EchoPlus™-NG User's Manual

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Version: 1.0

Date: 10/19/17

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Logicube Technical Support Contact Information

1. By website: www.logicube.com
2. By email: 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

1: Introduction

1.0 Introduction to the EchoPlus™-NG

The EchoPlus™-NG is a budget-friendly, single-master, single-target standalone hard drive duplicator. This handheld cloning solution provides advanced features not seen in your typical entry-level duplicator including support for PCIe M.2, SATA and USB 3.0 drives, an easy-to-use browser-based interface, comprehensive log reports and a wipe feature that supports a DoD 7-pass wipe.

The EchoPlus-NG provides the ability to create a bit-for-bit copy or use our Clever Copy mode to copy only data areas for extremely efficient cloning. This versatile duplicator makes it easy to accomplish all your cloning and wiping tasks including drive testing, software and O/S upgrades, back-ups, content/application distribution and new PC rollouts.

1.1 Features

- Single master to single target duplication at blazing speeds of 18GB/min*.
- The EchoPlus-NG supports PCIe/SATA/USB 3.0 interfaces. Master ports include 1 PCIe, 1 SATA, 1 USB 3.0 Target ports include 1 PCIe, 1 SATA, 1 USB 3.0.
- Supports PCIe type drives including AHCI/NVMe/SATA M.2 SSDs, PCIe and mini-PCIe express cards. Requires optional PCIe adapters available in a PCIe Adapter Kit.
- Support for IDE, 1.8” IDE, 1.8” ZIF, mSATA, microSATA, eSATA and flash media is available using optional adapters.
- Use the browser-based user interface to manage all EchoPlus-NG operations including software updates. The EchoPlus-NG includes 2 Gigabit Ethernet ports.
- The EchoPlus-NG features a compact size at 6.2” x 4.2” x 2.1” for use on the workbench or in the field.
- Clones all operating systems including Windows 10, MAC, Linux and Unix®.
- Multiple Cloning Modes:

  Mirror Copy, bit for bit copy. Supports all O/S including Windows, Linux and MAC.

  Clever Copy: Copies only data areas, skips blank sectors, scales partitions to target. Supports FAT16/FAT32/NTFS and Linux (ext, ext2, ext3, ext4) file systems.

  For multiple partition drives, EchoPlus-NG automatically selects the optimum cloning method (Clever or Mirror).

- Multi-Image Master. This optional feature allows you to store multiple EchoPlus-NG created images in a repository on a USB or SATA enclosure connected to the EchoPlus-NG and then clone to selected targets. Available with the purchase of an optional software activation package
- Hash/Verification option (SHA1, SHA256 or MD5) allows the user to clone and verify the exact replication of the master drive. Available with the purchase of an optional software activation package.
- Write-protected master ports. All master ports are automatically write-blocked to prevent any alteration to sensitive data on the master drive.
- Wipe Feature. Sanitize hard drives to DoD 7-pass specification. Offers Secure Erase and custom pass settings, meets NIST 800-88 guidelines.
- User Profiles. Create user profiles and save configurations for commonly used operations.
- Audit trail/log reports provide detailed information on each task. A digital signature is included in the report for authentication purposes.
- Bad sector handling. Scan for bad sectors on the source drive, abort or skip and log for review.
- Additional features include HPA/DCO support, advanced drive statistics and a color touchscreen with built-in stylus.

1.2 In the Box

The following items are included with the Echo-Plus-NG:

- The Logicube EchoPlus-NG unit.
- AC adapter/Power supply and US power cord
- QTY: 2 – SATA power and data cables
- QTY: 1 – CAT6 Network cable
- CD-ROM containing the user's manual

1.3 Options

There are several options for the EchoPlus-NG (listed below). To purchase any of the following options, please contact Logicube Sales: sales@logicube.com.

- Verification/Hash software option allows the user to clone and verify the exact replication of the master drive during cloning.
- Multi-Image Master software option allows you to store multiple EchoPlus-NG created images in a repository on a USB enclosure or SATA drive connected to the EchoPlus-NG.
- PCIe adapter kit for M.2 PCIe, (AHCI, NVMe and SATA), PCIe and mini-PCIe express cards. This kit is required for access to PCIe type drives.
- eSATA to SATA cable.

- mSATA to SATA adapter.
- Flash media reader for compact flash, SD cards and other flash media.
- 2.5”/3.5” IDE to SATA adapter.
- 1.8” IDE to SATA adapter.
- 1.8” IDE ZIF to SATA adapter.
- 1.8” micro SATA adapter.
- USB to SATA adapter allows you to connect SATA drives to the USB 3.0 ports.
- 18” extended length SATA cable set.
- Extended 1-year and 2-year warranties.

1.4 Specifications

SPECIFICATIONS

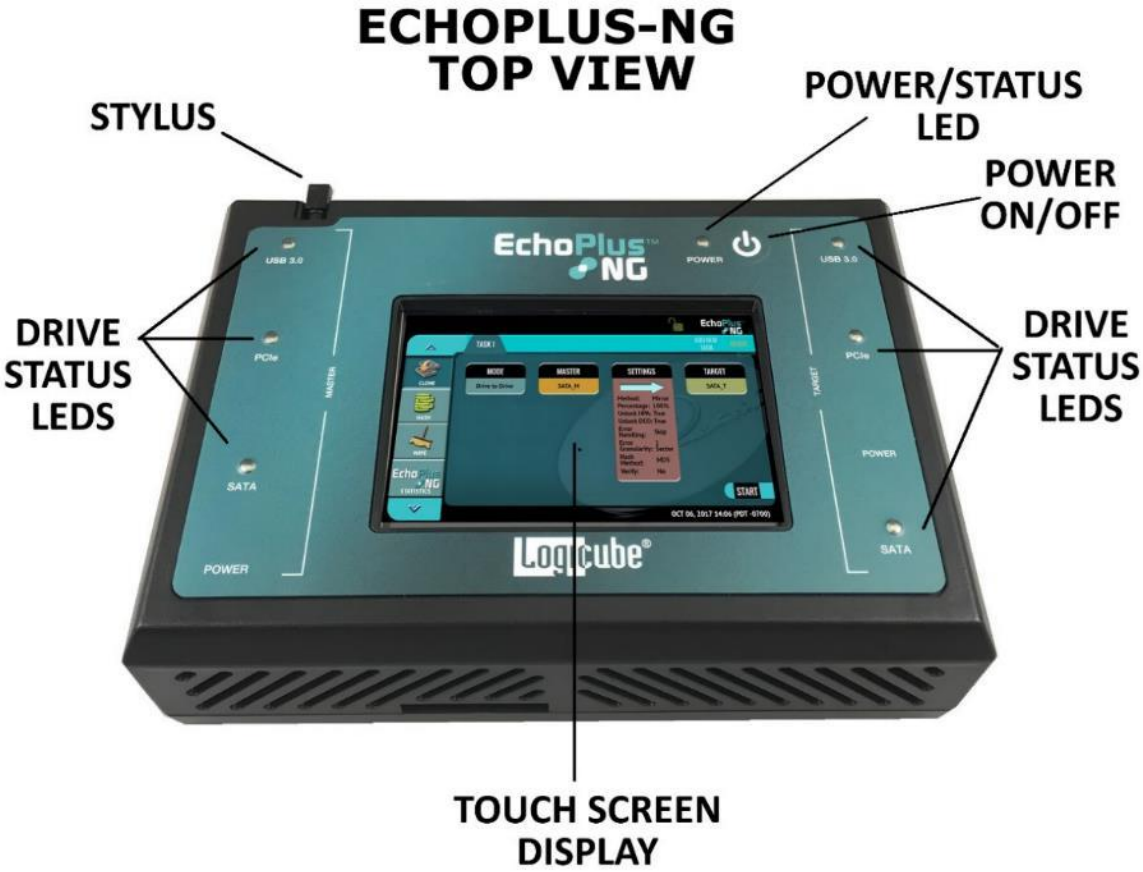
Power Requirements	Power Consumption	Operating Temp	Relative Humidity	Net Weight	Dimensions Approvals	Agency
12 V DC, 7 AMP	<72W w/drives	0-40°C 32 to 104° F	20% to 80%	0.8 lbs (.36 kg)	6.2"(L) X 4.2" (W) X 2.1"(H) 15.7cm X 10.6cm X 5.3cm	RoHs compliant

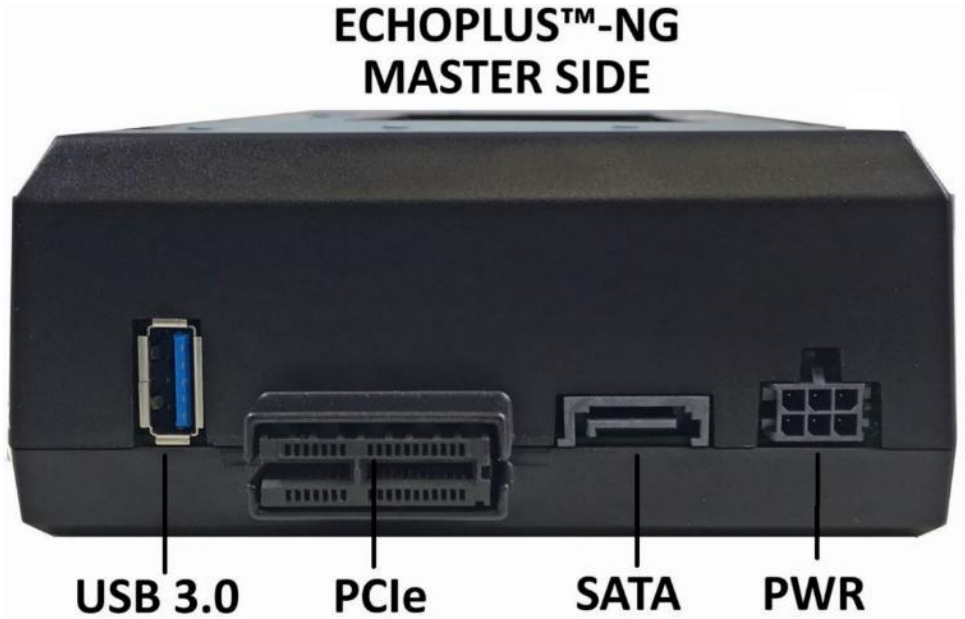
WARNINGS:

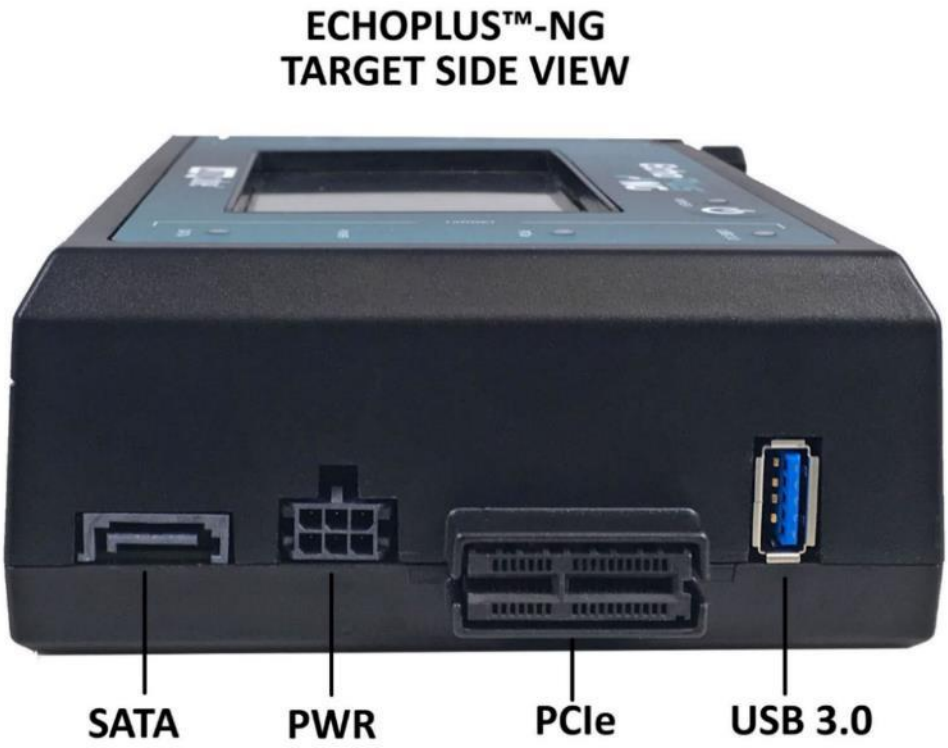
- Avoid dropping the Logicube device or subjecting it to sharp jolts. When in use, place it on a flat surface.
- Keep the unit dry. If the Logicube device needs to be cleaned, use a lightly damp, lint free cloth. Avoid using soap or other cleaning agents particularly those containing bleach, ammonia, alcohol or other harsh chemicals.
- Do not attempt to service or open the Logicube device. Doing so may void the warranty. If the unit requires service, please contact Logicube Technical Support for assistance.

2.0 Overview of the EchoPlus-NG

Special Icons – Throughout this manual, there are two icons that can be seen. Please pay close attention when any of these two icons are found. These icons highlight additional information or important warnings on specific topics.




ECHOPLUS™-NG
MASTER SIDE
USB 3.0
PCIe
SATA
PWR


ECHOPLUS™-NG
TARGET SIDE VIEW
SATA
PWR
PCIe
USB 3.0

ECHOPLUS™-NG
FRONT VIEW

INTERNAL
REMOVABLE SD CARD

ECHOPLUS™-NG
REAR VIEW

DC IN **GIGABIT ETHERNET** **FAN** **GIGABIT ETHERNET**

2.1 Turning the EchoPlus-NG on and off

The EchoPlus-NG comes with a 12V grounded, 2.5A (output DC) power supply that connects to the back of the device. Attach the included power supply to the EchoPlus-NG's DC power port in the back of the device.

To turn the EchoPlus-NG on, press and release the power button located on the top right corner of the EchoPlus-NG. The EchoPlus-NG will turn on and start the boot process.

