferring data between two devices in which all data passes through the CPU. A newer

alternative to PIO is Direct Memory Access (DMA). See also UDMA.

### **QWERTY**

Refers to the arrangement of the keys on a standard English computer keyboard. The name derives from the first six characters located on the top row of the keyboard.

### **RAM Disk**

RAM that has been configured to appear to a computer as a hard drive. Files on a RAM disk can be accessed just as files on a physical drive. However, RAM disks lose their contents once the computer has been turned off or rebooted. Also known as a RAMDISK or RAMDRIVE.

### **Sector**

The smallest physically divisible area of a hard drive where data can be written to, or read from. The first sector, (known as the master boot record, the partition sector, or the partition table) tells the computer vital information about the drive such as how many partitions it has.

### **SID (Security ID)**

A security feature in the Windows NT and Windows 2000 operating systems comprising of a unique alphanumeric character string used to identify a user or a group of users on a network. When a user attempts to access a resource on the network, the user's SID is checked to determine if they have the correct permissions to perform the requested action.

### **Slave Drive, IDE**

The secondary device connected to an IDE interface. See Master/ Single Drive.

### **SMART (Self-Monitoring, Analysis, and Reporting Technology)**

A diagnostic utility built into some modern hard drives that constantly monitors the media, electronic components and mechanical components. If something is encountered that indicates a problem, SMART is capable of notifying the user.

**Target Drive, Logicube SuperSonix**

The hard drive to which the Logicube SuperSonix copies the contents of the Master drive. The Target drive is commonly the one connected externally to the Logicube SuperSonix.

**Translation Mode, CHS**

A way of logically representing the physical geometry of a hard drive such that the BIOS of a computer can interface with it. The type of translation mode supported by the BIOS will determine the maximum size a drive can be. The most common translation modes are CHS, Large and LBA.

**UDMA (Ultra Direct Memory Access)**

A high-speed method of transferring data between a hard drive and a computer's memory. Ultra DMA/33 protocol transfers data at a rate of up to 33.3 MBps, twice the rate of standard DMA.

**USB (Universal Serial Bus)**

A high-speed serial interface for connecting external peripherals to a computer. USB 1.x supports data transfer rates of up to 12 Mbps (Megabits per second). USB 2.0 supports data rates of up to 480 Mbps. USB 2.0 is fully backward compatible with USB 1.x, both using the same cables and connectors.

**Wiping, Data**

The process of securely erasing information from a hard drive using a utility that writes a defined or random pattern of data one or more times onto every sector.10. Frequently Asked Questions and Answers

**Q.** Does the SuperSonix support drives larger than 2TB in capacity?

**A.** The SuperSonix supports drives up to 3TB in capacity.

**Q.** Does the Logicube SuperSonix support Western Digital(R) "Advanced Format" drives with 4K (4,096 bytes) sectors?

**A.** The Logicube SuperSonix supports these type of drives. Please check with Western Digital(R) to find out if your hard drive model has this feature.

**Q.** By comparison my Logicube SuperSonix appears to be operating slower than other units.

**A.** Make sure that your unit is using the latest software. Visit <http://www.logicube.com/> and go to the support page to view the latest software level and if necessary download the software for your system.

**Q.** Drive information as displayed on the Logicube SuperSonix Drive Info screen does not agree with the label fixed to the target HDD. Example: The number of cylinders displayed is different than the label

**A.** Drive labels will only show Cylinders, Heads, and Sectors for a maximum of 8.5GB (example: 16383, 16, 63.) The actual drive parameters will be displayed both in drive information, and in the printed session report. Most of the newer drives only have an LBA (Logical Block Addressing) value printed on the label showing the drive's capacity in sectors

**Q.** Cloning data to or from a Western Digital HDD is not working properly.

**A.** Most Western Digital drives require that the jumpers be removed for a capture to work. The exception to this statement is for the Western Digital "Xpert" series Hard Drives (an older manufactured version), where the jumper is set to the master position.

**Q.** I'm trying to update my Logicube SuperSonix with the latest software but I cannot get my PC to communicate with the unit.

**A.** The PC must be set up to communicate in the Bi-directional mode through the BIOS setup. Refer to your PC user manual. Also, you could try to update the unit using the Compact Flash card. Instructions on how to do that are available elsewhere in this manual.

