Logicube® Cloning Guide

EchoPlus-NG

SuperSonix-NG

ZClone Xi (ZXi)

ZXi-10G

Logicube, Inc.

Chatsworth, CA 91311

USA

Phone: 818 700 8488

Fax: 818 700 8466

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1.0 Introduction

This document provides guidelines on how to clone drives regardless of the Operating System using the following Logicube drive duplicators:

- EchoPlus™-NG
- SuperSonix®-NG and SuperSonix®-NG-PCIe
- ZClone™ Xi (ZXi)
- ZXi™-10G

1.1 Cloning Methods

Different cloning methods are available on each of the Logicube products listed at the beginning of this document. Please refer to the respective User's Manual of your Logicube device for complete instructions on how to use each cloning method.

1.1.1 Mirror Copy Method

All the Logicube products listed at the beginning of this document have the Mirror Copy method. Mirror Copy method performs a bit-for-bit copy of the Master drive, producing an exact duplicate of that drive and supports the cloning of any Operating System.

1.1.2 Clever Copy Method

All the Logicube products listed at the beginning of this document have the Clever Copy method. Clever Copy method copies only the sectors with data from the Master drive. and can be used with Operating Systems that use the following file systems: ***FAT (16/32)***, ***NTFS***, ***EXT***, ***EXT2***, ***EXT3***, ***EXT4***.

1.2 Cloning to Smaller Capacity Drives

Regardless of the Operating System, Target drives should be at least the same capacity or larger than the Master drive. Specifically, each Target drive must have the same number of sectors (or Logical Block Addresses/LBAs) or a larger number of sectors or LBAs than the Master.

If the Master drive is larger in capacity than any Target drive, it is still possible to clone the drive, but there are some adjustments that will need to be made to the Master drive. The following applies to any Operating System:

- The total partition sizes on the Master drive need to be adjusted to be less than the capacity/size of the smallest Target drive.
- The partitions on the Master drive need to be adjusted so that the free/unallocated space is at the end of the drive.

Before making any changes to the Master drive, it is highly recommended to make a backup copy of the Master drive by performing a Mirror copy of the drive to make sure there is an exact duplicate backup of the Master drive.

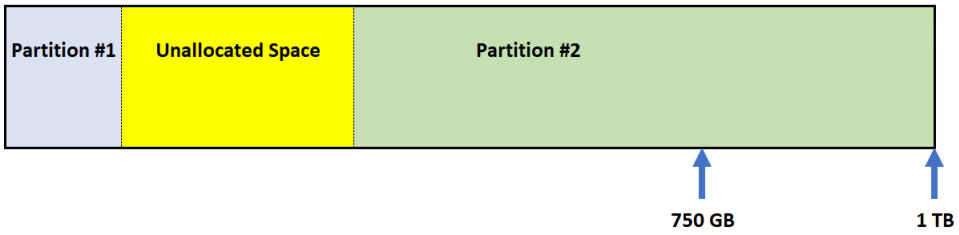
Logicube cannot provide support on how to re-size, shrink, or move partitions. There are several articles and software/utilities/tools available on the internet on how to re-size, shrink, or move partitions.

Sample original drive (1 TB drive):

Sample of a properly adjusted drive (from a 1 TB drive to fit a 750 GB drive):

Logicube, Inc. • 19755 Nordhoff Pl., Chatsworth, CA 91311 USA• tel:+1-818-700-8488• fax:+1-818-435-0088 www.logicube.com

Sample of an adjusted drive that will not work (from a 1 TB drive to fit a 750 GB drive):



Once the partitions have been adjusted to properly fit the Target drive, it can be cloned using any of the cloning methods. Depending on the Operating System, cloning method, and Logicube device used, there may be limitations to cloning the drive. See ***Section 1.4*** for limitations based on the cloning method and drive capacities being used.

1.3 BIOS, UEFI, Partitioning Schemes, and Sector Sizes

All the Logicube products listed at the beginning of this document support the following:

- **BIOS & UEFI –** Drives that come from devices that use BIOS or UEFI are supported.
- **MBR & GPT –** Both partitioning schemes are supported.
- **512 & 4096 (4K) Sector Size Drives –** Drives with these two common sector sizes are supported.

1.4 Mirror Copy and Clever Copy Limitations

Depending on the copy method used and drive capacities, there may be limitations.

1.4.1 Mirror Copy Limitations

Mirror Copy method performs a bit-for-bit copy of the Master drive, producing an exact duplicate of the Master drive. There are very few possible limitations when using Mirror Copy (e.g., sector size, drive health, etc.). There is one other possible limitation when using the Mirror Copy method:

The Target drives should be the same capacity or larger. If the Target drive is smaller in capacity, please see ***Section 1.2***, then set the Clone Method Setting to the proper percentage of the drive (for example, if the Target drive is 750 GB and the Master is 1 TB, clone no more than 75% of the drive), or set the number of blocks (LBAs) to match the Target drive's number of blocks (LBAs).

1.4.2 Clever Copy Limitations

Clever Copy method copies only data sectors and fills the rest of the drives with zeroes (blank space) and can expand partitions to fill the rest of the drive or a percentage of the drive. If one of the partitions (file systems) is not supported by Clever Copy, the Logicube

device will automatically use Mirror Copy for that partition. Here are some limitations when using the Clever Copy method:

- For Windows, all System Restore, Recovery, and OEM partitions should not be expanded.
- The Target drives should be the same capacity or larger. If the Target drive is smaller in capacity, please see ***Section 1.2***.

1.5 Cloning BitLocker Encrypted Drives

The Logicube devices mentioned in this guide cannot decrypt BitLocker encrypted drives. However, drives that are encrypted with BitLocker can be cloned. BitLocker only encrypts partitions (not the entire drive). Depending on the cloning method, the following behavior is expected:

- **Mirror –** Since Mirror is a bit-for-bit clone of a drive, the Target drive (including the BitLocker encrypted partition) will be an exact duplicate of the Master drive.
- **Clever –** Although partitions can be resized when using Clever, it is highly recommended to keep the BitLocker encrypted partition size the same as the Master (do not resize the BitLocker encrypted partition). If a BitLocker encrypted partition is resized, the partition will be resized (as seen in Disk Management) but the actual volume size (drive letter) will remain the same as the Master drive's volume size.

Another option is to first decrypt the drive before cloning. This will completely remove all key protectors from the drive. Once decrypted, the drive can be cloned using Mirror Copy or Clever Copy. If Clever Copy is used, the partition can be resized to a larger size.

Technical Support Information

For further assistance please contact

Logicube Technical Support:
by phone: **(+1) 818.700.8488 8 a.m. – 5 p.m. PT, M-F**
(excluding US legal holidays)

or by email: **techsupport@logicube.com**