To turn EchoPlus-NG off, press and hold the power button on the top right corner of the EchoPlus-NG until the power LED turns off.

2.2 Connecting various drive types

The SATA and USB ports on the EchoPlus-NG are hot swappable. Drives that are not being used in any task (image, hash, wipe, etc.) can be disconnected any time. The PCIe port is not hot-swappable.

The PCIe port is not hot-swappable. Always turn the EchoPlus-NG off when connecting or disconnecting drives through the PCIe port.

Cables and adapters are available for the following drive types:

- SATA
- M.2 SATA, AHCI, and NVMe (included with the optional PCIe Kit)
- mPCIe (included with the optional PCIe Kit)
- 2.5" and 3.5" PATA/IDE (optional)
- mSATA (optional)
- eSATA (optional)
- Micro SATA (optional)
- 1.8" ZIF (optional)
- 1.8" PATA/IDE (optional)
- Flash Media (optional)

2.2.1 Connecting Master Drives

Master drives must be connected to the left side of the EchoPlus-NG (labeled as 'Master' on the top-view of the EchoPlus-NG).

Never connect a master drive to the target ports of the EchoPlus-NG. Data may be overwritten if a drive is connected to a target port.

2.2.2 Connecting Target Drives

Target drives must be connected to the right side of the EchoPlus-NG (labeled as 'Target' on the top-view of the EchoPlus-NG).

2.2.3 Using USB/eSATA enclosures

When using USB or eSATA enclosures, it is highly recommended to leave the drive inside the enclosure. These enclosures typically have an on-board controller that may be necessary to read the drive properly. Taking the drive out of the enclosure could cause any device (including computers) not to read the drive contents properly.

2.2.4 Connecting PCIe/mPCIe/M.2 (AHCI/NVMe) Drives

Mini PCIe, and M.2 (AHCI or NVMe) drives can be connected using the optional PCIe Kit. Standard PCIe drives can be connected directly to the PCIe ports.

The EchoPlus-NG supports the following M.2, mPCIe, and PCIe drives:

- M.2 SATA (with the optional PCIe kit part# F-ADP-PCIE-T-KT)
- M.2 PCIe AHCI (with the optional PCIe kit part# F-ADP-PCIE-T-KT)
- M.2 PCIe NVMe (with the optional PCIe kit part# F-ADP-PCIE-T-KT)
- mPCIe (with the optional PCIe kit part# F-ADP-PCIE-T-KT)
- PCIe (standard PCIe drives can be connected directly to the PCIe port)

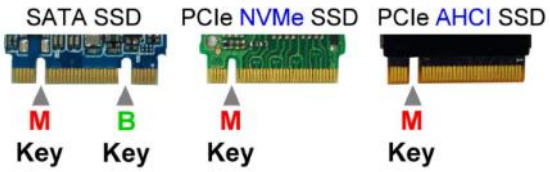
2.2.4.1 Understanding Mini PCIe (mPCIe), Mini SATA (mSATA), and M.2 SSDs

mSATA and mPCIe – These SSDs have similar connectors. The mSATA SSD is Serial-ATA based, while the mPCIe is PCIe based. These two types of SSDs are not interchangeable.

M.2 Solid State Drives (SSDs) come with one of two types of physical layers (PHY) and three types of controllers:

- **SATA physical layer –** SATA M.2 SSDs utilize the SATA controller.
- **PCIe physical layer –** There are two controllers for PCIe M.2 SSDs: AHCI Controller or NVMe Controller

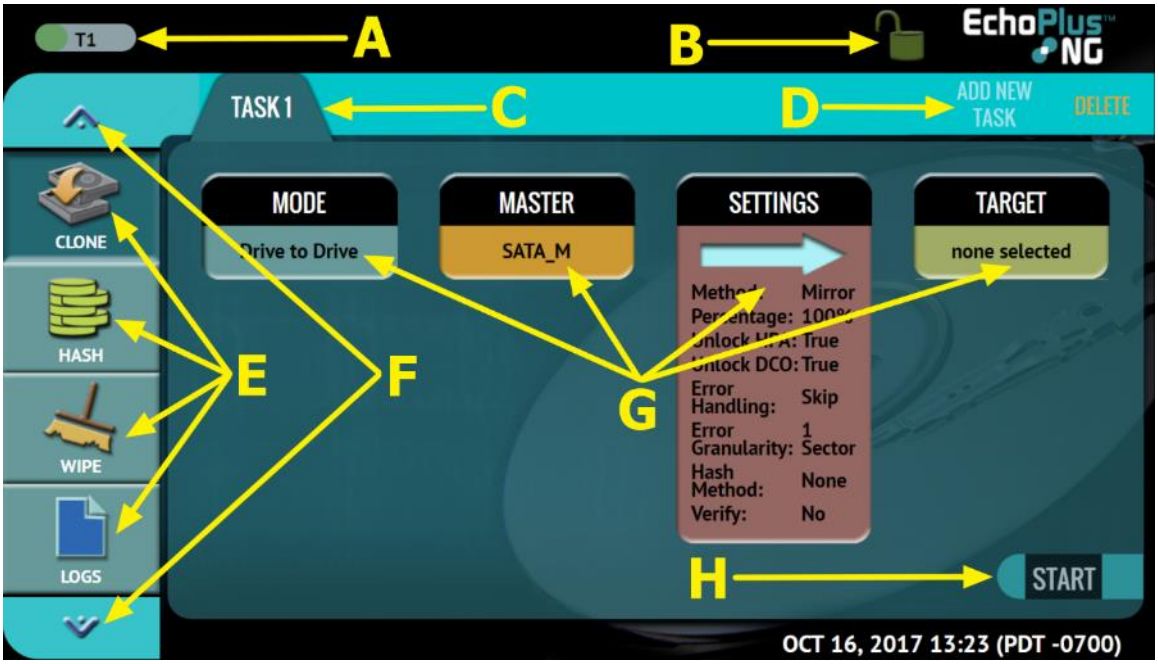
Typically, SATA M.2 SSDs utilize the "B & M key" while PCIe NVMe or PCIe AHCI SSDs utilize the "M key".



Although the examples above are typical, Logicube recommends contacting the SSD manufacturer to determine whether the SSD has a SATA interface or a PCIe interface.

2.3 The user interface

The user interface (UI) has been designed to quickly and easily input commands. It is simple and intuitive showing common icons such as tasks, modes of operation, and scroll icons on the screen. The UI is designed to be easily followed, going from left to right across the screen.



A – Operation/Task currently running

B – Lock indicator/shortcut

C – Operations/Tasks

D – Add or delete tasks

E – Types of Operations

F – Up and down scroll arrows

G – Operations options and settings

H – Start icon

3: Quick Start

3.0 Quick Start Guide – Introduction

This chapter gives a basic overview and steps on how to perform different operations using the EchoPlus-NG (Clone, Hash, Wipe, etc.). Complete details on each operation, menu, or selection, and the different screens can be found in ***Chapter 4: Clone*** and ***Chapter 5: Types of Operation***.

It is highly recommended to change the passwords for built-in accounts. Instructions on how to change the passwords to the two built-in accounts can be found in ***Chapter 6***.

3.1 Clone

The EchoPlus-NG has three modes of operation to clone virtually any drive (Hard Disk Drives or Solid State Drives). Drives can be cloned using ***Mirror*** (bit-for-bit copy) or ***Clever*** (copies only data areas, skips blank sectors, and partitions can be resized to fit larger capacity drives).

- **Drive to Drive –** Clones a drive to one or more Target drives.
- **Image to Drive –** Restores an image created by the EchoPlus-NG to a Target drive.
- **Drive to Image –** Creates a Logicube EchoPlus-NG image file to a target drive or repository. This image file can be restored to drives using the Image to Drive mode.

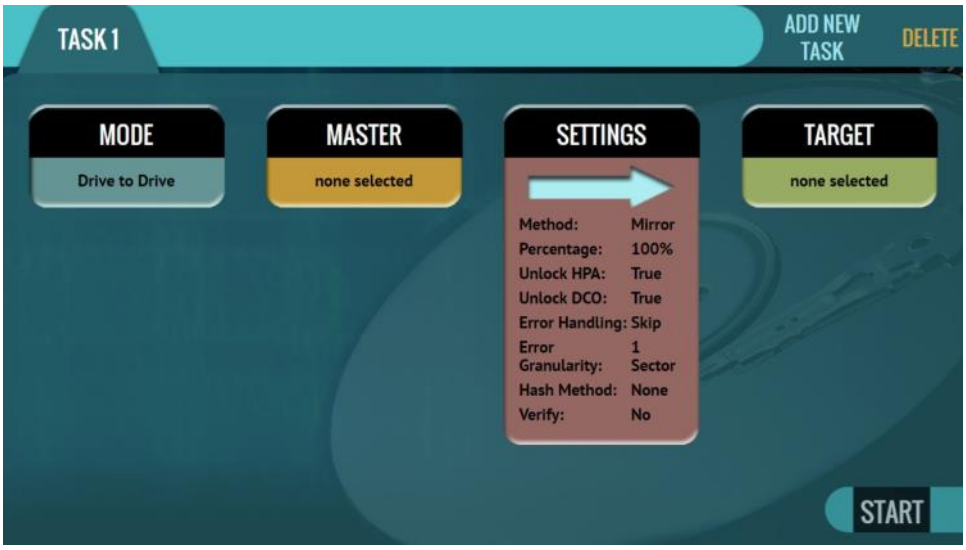
The Multi-Image Master is an option that allows ***Drive to Image*** and ***Image to Drive*** modes to function, allowing the EchoPlus-NG to create image files from Master drives. To purchase this option, contact the Logicube Sales Department at sales@logicube.com.

The EchoPlus-NG cloning, hash, and wipe speeds are determined by several factors including the following:

- The manufacturer specifications of the drive(s) being used
- The age of the drive (manufactured date)
- How often that drive has been used

For example, a 2 TB drive with 64MB of cache produced by the manufacturer 2 years ago is most likely slower than a 2 TB drive that the same manufacturer just released this year, even though they are both 7200RPM with 64MB of cache, and are both SATA III.

3.1.1 Step-by-step instructions – Clone



Details on each selectable option on the Image screen can be found in ***Chapter 4.0 Clone***.

1. Select ***Clone*** from the types of operation on the left side then tap the ***Mode*** icon and select one of the available modes then tap the ***OK*** icon.
2. Depending on your selection on step 2, tap ***Master*** to choose the master drive. Tap the ***OK*** icon to continue.
3. Tap ***Settings*** and adjust any of the settings as needed (Job Info, Clone Method Settings, HPA/DCO, Error Handling, and Hash/Verification. Tap the ***OK*** icon to continue.
4. Tap ***Target*** and select the Target. Tap the ***OK*** icon to continue. Tap ***Start*** to start the cloning task.
5. A progress bar will appear at the bottom of the screen showing the bytes processed, the rate (speed), elapsed time, and time remaining.
6. When finished, the status will show "COMPLETED". At this point, it is recommended to tap ***Reset Task*** to reset the task so the drive bays properly reset and not show as being used or assigned for other tasks.

3.1.2 Cloning to Smaller Capacity Drives

Target drives must 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 partitions 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.

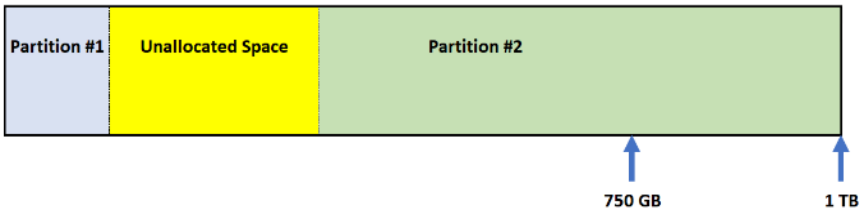
- It is highly recommended to make a backup copy of the Master drive by performing a Mirror copy of the drive to make sure there is an exact duplicate backup of the Master drive before changing partition sizes.
- Logicube cannot provide support on how to re-size or shrink partitions, however, there are several articles and software/utilities/tools available on how to re-size or shrink partitions.

Once the partitions have been adjusted to properly fit the Target drive, it can be cloned using any of the cloning methods.

- **Sample original drive (1 TB drive):**

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

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



3.2 Hash

A hash operation can be performed to any drive connected to the EchoPlus-NG. Performing a hash operation will instruct the EchoPlus-NG to calculate the hash for the specified drive or validate the hash value for that drive.

3.2.1 Step-by-step instructions – Drive Hash

1. Select ***Hash*** from the types of operation on the left side.
2. Tap the ***Target*** icon and select the drive to be hashed then tap ***OK***.
3. Tap the ***Settings*** icon to select the hash method or algorithm. SHA-1 and SHA-256 are the recommended algorithms. Details for every setting can be found in ***Section 5.2***.
4. Leave the expected value at zeroes to hash the drive. If the drive needs to be verified against a known/expected hash, change the expected value by tapping the ***edit*** icon. Tap the ***OK*** icon to continue.
5. Change any of the optional settings (LBA settings or percentage of the drive to be hashed) if needed.
6. Optional: Tap Job Info to set the Job Name, Job ID, Examiner, Other ID, or Job Notes.
7. Tap the ***Start*** icon to start the hash task.
8. When finished, the status will show “COMPLETED”. At this point, it is recommended to tap ***Reset Task*** to reset the task so the drive bays properly reset and not show as being used or assigned for other tasks.