**Q.** Do Target drives have to be formatted and partitioned prior to cloning?

**A.** No. Target drives do not need to be formatted, partitioned or otherwise modified prior to cloning. The Logicube SuperSonix disregards everything on the Target drive, reformatting and partitioning it during cloning.

**Q.** Are NT 4GB FAT16 partitions (also known as "NT FAT") supported by the Logicube SuperSonix?

**A.** Yes, through MirrorCopy™ mode only.

**Q.** Can the Logicube SuperSonix clone partitions created with file systems such as UNIX, LINUX and HPFS?

**A.** Yes, but results are guaranteed only if they are cloned between identical Master and Target drives. However, partitions of some versions of UNIX will self-repair upon the first boot.

**Q.** Can the Logicube SuperSonix defragment a partition?

**A.** Yes. Refer to [Chapter4: Cloning](#) for information on using Selective Partitions to defragment a FAT partition while cloning.

**Q.** Can the Logicube SuperSonix clone between dissimilar drives?

**A.** Yes. For Master drives that contain FAT16, FAT32 and NTFS partitions, the Logicube SuperSonix will take care of all the necessary adjustments to ensure that a Target drive of any size will be valid and bootable. Many combinations of Master and Target drives sizes up to 250 GB were tested and found to be valid.

Unknown partition types, however, are cloned in mirror mode and typically require very similar if not identical Master and Target drives to guarantee a successful clone.

**Q.** Can I clone from a larger drive to a smaller drive?

**A.** Yes, as long as the data content of each Master partition is able to fit into the scaled down size of the corresponding Target partition. Otherwise, an error message will be displayed indicating that the SuperSonix is unable to fit the data onto the Target drive.

The error "Cannot fit data to Target" can also be caused by a badly fragmented Master drive. In such cases, defragmenting the Master will generally resolve the issue.

Note that an NTFS partition can only be scaled down by approximately 55% due to the master file table (MFT) that resides in the center of the partition.

**Q.** Can I clone to/from laptop drives?

**A.** Yes. Logicube sells 2.5" drive adapters, and can provide adapters to many of the special drive connections on the market. Please call for availability. In cases where the drive cannot be removed from the laptop, you can use the parallel port interface, the optional Logicube CloneCard Pro for cloning through the PCMCIA/CardBus interface, or the optional Logicube USB Adapter for cloning through the USB port. See [Chapter 7: Interface Adapters](#) for more information.

**Q.** How does the Logicube SuperSonix handle Windows NT Security Identification (SID) duplication issues?

**A.** The Logicube SuperSonix does duplicate the SID. Because of this, it is recommended that a SID changer be installed on the Master drive so that the first time the newly cloned Target is booted-up, all SID's will be replaced with fresh ones.

There are a number of SID changer utilities available. A freeware SID changer is available at [www.sysinternals.com](http://www.sysinternals.com) for download. Note that Logicube assumes no responsibility for this or any third party software, and can only provide limited support in its use.

**Q.** How does the Logicube SuperSonix handle bad sectors encountered on the Master and Target drives during cloning?

**A.** On the Master drive, if OmniDiagnostics has been installed and its Recover feature has been enabled, the Logicube SuperSonix will attempt to recover the data from any bad sectors encountered.

If OmniDiagnostics has not been installed or its Recover feature has not been enabled, the Logicube SuperSonix will immediately skip over any bad sectors on the Master drive. Note that several attempts will be made to correctly read the sector before skipping.

Note that newer drives perform automatic bad sector reallocation on their own and will, therefore, rarely show a bad sector.

**Q.** Can I clone drives with virus protection software installed?

**A.** Yes, but remember to decline the "repair" of the target drive should a virus protection program complain about an altered master boot record, etc.

**Q.** How does the Logicube SuperSonix determine the size of partitions to create on the Target drive?

**A.** In the default Cleve Clone mode, all known partition types (i.e. FAT16, FAT32 and NTFS) are scaled proportionally to the ratio of Master/Target size. Note, however, that FAT16 partitions will not exceed 2.1 GB when scaled up, nor be smaller than 32 MB when scaled down.

All unknown partitions (e.g. HPFS, UNIX, etc.) are mirrored, that is they maintain their size.

**Q.** What is the difference between 100% MirrorCopy™ and CleverCopy?

**A.** 100% Clone™ simply copies the user-designated percentage of all sectors on a hard drive starting from sector one. It does not look at drive structures and thus can copy any type of known or unknown partition.

CleverCopy analyzes the drive structures prior to cloning and only copies sectors that are occupied by useful files and data. It also adjusts the various drive structures to assure a valid and fully partitioned target drive. For these reasons, CleverCopy™ is the default cloning mode, and recommended for use wherever possible.

**Q.** Can the Logicube SuperSonix correctly clone hard drives with dual boot configurations, even in conjunction with NTFS?

**A.** Yes. The Logicube SuperSonix will clone a FAT16 followed by either an NTFS or another FAT16 partition correctly and adjust all the necessary structures so that dual booting is possible. It will also correctly handle dual boot configurations that use the same partition.

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## **Troubleshooting Guide**

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**Q.** Why do I sometimes see transfer speeds that exceed 3.0 GB/min and then other times as slow as 200 MB/min?

**A.** There are many factors that determine transfer speed. For example, the speed of the cloning operation is governed by the slowest drive being used. If an older drive is used as either Master or Target, chances are it cannot sustain a high data transfer rate. Newer drives have faster electronics and larger on-drive caches that allow them to reach transfer rates of 33 MB/sec or more.

The type of cloning operation performed can also affect transfer speeds. When cloning FAT16 partitions, it is sometimes necessary to change the cluster class of the partition. In such cases,

the Logicube SuperSonix utilizes a more complex method of ensuring it creates a valid Target drive.

With OmniDiagnostics installed and its Recover feature enabled, the Logicube SuperSonix will attempt to recover data from bad or weak sectors found on the Master drive. This is a time consuming operation that could cause the overall cloning speed to drop significantly.

**Q.** The Logicube SuperSonix does not recognize my Master/Target drive.

**A.** Make sure that the drive jumpers are set to Master/Single. Drive jumper settings can be found at the drive manufacturer's web site. Also, check the condition of the power and data cables; they are rated for a maximum of 500 insertions. New cable sets can be ordered from Logicube.

**Q.** My Target drive will not boot. Why?

**A.** Please check several things:

First, make sure that the correct CHS Mode was selected for the Target drive. This will depend upon the capacity of the Target drive and on the BIOS of the PC in which it will be used. Check with the hard drive and PC manufacturers to determine which CHS mode is best as different BIOS systems use different translation methods for large (> 528 MB) capacity drives. See [Chapter 4: Cloning](#) for more information on the CHS Mode preference setting.

Also check and make sure that the first partition selected for cloning on the Master drive consists of a bootable operating system. It is possible to select a data-only partition to be cloned. However, if it becomes the first partition on the Target, a PC will not consider that drive to be a valid boot drive.

Finally, scan and check the Master drive for possible problems using a hard drive utility such as Window's Scandisk or Chkdsk. Some problems may not show up with casual booting of the Master, but things such as cross-linked clusters can cause serious cloning errors.

**Q.** All but the first partition is missing from the Target drive. How did that happen?

**A.** This is usually the result of having the wrong CHS translation mode for the Target drive being used. See [Chapter 4: Cloning](#) for information on selecting a CHS mode.

**Q.** Why do I have un-partitioned free space at the end of my Target drive?

**A.** This typically occurs when the Master drive has FAT16 partitions only and the Target is much larger than the Master. FAT16 partitions cannot scale up to more than 2.1GB each. FAT32 and NTFS partitions do not suffer from this limitation and will always be scaled up to fill the target

drive. This can also happen if 100% Clone is used to clone from a small drive to a larger Target drive.

**Q.** I receive the error: "Drive error– either the speed setting is too high, or a bad sector was encountered". What is causing this?

**A.** This error is typically the result of using slower (older) drives, or using drives that have weak or bad sectors. Defragmenting the master drive or adjusting the Speed setting to a slower mode can sometimes resolve this error.

**Q.** Why do I receive a "Not Enough Memory" error when running Scandisk or Defragment on cloned Windows 9.x systems?

**A.** This issue only applies to FAT32 partitions. The error occurs because both Scandisk and Defragment cannot handle the increased number of clusters that exist when Targets larger than 8 GB have been cloned from Master drives smaller than 8 GB.