3.3 Wipe

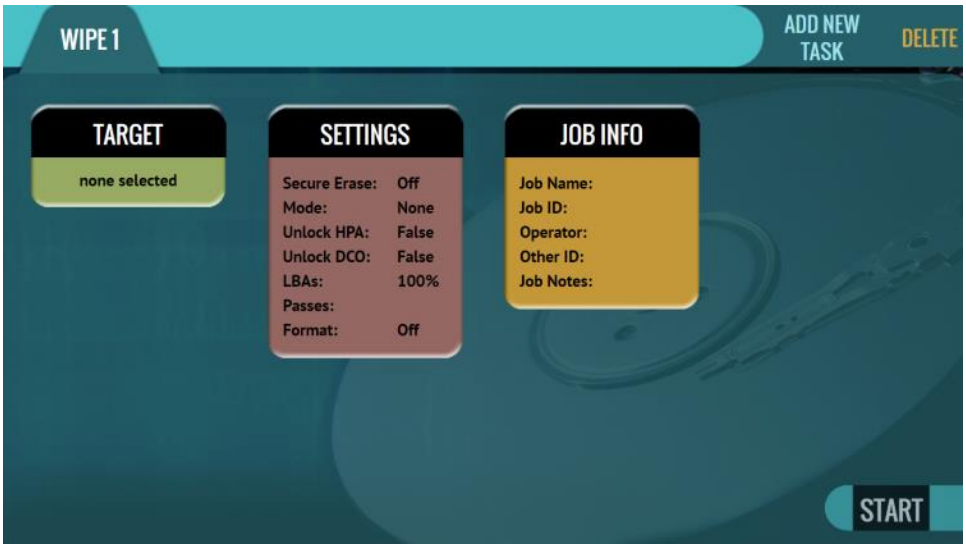
Drives connected to the Target ports (right side) can be wiped. The following methods are available in the Wipe menu:

- ***Secure Erase*** – Sends a command to the drive instructing it to wipe the drive based on the hard drive manufacturer's specifications for the Secure Erase command.

> If errors appear when performing Secure Erase, contact the drive manufacturer to check if the drive supports Secure Erase.

- ***Wipe Patterns*** – Allows the user to set a specific pattern to use for wiping the drive. The number of passes is customizable (up to 7 passes) along with the type of data written for each pass. In addition, a 7-pass DoD wipe can be set with pre-selected pass values.
- ***Format*** – Instructs the EchoPlus-NG to format a drive. The EchoPlus-NG can format the drive using the NT file system (NTFS) or EXT4 file system.

3.3.1 Step-by-step instructions – Wipe



1. Select ***Wipe*** from the types of operation on the left side.
2. Tap the ***Target*** icon and select the drive to wipe then tap the ***OK*** icon.
3. Tap the ***Settings*** icon and choose the type of wipe to be performed (Secure Erase, Wipe Patterns, and/or Format). If Wipe Patterns is selected, choose the type of Wipe Pattern to perform (DoD or Custom).
4. If the drive has an HPA or DCO area that needs to be wiped, tap the ***HPA/DCO*** icon and select ***Yes*** to wipe the HPA/DCO area of the drive.

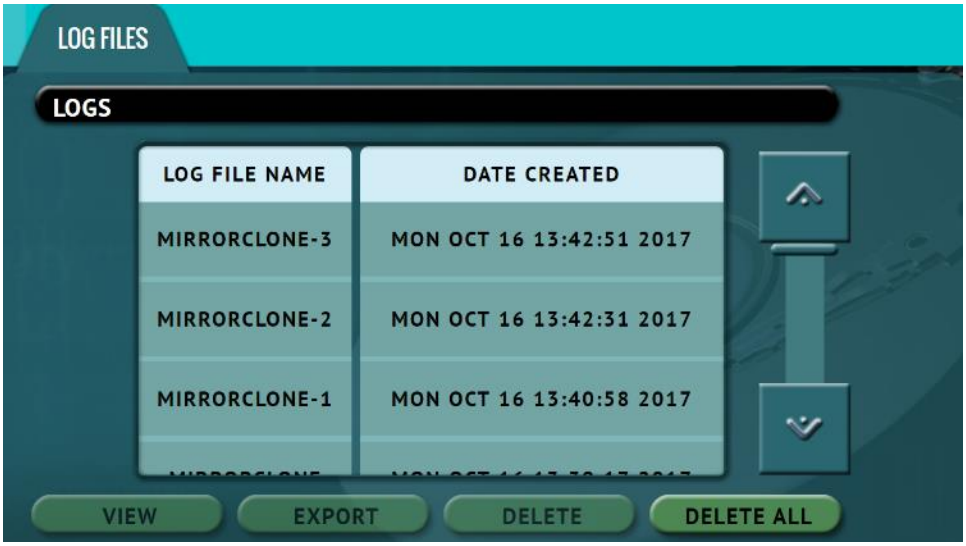
OPTIONAL for Wipe Pattern mode: Tap the ***Passes*** icon to edit the number of passes and what value gets written on each pass.

5. If the drive needs to be formatted, tap the ***Settings*** icon to change the Format settings then tap the ***OK*** icon.
6. Tap the ***Start*** icon to start the wipe task. The EchoPlus-NG will perform a Secure Erase first (if selected), then a Wipe Pattern (if selected), then finally a Format (if selected).
7. When finished, the status will show "COMPLETED". At this point, it is recommended to tap ***Reset Task*** to reset the task so the drive bays properly reset and not show as being used or assigned for other tasks.

3.4 Logs

The EchoPlus-NG keeps logs of all clone, hash, and wipe operations. Logs can be viewed directly on the EchoPlus-NG or from a computer's browser (if the EchoPlus-NG is connected to a network). In addition to viewing, the logs can be exported to an external USB location such as a USB flash drive. Logs are exported in PDF, HTML and XML format.

3.4.1 Step-by-step instructions – Viewing or exporting logs



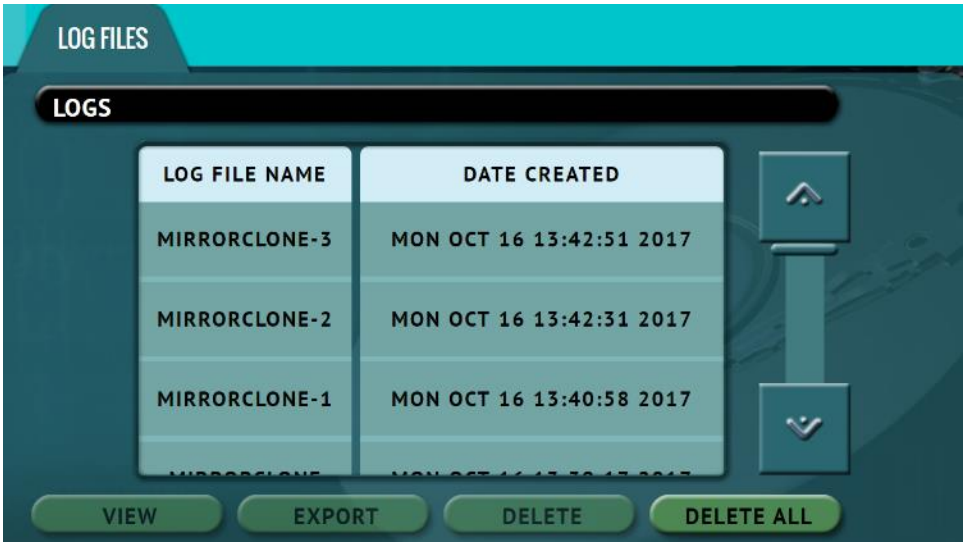
1. Select ***Logs*** from the types of operation on the left side. A list of log files will appear sorted by date (newest on top).
2. Select the log file to view by tapping the name of the log file. This will highlight the log file chosen.
3. Tap the ***View*** icon to view the log file on-screen. The log files can also be exported to a USB drive. To export the log files:
    a. Connect a formatted USB drive (USB flash drive or USB external drive) to the Target USB port (USB_T) located on the right side of the EchoPlus-NG.

b. Tap the ***Export*** icon to export the log file via USB. The log will be exported/copied to the attached USB drive and will be in HTML, PDF, and XML formats.

Repeat steps 2 through 4 if other log files need to be exported or viewed.

To print the log files, it is recommended to use the web interface as described in ***Chapter 8: Remote Operation*** and click the print icon on the upper-right corner of the screen. The browser's print menu will appear and the log can be printed to an available printer on configured on the computer.

3.4.2 Deleting log files



Log files can be deleted one at a time or all at once.

- To delete a single log file, tap the log file to highlight the log file to be deleted. Tap the ***Delete*** icon to delete the selected log file.
- To delete all the log files, tap the ***Delete All*** icon.

A log file deletion password can be set to add a layer of security when deleting log files. If a password was set, log files cannot be deleted without entering the correct password.

- If a log file deletion password was not created, a confirmation screen will appear confirming to delete the single log file or all log files.
- If a log file deletion password was created, a screen will appear prompting to enter the log file deletion password. Enter the log file deletion password. Tap the ***OK*** icon to delete the single log file or all the log files (depending on which was selected).

> The password can be set in the ***Systems Settings***. More information about the log file deletion password can be found in ***Section 5.6.2***.

3.4.3 Accessing the logs over a network

The log files can also be accessed through a network on a computer if the EchoPlus-NG is connected on the same network.

1. Open Windows Explorer or a similar file browser window and browse to the hostname or the IP address found in the Statistics screen. See ***Section 5.5*** for more information on the Statistics screen.
2. A Windows security screen will appear prompting to enter a User name and Password to connect to the EchoPlus-NG. Login with the following credentials:
   - User name: ***it***
   - Password ***it***
3. Once connected, an ***auditlog*** folder will appear. Open the ***auditlog*** folder.
4. The auditlog folder contains the HTML, PDF, and XML files for each of the log files. There will be two folders (html and pdf) that contain either the HTML or PDF versions of the log files. The XML files can be used with any XML viewer which allows for some customization on how the information can be viewed.

3.5 Statistics

This will display four tabs: ***About***, ***Adv. Drive Statistics***, ***Options***, and ***Network Interface Stats***.

- **About** – This screen will show information about the EchoPlus-NG including the current serial number, hostname, and software installed.
- ***Adv. Drive Statistics –*** Displays S.M.A.R.T. information taken directly from what the drive is reporting.
- **Options –** Displays which optional software is available and what is installed.
- **Network Interface Stats –** Displays the Network Interface statistics (Receive and Transfer bytes, packets, drops, and errors, and the link status).

For more information on the Statistics screen, see ***Section 5.5*** of this manual.

3.6 System Settings

The ***System Settings*** screen allows users to configure three different settings for the EchoPlus-NG:

- Profiles
- Passwords
- Language/Time Zone

For more information on EchoPlus-NG's system settings, see ***Section 5.6*** of this manual.

3.7 Network Settings

There are three tabs in the Network settings screen:

- **Services –** The network settings screen allows certain network services to be enabled or disabled.
- **Interfaces –** Displays the network interface information (MAC Address, Configuration type (DHCP or Static), MTU, and the status.
- **HTTP Proxy –** For the EchoPlus-NG to be able to update software from a network (over the internet), proxy settings may need to be set. Networks that have a proxy server for internet access will require proxy settings for devices like the EchoPlus-NG to connect to the Internet. This typically includes a server (or IP address), a host port, a username and password.

For detailed information on the Network Settings screen, see ***Section 5.7*** of this manual.

3.8 Software Updates

New and improved software will be released from time to time. There are two ways to update the software on the EchoPlus-NG: From the web via a network connection or from a USB drive.

For detailed information on see ***Chapter 7: Updating/Loading/Re-loading the EchoPlus–NG Software***.

3.9 Power Off

There are two tabs in the Power Off screen:

- **POWER OFF –** The EchoPlus-NG can be remotely restarted by going to this tab. Also, the EchoPlus-NG screen can be refreshed.

- **DRIVE POWER –** Inactive drives connected to the EchoPlus-NG can be set to go to standby mode in this tab. The default is set to 0 minutes (OFF).

For more detailed screen shots, see ***Section 5.9*** of this manual.

4: Clone

4.0 Clone - Introduction

This type of operation allows the cloning of a Master drive or image created by the EchoPlus-NG to one or more Targets. There are three different clone modes and several settings to choose from. These selections should be performed in order from left to right. Within each mode, there are two ways to perform the clone: Mirror and Clever.

- **Mirror –** Performs a bit-for-bit copy of the Master drive or image.
- **Clever** – Clones only sectors with data, skips blank sectors, and partitions can be adjusted based on user settings to expand and fill the larger capacity Target drive.

There are four selections when performing an image: ***Mode***, ***Master/Image File***, ***Settings***, and ***Target***.

4.0.1 Cloning to Smaller Capacity Drives

Target drives must 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 partitions 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.

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 before changing partition sizes.

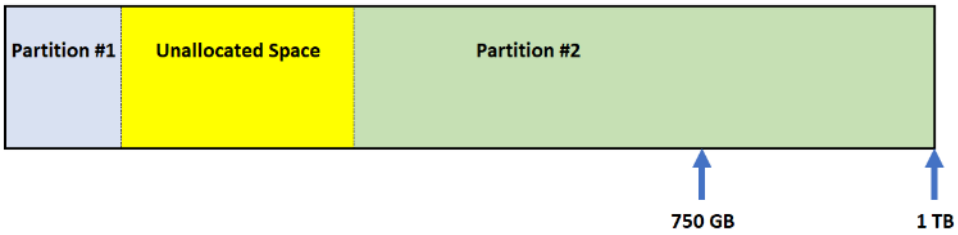
Logicube cannot provide support on how to re-size or shrink partitions, however, there are several articles and software/utilities/tools available on how to re-size or shrink partitions.

Once the partitions have been adjusted to properly fit the Target drive, it can be cloned using any of the cloning methods.