To prevent the problem from occurring, change the Logicube SuperSonix default CleverCopy mode to Selective Partitions™. Then select the Defragment copy method for the partition(s) you wish to clone. This will resize the clusters and reduce their number.

**Q.** Why does my cloned Windows 2000 or Windows XP partition boot to a blue screen?

**A.** The CHS mode for cloning needs to be set to LBA-1 or LARGE-1. If one of these was used, then set the CHS mode to LBA-2 or LARGE-2. You may also need to set the Speed option to a lower setting.

**Q.** Why do I get the error "Can't fit data to Target" when cloning between drives of the same size?

**A.** The drives may be from different manufacturers and the Target actually somewhat smaller than the Master. Also, the Master drive may have some data at the very end of the partition. This would prevent it from scaling down.

We recommend that you use a defragment utility on the Master drive before cloning it to the Target again.

**Q.** My cloning session stops with the error "Error initializing/writing NTFS data." Why?

**A.** This error means that NTFS CleverCopy has encountered corrupt data in the boot sector, MFT or Volume Bitmap of the Master drive. The drive may still boot in a PC, however.

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**Q.** My cloning session always stops at a certain point with a “Drive not ready” error message. Why?

**A.** The Master drive may have too many bad sectors for the unit to skip over. In rare cases, sectors can also be too damaged for the unit to skip over. Please refer to the Scan Target and Repair Target section of [Chapter 4: OmniDiagnostics](#).

Note that if Verify is set to Some or All, the bad sector(s) may be on the Target drive.

**Q.** Why does the cloning session stop with an “Invalid MBR” error message?

**A.** This error comes up when the partition table or boot sector contains corrupt data. Despite the error, the Master drive may still boot in a PC.

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## 11. Index

- Active Directory, 42, 45
- Add Partition, 34
- Alphanumeric Keypad, 16, 27, 34, 45
- bad sector, 53
- Bcdedit, 40, 41
- BIOS, 44, 51, 83, 85, 88, 90, 92
- BIOS, Phoenix, 44
- Button, Start, 58
- CardBus, 56, 83, 86, 91
- Chkdsk, Microsoft Windows, 92
- CleverCopy™, 7, 28, 29, 30, 34, 38, 91, 93
- CloneCard Pro™, 6, 8, 56
- Cluster, partition, 83
- Compact Flash (CF) Slot, 79
- Compaq computers, 44
- Cylinders, 45, 85, 89
- Debug Trace, 79
- Defragment (Defrag), 30, 34, 84, 90, 93
- DELL laptop Computers, 44
- DoD, Specification M-5220, 8, 55
- Drive, CD-ROM, 57, 66
- Drive, EIDE, 7, 84, 85
- Drive, eSATA, 7, 15
- Drive, IDE, 7, 11, 12, 13, 84, 85, 87
- Drive, Jumper Setting, 6, 86, 89, 92
- Drive, Master, 6, 85
- Drive, Master/Single, 85
- Drive, microSATA, 7, 15
- Drive, older, 43, 92
- Drive, S.M.A.R.T., 87, 88
- Drive, SATA, 7, 9, 11, 13, 14
- Drive, Slave, 87
- Drive, Target, 6, 88
- Drives, SCSI, 15
- Dual Boot, 91, 92
- Dynamic Partitioning, 45
- Error, Not Enough Memory, 93
- FAT16, 28
- FAT32, 28
- Firewire (1394), 66, 68, 69
- Geometry, Drives, 24, 40, 41, 44, 85, 88
- GPT, 47
- GUID Partition Table, 47
- Hard Drive, Western Digital, 89
- HDD, Hard Disk Drive, 6, 89
- HPFS, 90, 91
- Icon, Back, 26, 34, 52, 54
- Indicator Lights, 16
- Laptop Drives, 1.8, 15
- Laptop Drives, 2.5, 15, 90
- Large 8.5, CHS Translation Setting, 44
- LARGE, CHS Translation Setting, 44, 45, 85, 88, 93
- LARGE-1, CHS Translation Setting, 45
- LARGE-2, CHS Translation Setting, 45
- LBA, 44
- LBA 8.5, CHS Translation Setting, 44
- LBA, CHS Translation Setting, 44, 45, 85, 88, 89, 93
- LBA-1, CHS Translation Setting, 45, 93
- LBA-2, CHS Translation Setting, 45, 93
- License key, 40, 41, 50, 51
- Light, Error, 16
- Light, Power, 16
- Light, Status, 16
- Linux, 7, 38, 90
- Logical drives, 38
- Mac, 7
- Master Manager™, 16, 32, 33, 39
- Menu, Software Setup, 80, 82
- MirrorCopy™, 7, 27, 30, 38, 90, 91, 93
- MS-DOS, 30
- NT FAT, 90
- NTFS, 28
- OCXi™, 39
- OmniDiagnostics™, 7, 50, 51, 93
- On Error, Abort, 51
- On Error, Recover, 51, 91, 92
- On Error, Retry, 51
- On Error, Skip, 51
- Optional Preference Settings, 28, 29, 31, 33, 42, 47
- OS2, 7
- Parallel Port, 86
- partition, 30
- partition label, 16