Sample original drive (1 TB drive):

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

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



4.1 Mode

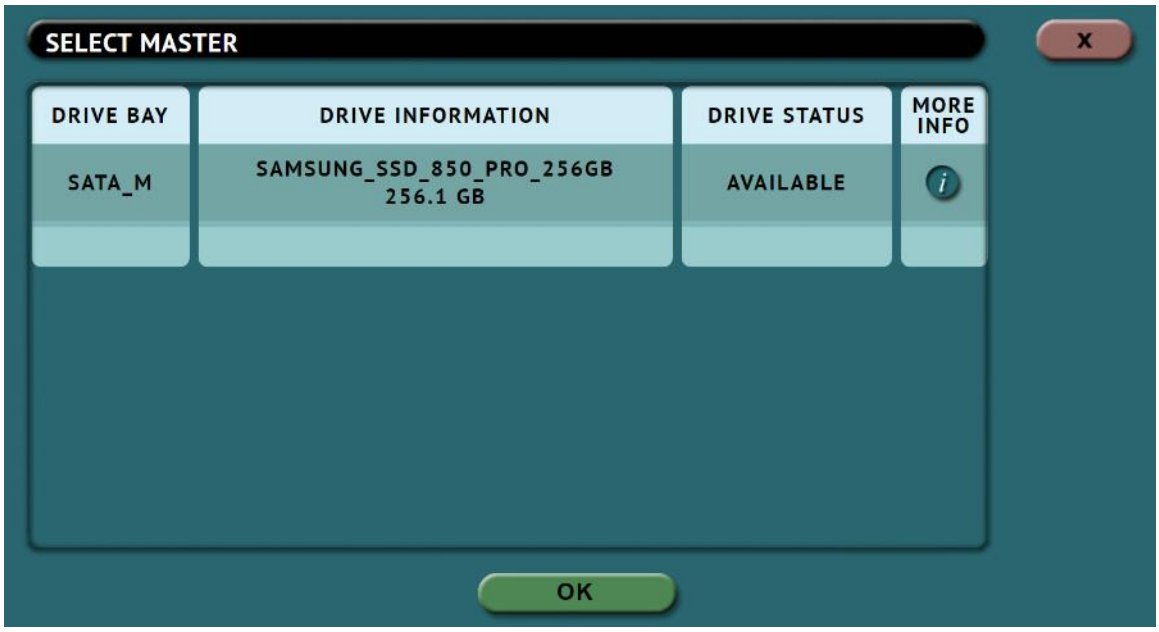
Tap this icon to choose between the following three imaging modes:

- **Drive to Drive –** Clones one Master drive to one Target drive.
- **Image to Drive –** Restores EchoPlus-NG image files to one Target drive. This mode is activated with the Multi-Image Master option.
- **Drive to Image –** Creates an image file from the Master drive to a Multi-Image Master drive. This mode is activated with the Multi-Image Master option.

> The Multi-Image Master is an option that allows ***Drive to Image*** and ***Image to Drive*** modes to function, allowing the EchoPlus-NG to create image files from Master drives. To purchase this option, contact the Logicube Sales Department at sales@logicube.com.

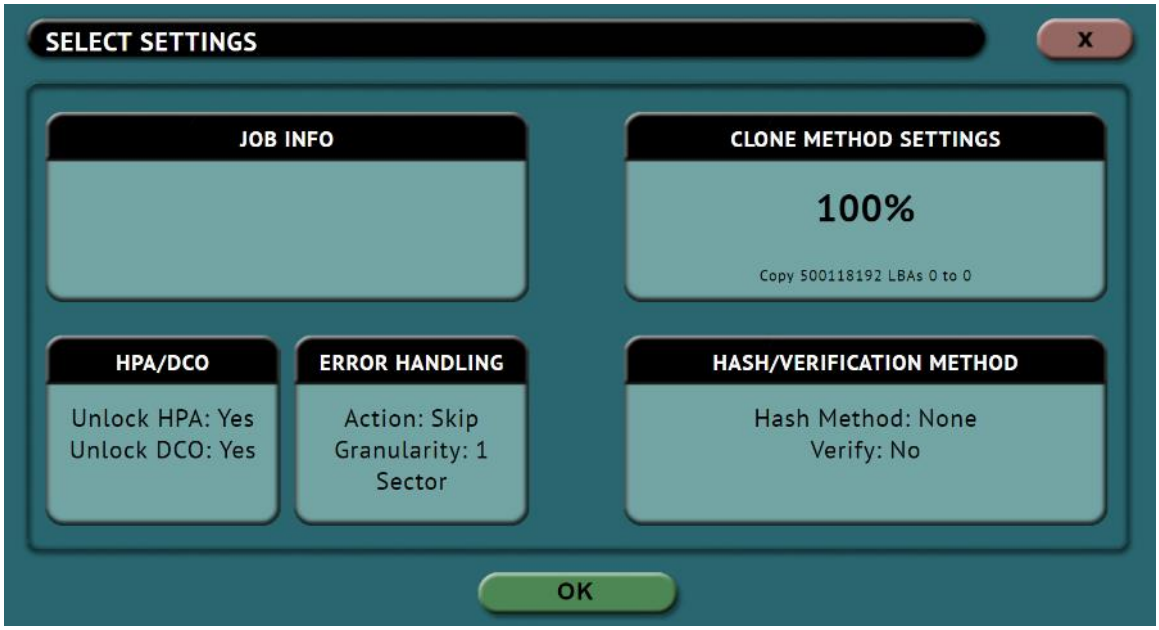
4.2 Master/Image File

Tap this icon to select the Master drive to be cloned. EchoPlus-NG will list all the drives connected to the Master position(s).



The ***More Info*** icon displays more information on the drive. The drive details window will appear showing information about the drive.

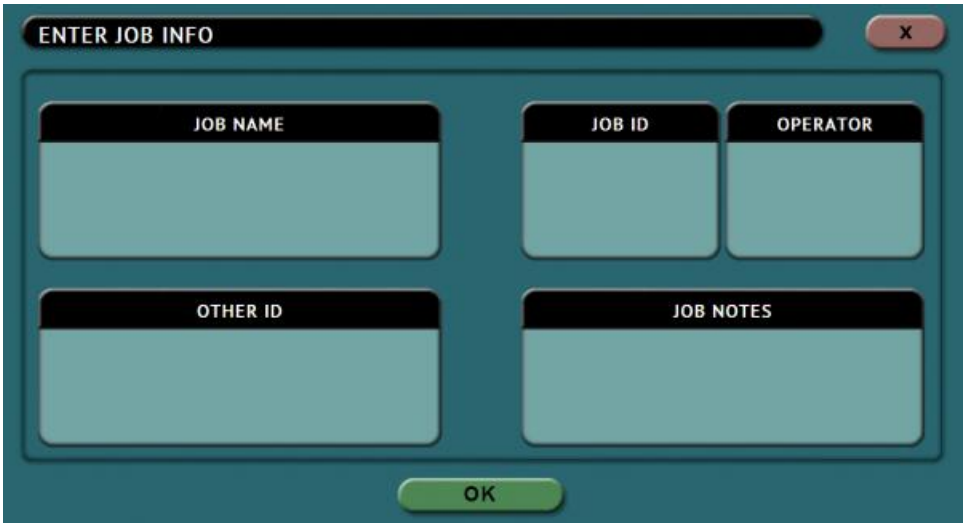
4.3 Settings



Tap the ***Settings*** icon to change the clone settings. Depending on what Mode was selected (Drive to Drive, Image to Drive, or Drive to Image), different screens will appear.

- **Job Info –** Available in all 3 modes.
- **HPA/DCO –** Available in Drive to Drive and Drive to Image modes.
- **Error Handling –** Available in all 3 modes.
- **Clone Method Settings –** Available in all 3 modes.
- Hash/Verification Method – Available in all 3 modes (Hash Method is not selectable in Image to Drive mode).

4.3.1 Job Info



Job Info is a common setting available in all modes. This screen allows users to enter information about the job. This is optional and is not required to start an imaging operation.

Information entered here will appear in the logs. In addition, some forensic analysis software can import the information when the image files are opened.

Tap any of the boxes and an on-screen keyboard will appear allowing information to be entered. After entering the information, tap the ***OK*** icon to go back to the previous screen.

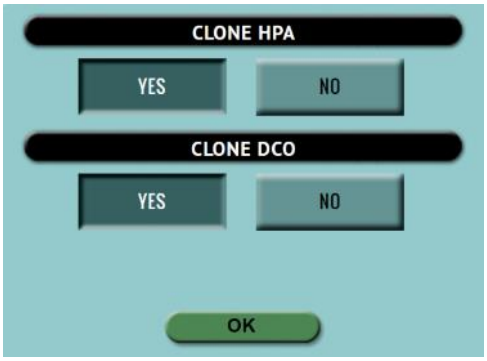
Log names and file names can be customized by entering a ***Job/File Name***. For example, if a clone operation is performed, and the Job/File Name is set to ***TestJob***, the log name and file name will be called ***TestJob***.

Subsequent Job/File Names that are the same will be identified with a dash, then the next image number. For example, TestJob-1, TestJob-2, etc.

4.3.2 HPA, DCO

HPA and DCO is a setting that can be found in Drive to Drive and Drive to File. Some computer manufacturers will use a utility that creates an HPA or DCO configuration on a hard drive. These configurations are designed to change drive characteristics such as drive capacity as seen by the computer's BIOS.

The HPA/DCO setting allows the user to set whether a drive's HPA or DCO is to be unlocked and imaged. Select ***YES*** to unlock and image a Host Protected Area (HPA) or Device Configuration Overlay (DCO).



HPA – Host Protected Area can limit the size of a hard drive, but it can also change many other settings such as speed and S.M.A.R.T. status.

DCO – Device Configuration Overlay limits the size of a drive only. For example, a 160GB drive can be made to look like a 100GB drive to a computer.

4.3.3 Error Handling

When bad sectors are encountered on the Master drive, EchoPlus-NG can either skip the bad sectors or abort the imaging operation. This allows flexibility on what to do when bad sectors are found on the Master drive.

When bad sectors are encountered, and error handling is set to ***Skip***, EchoPlus-NG will write a zero on the corresponding sector or position in the Target drive or image file.

EchoPlus-NG also has a setting for error granularity. There are 3 settings:

- 1 sector (512 Bytes)
- 4096 Bytes (8 sectors)
- 64 KIB (128 sectors)

When a bad sector on the Master drive is found, by default, it will skip that sector. Changing the granularity allows more sectors to be skipped.

A cluster size represents the smallest amount of disk space that can be used to hold a file. The most common cluster size for an NTFS volume, for example, is 4KB (4096 Bytes). This means that the smallest amount of space that will be used for a file is 4096 Bytes.

As an example, if 4096 Bytes is chosen, and one of the 8 sectors in that cluster size contains a bad sector, the EchoPlus-NG will skip the entire cluster (or 4096 bytes or 8 sectors).

4.3.4 Clone Method Settings

When ***Drive to Drive*** mode is selected, ***Clone Method Settings*** will appear on the top-right of the Settings screen. Tap ***Clone Method Settings*** and the following screen will appear:

The Settings screen changes depending on which of the three ***Modes*** (Drive to Drive, Image to Drive, or Drive to Image) is selected. Each of the three modes has their own different ***Settings*** screen.

4.3.4.1 Special Settings for Drive to Drive

When ***Drive to Drive*** mode is selected, ***Clone Method Settings*** will appear on the top-right of the Settings screen:

Tap ***Clone Method Settings*** and one of the following two screens will appear:

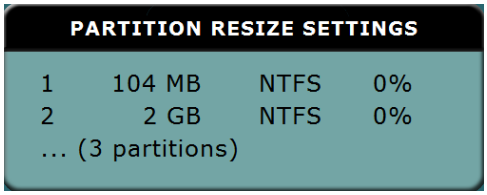
From this screen, you can choose ***Mode*** to change the mode. Choose between ***Mirror*** or ***Clever***.

- **CLEVER –** Clones only sectors with data, skips blank sectors, then adjusts the partition to fit the drive.
- **MIRROR –** Performs a bit-for-bit copy of the Master drive or image.

4.3.4.2 Clever Clone Partition Resize Settings or Mirror Clone Advanced Settings

The ***Partition Resize Settings*** or ***Mirror Settings*** window will show the different clone settings available based on which clone method (above) was chosen.

- If Clever was chosen, the following screen will appear showing a list of partitions seen on the Master drive.



Tap ***Settings*** to bring up the ***Clever Clone Partition Resize*** window. This screen displays each partition on the selected Master drive, the Filesystem, and for each partition, a resize percentage bar to set the percentage to resize each partition.

Setting the slider/percentage to 0% will instruct the EchoPlus-NG to keep the same partition size.

The percentage value, when set from 1 to 100 will determine what percentage of the Target drive will be used. For example, setting the percentage value to 100% would instruct the EchoPlus-NG to use the entire Target drive for that partition.

When attempting to clone to a Target drive that is smaller in capacity than the Master drive, the partitions on the Master drive need to be adjusted to be no more than the same size of the Target drives. Please see ***Section 3.1.2*** for more information on cloning to smaller capacity drives.

- If Mirror was chosen, a screen will appear showing a percentage of the Master drive to copy. By default, it will be set to 100% to copy the entire Master drive.

  Tap ***Mirror Settings*** to bring up the ***Mirror Clone Advanced Settings*** window. This screen displays an option to select whether the Master drive is a RAID configuration or a NON-RAID configuration. There are also 3 other parameters that can be set:

  - **LENGTH –** Sets the percentage or number of blocks to clone.
  - **MASTER START –** Sets the percentage or number of blocks from the start of the Master.
  - **TARGET START –** Sets the percentage or number of blocks from the start of the Target(s).

    To enter an LBA number (number of blocks), press and hold one of the left or right arrows on the Length, Master Start, or Target Start. A window will appear like the one below allowing you to enter a specific number of blocks.

4.3.4.3 Cloning Drives from a RAID Array

When cloning drives from a RAID array, 'Drive to Drive' and Mirror mode must be used. The EchoPlus-NG can check the Master drive to see if it has a RAID configuration. When the ***RAID*** icon is selected, the EchoPlus-NG will check the Master Drive for a RAID configuration, and check the Target drive.

RAID information is ***NOT*** copied or cloned to the Target drive. When cloning a Master drive from a RAID array, the Target drive may need to be initialized by the RAID controller prior to cloning for the RAID controller to recognize the drive as part of a RAID array.

4.3.5 Hash/Verification Method

This setting can be found in Drive to Drive, Drive to File, and File to File and allows the user to set a hash method and/or a verification method.

> The Verification setting is available with the purchase and activation of the Verification Option. To purchase this option, contact the Logicube Sales Department at sales@logicube.com.

Hash Method – Will hash the Master drive with the selected method. There are two or four hash algorithm options available, depending on which cloning mode is selected:

- **None –** No hash of the Master will be performed. This is available only when using the following mode:
  - Drive to Drive
- **SHA-1 –** Uses the SHA-1 algorithm to hash the Master. This is available in the following modes:
  - Image to Drive – Non-selectable. The EchoPlus-NG will use SHA-1 if the Image File was created using SHA-1.
  - Drive to Image
- **SHA-256 –** Uses the SHA-256 algorithm to hash the Master. This is available in the following modes:
  - Image to Drive – Non-selectable. The EchoPlus-NG will use SHA-256 if the Image File was created using SHA-1.
  - Drive to Image
- **MD5 –** Uses the MD5 algorithm to hash the Master. This is available only when using the following mode:
  - Drive to Drive

Verify – Select ***YES*** to automatically verify the hash of the Target matches the value of the Master's hash value.

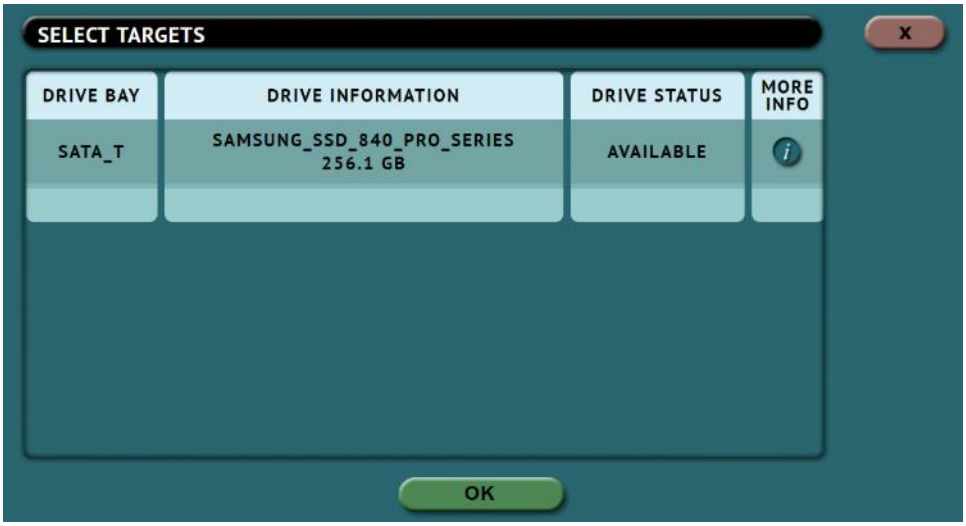
4.4 Target

Tap this icon to select which drive or image file will be used as the Target drive or image. When 'DRIVE TO DRIVE' or 'IMAGE TO DRIVE' is chosen from the Mode settings, this will show the different drives connected to the EchoPlus-NG. When 'DRIVE TO IMAGE' is chosen from the Mode settings, this will show the repository screen which contains the different images located on the EchoPlus-NG's repository drive.

When attempting to clone to a Target drive that is smaller in capacity than the Master drive, the partitions on the Master drive need to be adjusted to be no more than the same size of the Target drives. Please see ***Section 3.1.2*** for more information on cloning to smaller capacity drives.

4.4.1 Selecting Target drives or images

If 'DRIVE TO DRIVE' or 'IMAGE TO DRIVE' was chosen as the mode the following screen will appear. This will allow you to select one or more Targets. It will display all available drives that are connected. If a drive has been selected for a different task, it will be greyed out and cannot be selected.

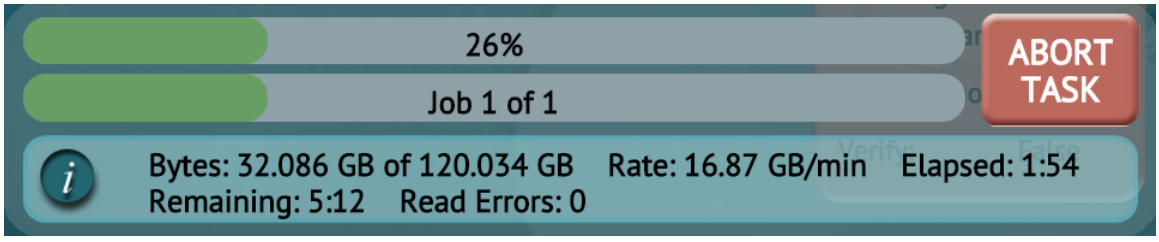


You can also tap the 'MORE INFO' icon to see more information on the drive. The drive details window will appear showing information about the drive such as the which bay it is connected to, the model, size, cylinders, heads, sectors, etc.

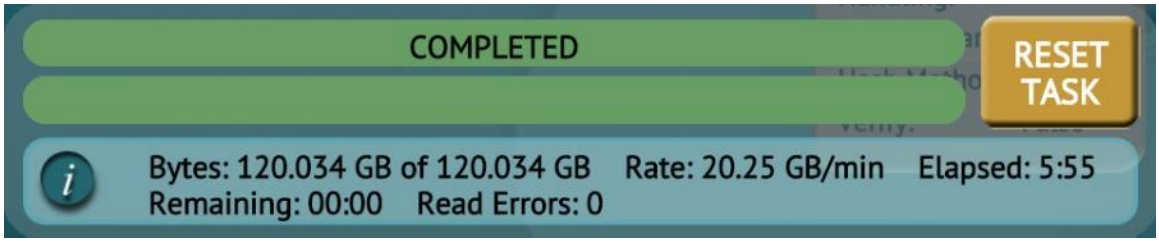
4.5 Starting the Imaging Operation

Once all the settings and options have been selected or set, tap the ***Start*** icon to begin the imaging. A confirmation screen will appear. Tap the ***Yes*** icon to continue.

A progress bar will appear at the bottom of the screen showing the bytes processed, the rate (speed), elapsed time, and time remaining.

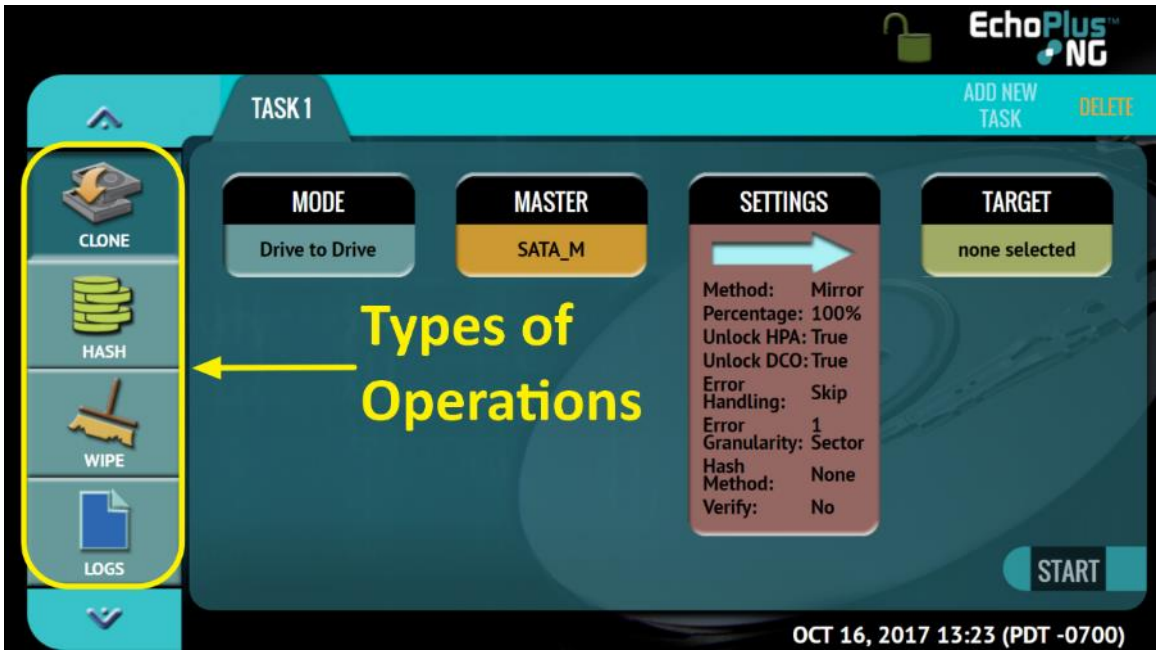


When finished, the status will show “COMPLETED”. At this point, it is recommended to tap ***Reset Task*** to reset the task so the drive ports properly reset and not show as being used or assigned for other tasks.



5.0 Types of Operations - Introduction

There are up to 11 types of operation available on the EchoPlus-NG. The left side of the screen shows the different operation types that can be set. Detailed information on all the different operations and their screens can be found in this section.



1. **CLONE –** The EchoPlus-NG has three modes of operation to clone virtually any drive (Hard Disk Drives or Solid State Drives). Drives can be cloned using ***Mirror*** (bit-for-bit copy) or ***Clever***.

    - **Drive to Drive –** Clones a drive to one or more Target drives.
    - **Image to Drive –** Restores an image created by the EchoPlus-NG to one or more Target drives.
    - **Drive to Image –** Creates a Logicube EchoPlus-NG image file to a Target or Repository. This image file can be restored to drives using the Image to Drive mode.

    Details on the different screens found in the Clone operation can be found in ***Chapter 4: Clone*****.**

2. **HASH –** Perform a SHA1, SHA-256, or MD5 hash of a drive. This can also verify the hash of the drive by entering an "expected value" for the hash.

3. **WIPE –** This type of operation is used to erase, wipe, and/or format drives. There are three main settings:
    - **Secure Erase –** Sends a command to the drive instructing it to perform a secure erase based on the drive manufacturer's specifications.
    - **Wipe Patterns –** Allows the user to set a specific pattern to use for wiping the drive. The number of passes is customizable (up to 7 passes) along with the type of data written for each pass. In addition, a 7-pass DoD wipe can be set.
    - **Format –** Formats the Target using the NT file system (NTFS) or EXT4 file system.
4. **LOGS –** Display logs of each clone, hash, or wipe task that has been performed on the EchoPlus-NG.
5. **STATISTICS –** This will display four tabs that include:
    - **About –** Displays information about the EchoPlus-NG
    - **Advanced Drive Statistics –** Shows raw S.M.A.R.T. data on any drive connected to the EchoPlus-NG.
    - **Options –** Shows available options and which ones are installed.
    - **Network Interface Stats –** Shows information on the Network Interface.
6. **SYSTEM SETTINGS –** This mode allows changes to the system settings on the EchoPlus-NG which include the following:
    - **Profiles –** Allows the user to create, save, apply, or delete user profiles.
    - **Passwords –** Allows the user to set a password to lock the EchoPlus-NG from any configuration changes.
    - **Language/Time Zone –** Sets the language on the EchoPlus-NG's menu and change the system's Time Zone.
7. **NETWORK SETTINGS –** Allows certain services to be enabled or disabled. Also shows the network interface status and allows the user to set proxy settings (if required by their network).
8. **SOFTWARE UPDATES –** Perform software updates on the EchoPlus-NG. Software can be updated over an internet connection (from network) or from a USB flash drive.
9. **POWER OFF –** Allows the user to restart the EchoPlus-NG by using the Graphical User Interface (GUI). Also allows a drive timeout to be set, powering down drives when not in use.

5.1 Clone

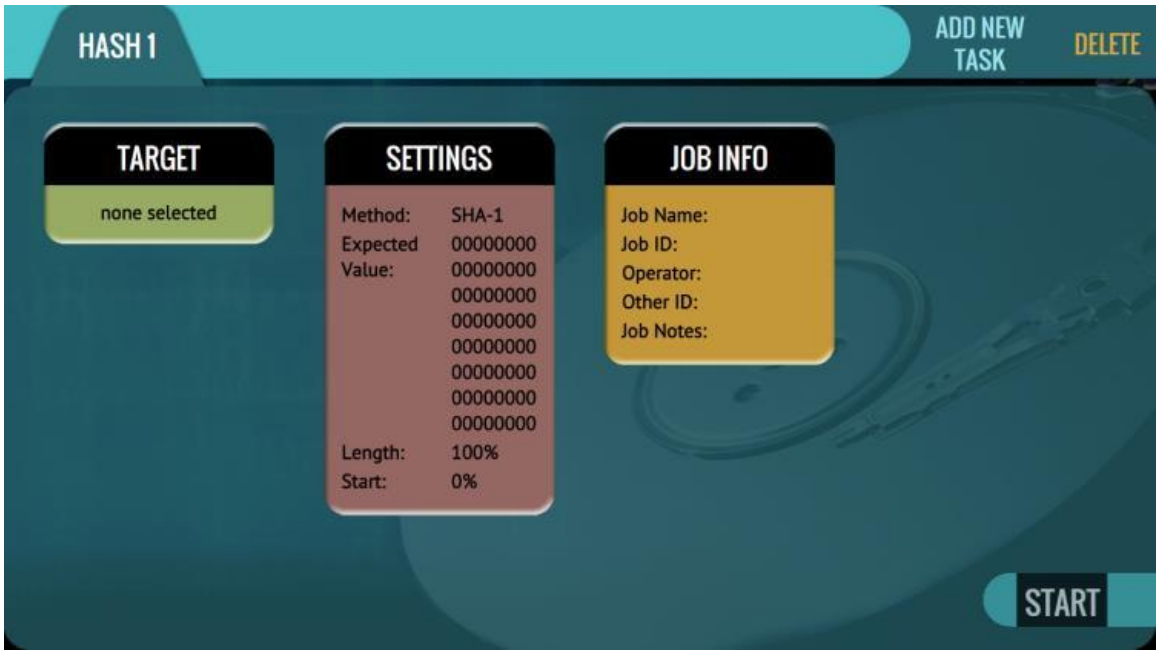
The EchoPlus-NG has three modes of operation to clone virtually any drive (Hard Disk Drives or Solid State Drives). Drives can be cloned using ***Mirror*** (bit-for-bit copy) or ***Clever*** (copies only data areas, skips blank sectors, and partitions can be resized).

Details on the different screens found in the Imaging operation can be found in ***Chapter 4: Clone***.

5.2 Hash

Any drive connected to the EchoPlus-NG can be hashed. Performing a hash operation will instruct the EchoPlus-NG to calculate the hash for the specified drive or compare the hash value to an expected value entered by the user.