Partition Label, 16, 35  
 Partition Mirror, 30  
 Partition, Compaq (CQ), 31, 34  
 Partition, DELL Utility (DE), 34  
 Partition, Drive, 30, 34, 86  
 Partition, FAT16, 7, 28, 30, 31, 33, 84, 90, 91, 92, 93  
 Partition, FAT32, 28, 30, 31, 33, 34, 84, 90, 91, 93  
 Partition, NTFS, 7, 28, 29, 30, 31, 33, 38, 86, 90, 91, 92, 93  
 Partition, Phoenix Recovery (PH), 31, 34, 48  
 Partition, Unknown (?), 34, 90  
 Partitions, 38, 39  
 Password Protection Feature, 45  
 PC Card, 86  
 PCMCIA, 6, 7, 56, 57, 83, 86, 91  
 PCMCIA slot, 6, 56, 57  
 PnP, Plug and Play, 42  
 Power Supply, 22, 59  
 QWERTY, 87  
 RAMDRIVE, 87  
 Recovery Environment (RE) partition, 38  
 Repair Target Mode, 53, 54, 93  
 Samsung Computers, 44  
 Scan Target Mode, 52, 53, 93  
 Scandisk, Microsoft Windows, 92, 93  
 Scratch drive, 8  
 Screen, About, 26  
 Screen, Drive Info, 23, 89  
 Screen, Main Menu, 19, 82  
 Screen, Settings, 26, 29, 33, 50, 51, 53, 54, 55  
 Screen, Status, 32, 34, 48, 52, 53, 54  
 Sector, 87  
 Sector, bad, 42, 50, 51, 52, 53, 91, 92, 93  
 Sector, weak, 52, 92  
 Security Identification Number (SID), 40, 41, 42, 87, 91  
 Set button, 16  
 Setting, CHS Translation, 44, 88  
 Setting, Direction, 28, 29, 31, 33, 43, 47, 52  
 Setting, Enable Option, 50  
 Setting, On Error, 51  
 Setting, Speed, 42, 58, 93  
 Setting, Verify, 28, 33, 52, 93  
 Slot, PCMCIA, 6, 56  
 Software, Loading, 79, 82  
 Speed benchmarking, 43  
 Speed, PIO-Auto, 43  
 Speed, PIO-Medium, 43, 58  
 Speed, PIO-Slow, 43  
 Speed, UDMA-0, 43  
 Speed, UDMA-1, 43  
 Speed, UDMA-2, 43  
 Speed, UDMA-3, 43  
 Speed, UDMA-4, 43  
 Sun, 7  
 Sysprep, Microsoft, 41  
 Technical Support, Logicube, 15, 26, 96  
 Thinkpad™ Computers, 44  
 Unix, 7, 86, 90, 91  
 USB 1.x, 66, 69, 88  
 USB 2.0, 66, 88  
 USB Cloning Option, 9  
 USB Port, 6, 8, 66, 67, 68, 69, 80, 91  
 User interface (UI), 7, 15  
 Virus Protection Software, 91  
 Website, Logicube, 38, 79, 82, 89  
 Windows 7, 35  
 Windows Vista, 37, 38, 39, 40, 41, 42  
 Windows XP, 38, 39, 40, 41  
 WipeClean™ Target Mode, 33, 54, 55, 88

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## Technical Support Information

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For further assistance please contact  
 Logicube Technical Support at: **(001) 818 700 8488 7am-5pm PST, M-F**  
**(excluding US legal holidays)**  
 or by email to **techsupport@logicube.com**