There are three selections when performing a Hash or Verify: ***Target***, ***Settings***, and ***Job Info***.



When the EchoPlus-NG finishes hashing the drive, the 'COMPLETED' screen will appear showing the task completed.

Tap the ***Info*** icon on the left of the completed screen to see both the expected hash value and the computed hash value.

5.2.1 Target

Tap this icon to select which drive will be hashed or verified. The EchoPlus-NG will show all connected Master and Target drives. Tap the drive to be hashed then tap ***OK***.

5.2.2 Settings

Tap this icon to choose a drive to adjust the hash settings. The Hash Settings screen will appear.

5.2.2.1 Hash Values

Tap this icon to set the hash method (SHA-1, SHA-256, or MD5) and to set the expected hash value (if desired). Setting the expected hash value instructs the EchoPlus-NG to hash the drive then verify the hash with the expected value set.

5.2.2.1.1 Hash Method

Select one of the following hash methods:

- **SHA-1 –** Select this to hash the drive using the SHA-1 algorithm.
- **SHA-256 –** Select this to hash the drive using the SHA-256 algorithm.
- **MD5 –** Select this to hash the drive using the MD5 algorithm.

5.2.2.1.2 Hash Values

By default, this value will have 0s (zeros). If this is not changed, or no value is entered, this will instruct the EchoPlus-NG to hash the drive using the selected algorithm in the previous step. If a value is entered, the EchoPlus-NG will hash the selected drive and verify hash with the value entered/edited.

To set the expected value, tap the ***edit*** icon. The on-screen keyboard will appear and the expected hash value can be set.

5.2.2.2 LBA

The LBA icon will bring up the LBA settings screen. On this screen, the user can adjust the percentage or the number of blocks of the drive to hash and where to start the hash.

Users can specify the length (in LBAs) of the drive to be hashed. By default, the length is set to 100% (whole drive).

Users can also specify where to start the hash. By default, this is set to 0% (the first LBA of the drive).

5.2.3 Job Info

Job Info allows users to enter information about the job. This is optional and is not required to start an operation. Information entered here will appear in the logs. More information on the Job Info screen can be found in ***Section 4.3.1***.

5.3 Wipe

This type of operation allows the user to erase, wipe, and/or format a Target drive. There are three main settings: Secure Erase, Wipe Patterns, and Format.

- **Secure Erase –** Sends a command to the drive instructing it to perform a secure erase based on the drive manufacturer's specifications for the secure erase command.

- **Wipe Patterns –** Allows the user to set a specific pattern to use for wiping the drive. The number of passes is customizable (up to 7 passes) along with the type of data written for each pass. In addition, a 7-pass DoD wipe can be set with pre-selected pass values.
- **Format –** Formats the Target drive with an NT file system (NTFS) or EXT4 file system.

There are three selections when performing a wipe: ***Target***, ***Settings***, and ***Job Info***.

5.3.1 Target

Tap this icon to choose a drive to erase, wipe, and/or format.

A screen will appear, allowing the user to select a Target drive. Tap the drive to be erased, wiped, and/or formatted then tap ***OK***.

5.3.2 Settings

Tap this icon set the wipe settings. The Wipe Settings screen will appear.

There are three sections in the Settings screen: ***Secure Erase***, ***Wipe Patterns***, and ***Format***.

The EchoPlus-NG will perform each of the settings sequentially. For example, if Secure Erase is set to ON, a Wipe Pattern mode is specified, and Format is set to On, the EchoPlus-NG will first secure erase the drive, then wipe the drive according to the mode specified, then format the drive.

5.3.2.1 Secure Erase

Secure Erase is function supported by most ATA drives (Serial-ATA/SATA or Parallel-ATA/PATA). Choose ***ON*** to perform a Secure Erase the selected Target drive.

If the drive supports Enhanced Secure Erase, the EchoPlus-NG will send the Enhanced Secure Erase command to the drive. If

the drive does not support Enhanced Secure Erase, the EchoPlus-NG will send a regular Secure Erase command.

Technical Committee T13 (T13.org) is responsible for all interface standards relating to the popular AT Attachment (ATA) storage interface utilized as the disk drive interface on most personal and mobile computers today.

According to the T13.org ATA Specifications:

- Secure Erase writes binary zeroes to all user accessible data areas.
- Enhanced Secure Erase writes predetermined (by the drive manufacturer) data patterns to all user accessible data areas.

If errors appear when performing Secure Erase, contact the drive manufacturer to check if the drive supports Secure Erase. For Secure Erase specifications (what happens when the drive receives the Secure Erase command), contact the drive manufacturer.

Secure Erase is not supported over the USB port.

5.3.2.2 Wipe Patterns

This setting allows the user to set a specific wipe pattern or patterns to use for wiping the drive. The number of passes is customizable (up to 7 passes) along with the value written for each pass. In addition, a 7-pass DoD wipe can be set with pre-selected pass values.

There are 4 selections when setting a wipe pattern: ***Mode***, ***HPA/DCO***, ***LBAS***, ***PASSES***.

5.3.2.2.1 Mode

Selecting this will open the Wipe Mode screen showing 3 options:

- **NONE –** Choosing this will instruct the EchoPlus-NG not to perform a wipe using the Wipe Patterns Mode.
- **DOD –** Choosing this will instruct the EchoPlus-NG to perform a 7-pass wipe conforming to the DoD 5220.22-M standard.
- **CUSTOM –** Choosing this will allow the user to specify how many wipe passes

will be performed and what values each pass will be written on each of the passes selected.

5.3.2.2.2 HPA/DCO

This will open the HPA/DCO option for wiping. If the drive to be wiped has HPA and/or DCO that needs to be wiped, select ***Yes*** for the corresponding option and the HPA and/or DCO will also be wiped.

5.3.2.2.3 LBA

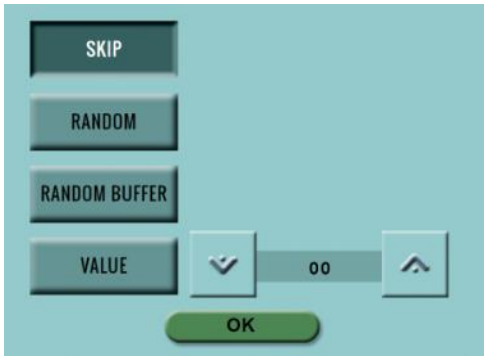
By default, this is set to 100% which will wipe all Logical Block Addresses (LBAs) and will wipe the entire drive (100%).

5.3.2.2.4 Passes

This Wipe Setting will change depending on the Wipe Pattern ***Mode*** selected.

- If ***None*** was selected, this is not selectable.
- If ***DoD*** was selected, all 7 passes will be pre-filled. Users can edit the pass values if desired by tapping the ***edit*** icon.
- If ***Custom*** was selected, one pass will be pre-filled with a random value. Users can edit the pass values if desired by tapping the ***edit*** icon.

Editing one or more of the passes in DOD or CUSTOM mode will bring up this screen:



- **SKIP –** Instructs the EchoPlus-NG to skip the pass.

- **RANDOM –** Instructs the EchoPlus-NG to automatically select one random value (one byte) which will be used to fill the entire drive on all Logical Block Addresses (LBAs) / sectors.
- **RANDOM BUFFER –** Instructs the EchoPlus-NG to create an 8MB block filled with random values (each byte in the 8MB block will contain a random value). The 8MB block will be written repeatedly to fill the entire drive.
- **VALUE –** Instructs the EchoPlus-NG to use the specified hex value to be written for the pass. The values can range anywhere from 00 to FF.

5.3.2.3 Format

The EchoPlus-NG can format a drive. This can be used to format a drive to prepare it to be used as a repository for images (Multi-Image Master/Drive to Image operations). The drive can be formatted with the NT File System (NTFS) or EXT4 file system.

Multi-Image Master is an option for the EchoPlus-NG that allows image files to be created from a Master drive. To purchase this option, contact the Logicube Sales Department at sales@logicube.com.

5.3.3 Job Info

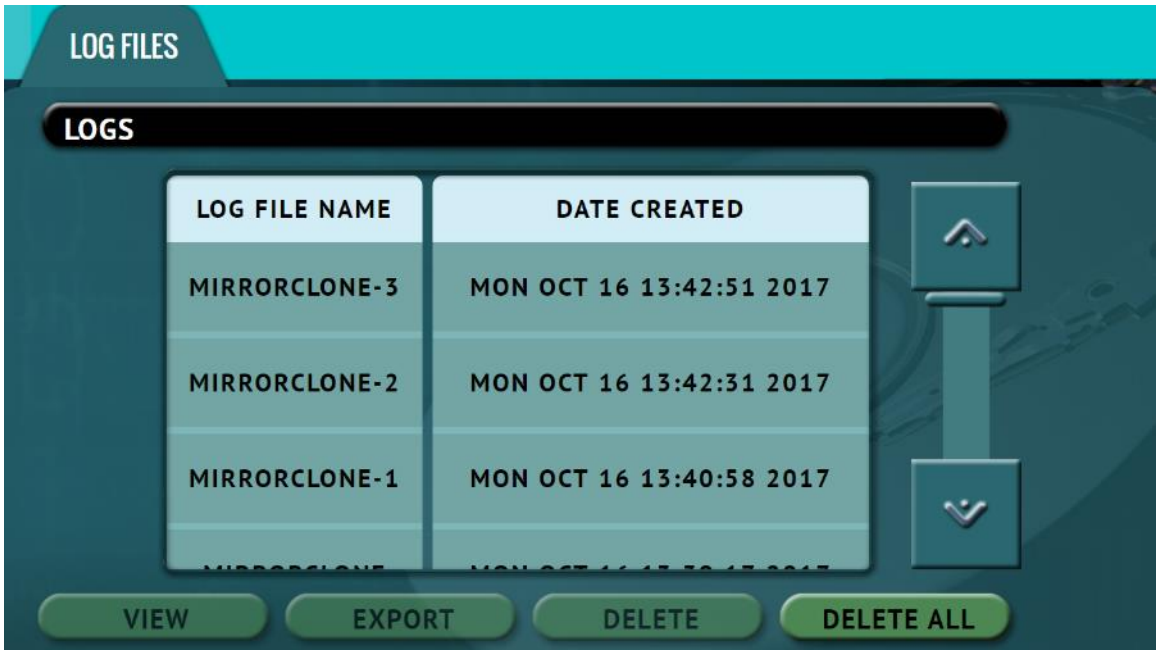
Job Info allows users to enter information about the job. This is optional and is not required to start an operation.

Information entered here will appear in the logs. More information on the Job Info screen can be found in ***Section 4.3.1***.

5.4 Logs

The EchoPlus-NG keeps logs of all clone, hash, and wipe operations. Logs can be viewed directly on the EchoPlus-NG or from a computer's browser (if the EchoPlus-NG is connected to a network).

In addition to viewing, the logs can be exported to an external USB location such as a USB flash drive. Logs are exported in PDF, HTML and XML format. From the on-screen display, log files can also be deleted one at a time or all at once.



The log file may contain several sections, depending on what settings and options were chosen during the operation, including:

- Information on the EchoPlus-NG and its settings
- Job info
- Master and Target hashes

See ***Section 3.4.1*** for instructions on how to export the log files.

See ***Section 3.4.2*** for instructions on how to delete the log files.

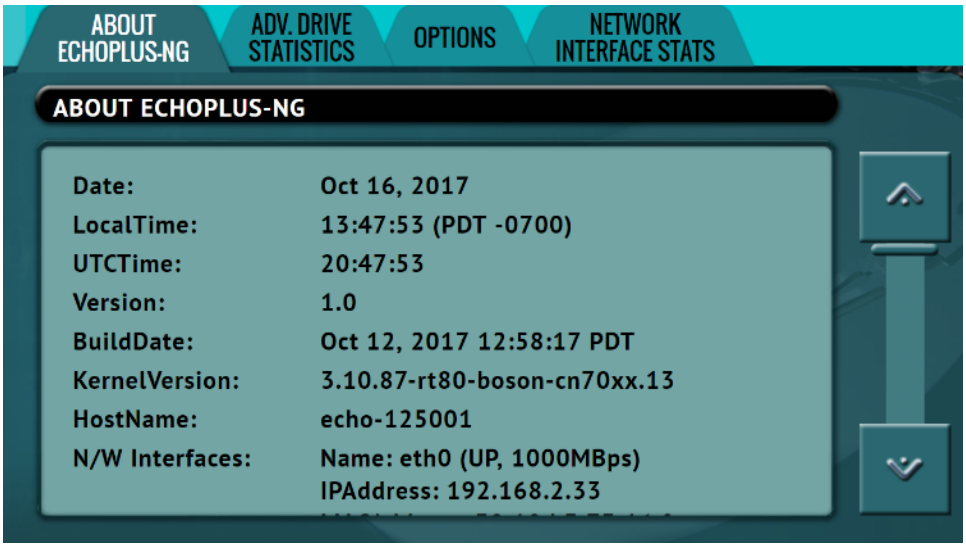
See ***Section 3.4.3*** for instructions on accessing the logs over a network.

5.5 Statistics

This will display four tabs: ***About***, ***Adv. Drive Statistics***, ***Options***, and ***Network Interface Stats***

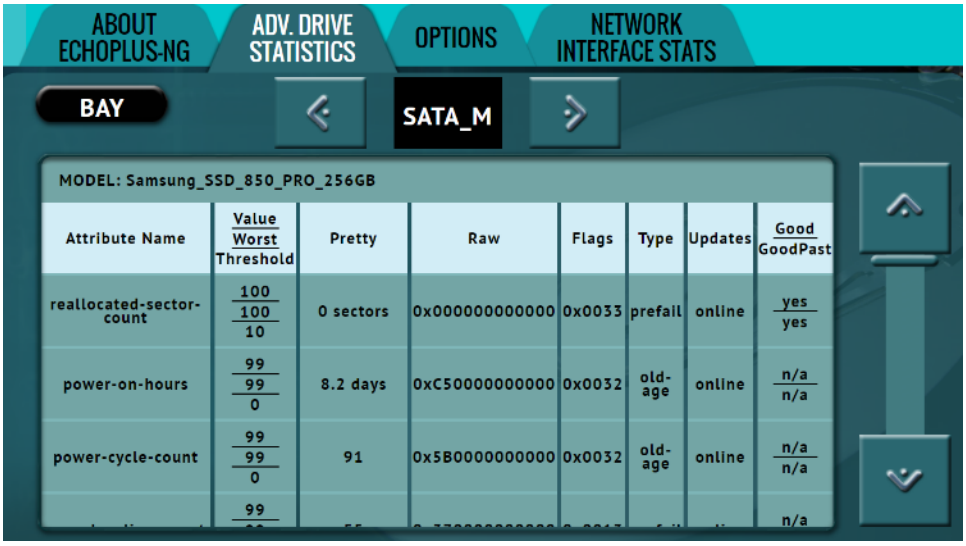
5.5.1 About

This screen will show information about the EchoPlus-NG.



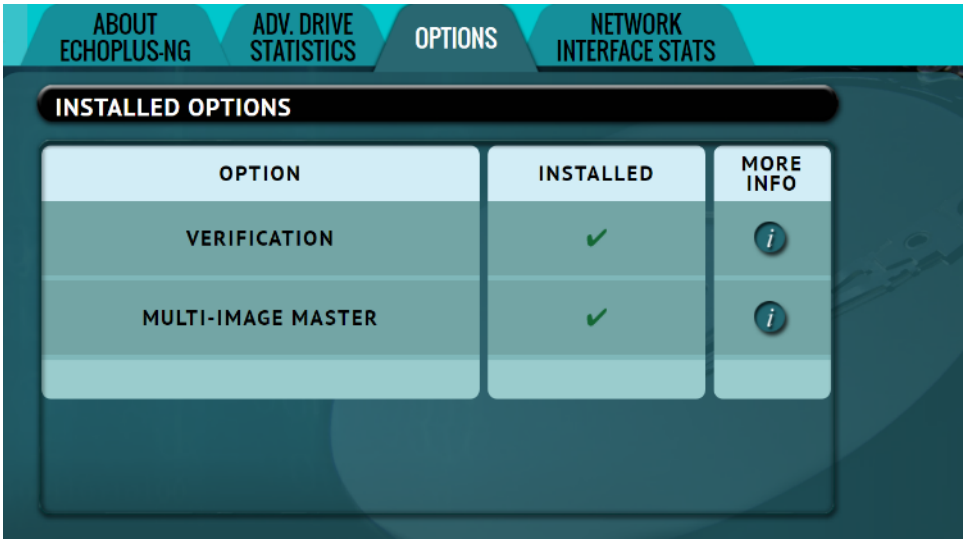
5.5.2 Adv. Drive Statistics

This shows S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) information taken directly from what the drive is reporting. The information shown is the raw value tracked by the drive and is not translated.



5.5.3 Options

Displays which optional software is available and what is installed.

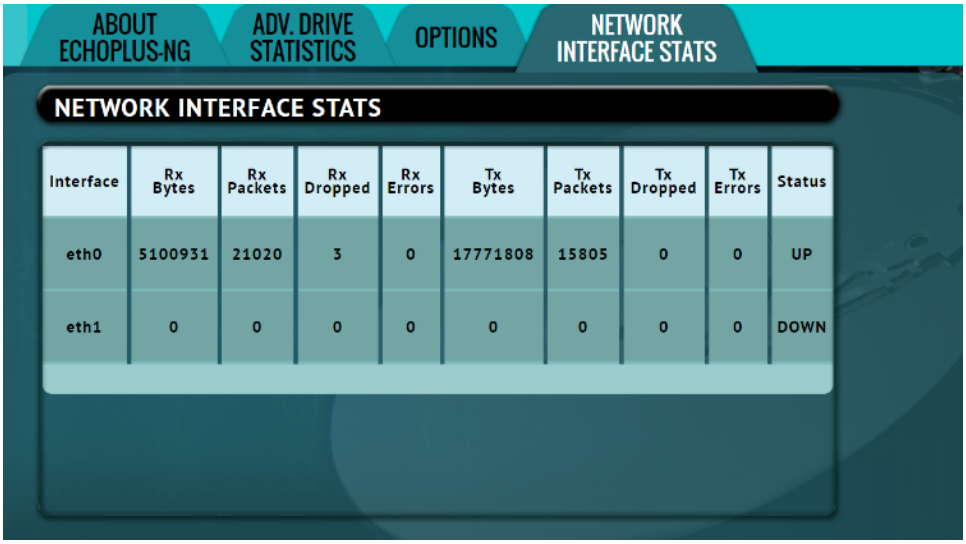


To purchase an option, please contact Logicube Sales: sales@logicube.com.

If an option has already been purchased but is not installed, please contact Logicube Support: techsupport@logicube.com.

5.5.4 Network Interface Stats

Displays the Network Interface statistics (Receive and Transmit bytes, packets, drops, and errors, and the link status).



Interface	Rx Bytes	Rx Packets	Rx Dropped	Rx Errors	Tx Bytes	Tx Packets	Tx Dropped	Tx Errors	Status
eth0	5100931	21020	3	0	17771808	15805	0	0	UP
eth1	0	0	0	0	0	0	0	0	DOWN

5.6 System Settings

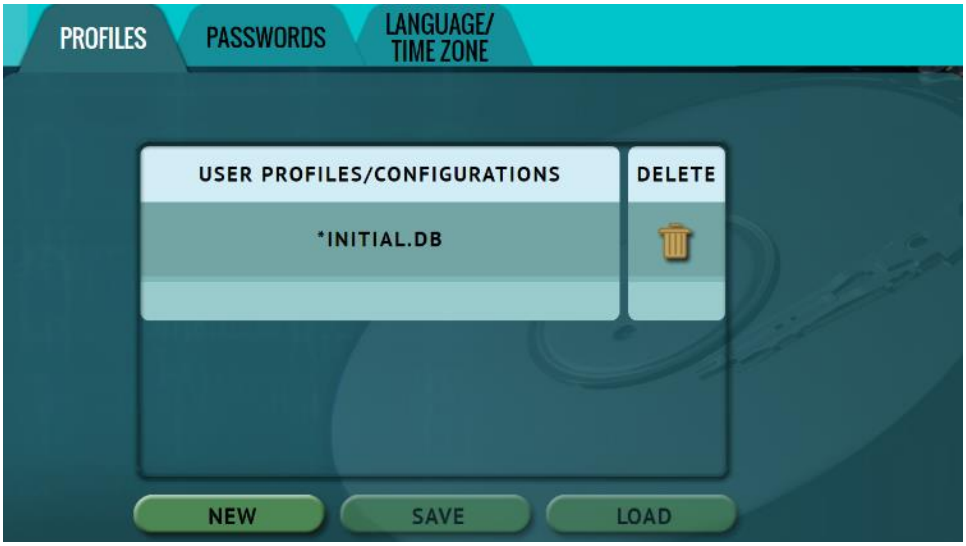
The ***System Settings*** screen allows users to configure five different settings for the EchoPlus-NG:

- Profiles
- Passwords
- Language/Time Zone

5.6.1 Profiles

This screen shows all profiles for the EchoPlus-NG. There are three options in this screen:

- **New –** Allows the user to create a new profile name.
- **Save –** Saves the selected profile.
- **Load –** Loads the selected profile.



The EchoPlus-NG will boot with the profile that has an asterisk (*) next to the name.

Profiles allow users to create different profiles or configurations. The profile can then be saved. When a profile is loaded using the ***Load*** icon, the EchoPlus-NG will load that configuration during its boot process.

For example, if the user wants the EchoPlus-NG to always boot up with the SATA_M drive selected:

1. Turn the EchoPlus-NG off then back on. This will reset all settings to its default configuration. This is an important step to help ensure only the changes desired will be the changes saved.
2. Connect a drive to the SATA_M master SATA port.
3. Go to the ***Clone*** screen and set the Master drive to ***SATA_M***.
4. In the ***System Settings***, go to ***Profiles*** and tap the ***New*** icon
5. Type a name for this profile. For example, SATAMASTER and tap the ***OK*** icon. The profile name should appear on the screen.
6. Tap the newly saved profile and tap ***Save***. A confirmation screen will appear.
7. Tap the ***Yes*** icon to save the profile.
8. Make sure the profile to be loaded (during the boot process) is highlighted (in this job, SATAMASTER.DB) and tap the ***Load*** icon. A confirmation screen will appear.
9. The next time the EchoPlus-NG is turned on it will load SATAMASTER profile. Also, each time a profile or configuration is selected, then loaded, it will immediately load the saved settings on that profile or configuration.

To delete a profile, tap the ***delete*** icon. A confirmation screen will appear. Tap the ***Yes*** icon to delete the selected profile.

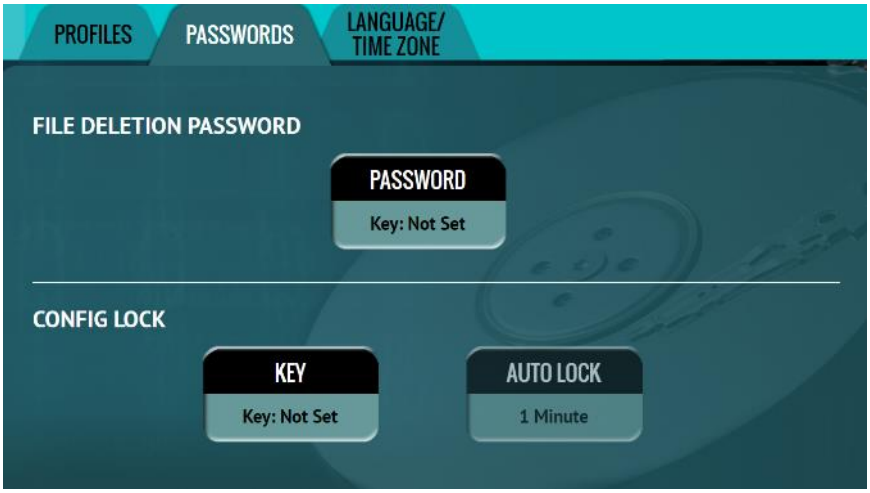
It is highly recommended that the EchoPlus-NG is turned off then back on before making any changes to a profile. This helps ensure that only the desired changes are saved.

5.6.2 Passwords

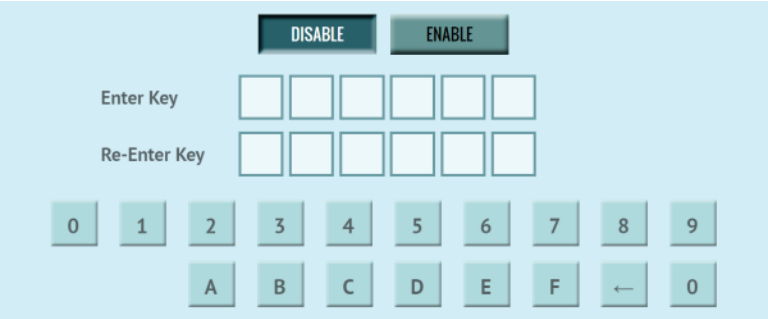
There are two sets of passwords that can be entered on the EchoPlus-NG.

- **Log File Deletion Password –** A password can be set as an extra layer of protection when deleting log files. If this password is set, EchoPlus-NG will prompt for the password before any log files can be deleted.
- **Config Lock –** The EchoPlus-NG can be configured to lock out any configuration changes. When this is enabled, changes to the different types of operations cannot be made without entering the correct key or password. Operations like Clone, Hash, or Wipe can still be started.

  For example, when the EchoPlus-NG is locked, and it is configured for Drive to Drive clone mode, the user will be unable to change this mode to Drive to Image or Image to Drive, but can start the Drive to Drive task.



Tap ***Password*** or ***Key*** to enter a log file deletion password or a config lock key. The following screen will appear.



Tap the ***Enable*** icon to enter a password or key. The available characters are 0 through 9 and A through F.

5.6.2.1 Additional information for Config Lock

Tap the ***Auto Lock*** icon to set the time to automatically lock the configuration and require a password. By default, this is set to 1 minute.

A shortcut (and indicator) to the ***config lock*** can always be seen on the EchoPlus-NG's screen. It is located on the top-right of the screen, next to the EchoPlus-NG logo.


While in a locked state, the following operations will be affected as follows:

- **Clone –** A clone task can be started, but no settings can be changed.
- **Hash –** A hash task can be started, but no settings can be changed.
- **Wipe –** A wipe task can be started, but no settings can be changed.
- **Logs –** Since there are no settings or configurations for this operation, it is not affected by Config Lock.
- **Statistics –** Since there are no settings or configurations for this operation, it is not affected by Config Lock.
- **System Settings –** This entire section cannot be accessed without the unlock key.
- **Network Settings –** This entire section cannot be accessed without the unlock key.
- **Software Updates –** This entire section cannot be accessed without the unlock key.
- **Power Off –** This entire section cannot be accessed without the unlock key.

The Passwords can be saved into a profile and loaded each time the EchoPlus-NG is turned on. See ***Section 5.6.1*** for more information on saving and loading a profile.

Remember the Config Lock Key! If the EchoPlus-NG is configured to load with the Config Lock set (enabled) the only way to delete the Config Lock is to reset the EchoPlus-NG using the Command Line Interface (CLI).

5.6.2.2 Forgotten password or config lock key

If the Log File Deletion password or Config Lock key is forgotten, the EchoPlus-NG will need to be reset using the Command Line Interface (CLI). See ***Section 8.2*** for more information on how to connect to the EchoPlus-NG using the CLI.

Once connected to the CLI:

1. Login with the username "***it***" (without the quotes) and the password "***it***" (without the quotes).

2. From the main prompt, type ***command,*** then press the enter key.
3. Type ***config*** then press the enter key.
4. Type ***db list*** then press the enter key. This will show a list of databases or configurations saved. The db that shows an asterisk (*) before the name is the current database or configuration being loaded each time the EchoPlus-NG is turned on.
5. Type ***db load initial.db*** then press the Enter key to load the default database. There should be a response showing "Command (DbManagement) Successful".
6. Type ***db list*** again and there should be an asterisk (*) on initial.db.
7. Turn the EchoPlus-NG off using the power switch located in the back of the device, and close the Telnet/SSH application.
8. Wait for the EchoPlus-NG to completely turn off then turn it back on. When the EchoPlus-NG boots up, it will load the default configuration. The default configuration can be checked by going to ***System Settings*** and looking at the ***Profiles*** tab. INITIAL.DB should have an asterisk next to it.

5.6.3 Language/Time Zone

The EchoPlus-NG's menu system's language can be changed. The available languages are English, Chinese (中文), and Korean (한국어).

This screen also allows the time zone to be set.

5.6.3.1 Language

Four languages are available. Select English, Chinese (中文), or Korean (한국어) to change the language displayed. As soon as the selection is made, the EchoPlus-NG's screen (or the computer's Internet browser) will automatically refresh and display the selected language.

The ***Custom*** button is reserved for future language releases.

5.6.3.2 Time Zone

The EchoPlus-NG utilizes NTP (Network Time Protocol). Each time the EchoPlus-NG is connected to a network with internet

access, it will automatically check for the correct time using NTP and adjust the time as needed.

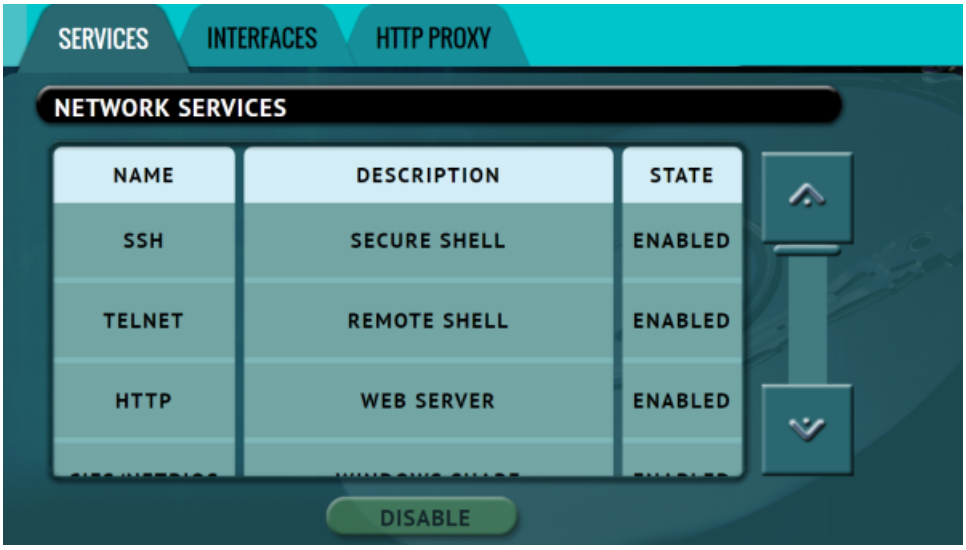
The EchoPlus-NG also has a time zone setting. Tap ***Time Zone*** to select the time zone region. Tap the ***OK*** icon to continue.

After selecting the region, select the time zone where the EchoPlus-NG is located. Tap the ***OK*** icon to set the time zone.

5.7 Network Settings

The Network settings screen allows certain services to be enabled or disabled in the ***Services*** tab. There is also an ***Interfaces*** tab to set the network interface to DHCP or Static, and an ***HTTP Proxy*** tab where proxy server information can be entered.

5.7.1 Services



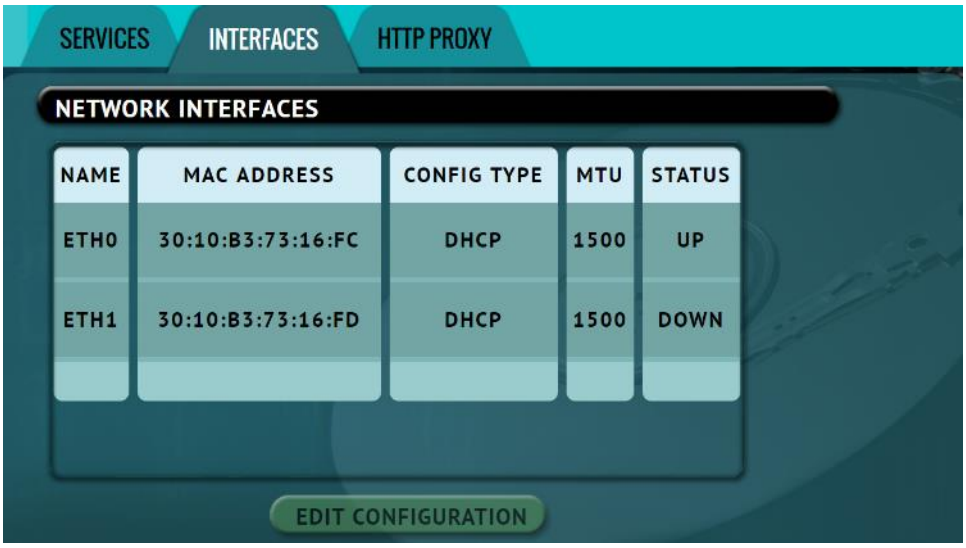
There are six services that can be disabled (enabled by default):

- **SSH –** Disabling this will block Secure Shell (SSH) traffic.
- **Telnet –** Disabling this will block Telnet traffic.
- **HTTP –** Disabling this will block web browser connections to the EchoPlus-NG.
- **CIFS/NETBIOS –** Disabling this will block any CIFS or NETBIOS connection to the EchoPlus-NG (for example, Windows Explorer).
- **Iperf –** Disabling this will block Iperf traffic (a network tool to measure bandwidth performance).
- **Ping –** Disabling this will block ping access to the EchoPlus-NG.

Disabling any of the services above will disallow the types of communication controlled by those services. For example, if HTTP is disabled, users will not be able to see the EchoPlus-NG through a web browser over the network.

Please contact your Network or Systems Administrator before changing any of these services.

5.7.2 Interfaces



The Interfaces tab displays information on the network interfaces (MAC address, configuration type (DHCP or Static), MTU, and the status). See ***Section 8.6*** for detailed information on how to set the EchoPlus-NG with a static IP address.

5.7.3 HTTP Proxy

If the network the EchoPlus-NG is connected to uses an HTTP proxy server to access the Internet, proxy settings may need to be set for the EchoPlus-NG to be able to update software from a network (over the internet). This typically includes a server (or IP address), a host port, a username and password.

5.7.3.1 Server

Tap the Server icon to set the IP address (or server name) and port of the proxy server.

5.7.3.2 Username/Password

If the proxy server requires a username and password for authentication, tap the ***Username/Password*** icon to set this information.

5.8 Software Update

New and improved software will be released from time to time. There are two ways to update the software on the EchoPlus-NG: From the web via a network connection or from a USB drive.

For the latest step-by-step instructions on how to update the EchoPlus-NG software, please read the ***EchoPlus-NG SW Update Instructions*** file located on the EchoPlus-NG Support page on the Logicube website at https://www.logicube.com/knowledge/echoplus-ng.

In-depth information on updating the EchoPlus-NG software can be found in ***Chapter 7: Updating/Loading/Re-loading the EchoPlus-NG Software***.

5.9 Power Off

There are two tabs in the ***Power Off*** screen:

POWER OFF – The EchoPlus-NG can be remotely restarted by going to this tab. Additionally, the Graphical User Interface (GUI) can be refreshed.

DRIVE POWER – Inactive drives connected to the EchoPlus-NG can be set to go to standby mode in this tab. The default is set to 0 minutes (OFF).

6: Security – Changing the default passwords

6.0 Changing the default passwords - Introduction

The EchoPlus-NG comes with default accounts created. It is highly recommended to change the default passwords for security purposes.

- logicube
- it

If the new password(s) cannot be remembered, a system recovery must be performed to reset the passwords back to the default values. Contact Logicube Technical Support for instructions on how to perform a system recovery.

6.0.1 Changing both the *logicube* and *it* passwords

To change both the "logicube" and "it" passwords, follow these steps:

1. Connect a USB keyboard to one of the two USB ports in front of the EchoPlus-NG then use the following key combinations: ***Alt+2*** then ***Alt+Shift+Enter***.
2. Once logicube prompt appears, type the following commands, one line at a time (Press the Enter key after each command/line):

   `sudo mount -o remount,rw /`

   `passwd`
3. The following prompt will appear:

   Changing password for logicube.

   (current) UNIX password:
4. Type the current password for the "logicube" account (the default password for this account is "logicube") then press the Enter key. The following prompt will appear:

   Enter new UNIX password:
5. Type a new password then press the Enter key. The following prompt will appear:

   Retype new UNIX password:
6. Type the new password again then press the Enter key. The following response should appear:

   passwd: password updated successfully

7. Next, type the following command:

   `sudo smbpasswd logicube`

8. The following prompt will appear:

   New SMB password:

9. Type the same password you used in step 5 above. The following prompt will appear:

   Retype new SMB password:

10. Type the same password again, then press the Enter key. The Logicube prompt should appear.
11. Next, to change the "it" password, type the following command then press the Enter key:

    `sudo passwd it`

12. The following prompt will appear:

    Enter new UNIX password:

13. Type a new password then press the Enter key. The following prompt will appear:

    Enter new UNIX password:

14. Type the new password again then press the Enter key. The following response should appear:

    passwd: password updated successfully

15. Next, type the following command:

    `sudo smbpasswd it`

16. The following prompt will appear:

    New SMB password:

17. Type the same password you used in step 5 above. The following prompt will appear:

    Retype new SMB password:

18. Type the same password again, then press the Enter key. The Logicube prompt should appear.
19. Type the following command then press the Enter key:

    `sudo mount -o remount,ro /`

20. Press the following key combinations to go back to the Graphical User Interface: ***Alt+1***

6.0.2 Changing only the *logicube* password

For the username: logicube

1. Connect a USB keyboard to one of the two USB ports in front of the EchoPlus-NG then use the following key combinations: ***Alt+2*** then ***Alt+Shift+Enter***.
2. Once logicube prompt appears, type the following commands, one line at a time (Press the Enter key after each command/line):

   `sudo mount -o remount,rw /`

   `passwd`
3. The following prompt will appear:

   Changing password for logicube.

   (current) UNIX password:
4. Type the current password (by default, "logicube" without the quotes) then press the Enter key. The following prompt will appear:

   Enter new UNIX password:
5. Type a new password then press the Enter key. The following prompt will appear:

   Retype new UNIX password:
6. Type the new password again then press the Enter key. The following response should appear:

   passwd: password updated successfully
7. Next, type the following command:

   `sudo smbpasswd logicube`
8. The following prompt will appear:

   New SMB password:
9. Type the same password you used in step 5 above. The following prompt will appear:

   Retype new SMB password:
10. Type the same password again, then press the Enter key. The Logicube prompt should appear.
11. Type the following command then press the Enter key:

    `sudo mount -o remount,ro /`
12. Press the following key combinations to go back to the Graphical User Interface: ***Alt+1***

6.0.3 Changing only the *it* password

For the username: it

1. Connect a USB keyboard to one of the two USB ports in front of the EchoPlus-NG then use the following key combinations: ***Alt+2*** then ***Alt+Shift+Enter***.
2. Once logicube prompt appears, type the following commands, one line at a time (Press the Enter key after each command/line):

   `sudo mount -o remount,rw /`

   `sudo passwd it`
3. The following prompt will appear:

   Enter new UNIX password:
4. Type a new password then press the Enter key. The following prompt will appear:

   Enter new UNIX password:
5. Type the new password again then press the Enter key. The following response should appear:

   passwd: password updated successfully
6. Next, type the following command:

   `sudo smbpasswd it`
7. The following prompt will appear:

   New SMB password:
8. Type the same password you used in step 5 above. The following prompt will appear:

   Retype new SMB password:
9. Type the same password again, then press the Enter key. The Logicube prompt should appear.
10. Type the following command then press the Enter key:

    `sudo mount -o remount,ro /`
11. Press the following key combinations to go back to the Graphical User Interface: ***Alt+1***

7: Updating/Loading/Re-loading the EchoPlus-NG Software

7.0 Updating/Loading/Re-loading New Software – Introduction

New and improved software will be released from time to time and will always be available on the EchoPlus-NG support page. Browse to http://www.logicube.com. Point your mouse to Tech Support and select Product Knowledge Base.

7.1 Updating/Loading/Re-loading New Software Instructions

There are two methods of how to update the EchoPlus-NG software:

A. **FROM NETWORK –** Via the Internet through a network connection

B. **FROM USB DRIVE** – Via software file download onto a USB drive flash.

> The actual software installation will take about 5 minutes. If ***FROM NETWORK*** was chosen, the total time can exceed 10 to 20 minutes (or longer) depending on Internet speeds and Internet traffic.

7.1.1 From Network – Via the web

1. Connect the EchoPlus-NG to a network with Internet access. Set the proxy settings (IP settings) if necessary. Attach a network cable to the back of the EchoPlus-NG.

   > The EchoPlus-NG is DHCP enabled by default.

2. From the main menu on the EchoPlus-NG, tap the down arrow twice then tap the ***Software Updates*** icon. A screen will appear showing the current version of software installed towards the top of the screen.
3. Select ***From Network***. The EchoPlus-NG will check for a newer version on the web. If one is found, it will display the version on the screen and the ***Update*** icon will be selectable.
4. Tap the ***Update*** icon to begin the update. A confirmation screen will appear. Tap ***Yes*** to continue the update.
5. Do not interrupt the update process. It may take several minutes. Once completed, a 'Successful' screen will appear.
6. Reboot the EchoPlus-NG by turning the unit off then back on using the Power switch in the back of the unit.

7. Verify the software version at the top of the 'Software Updates' screen.

7.1.2 From USB Drive – Via software download

The latest software can also be downloaded from Logicube's website and be placed onto a USB flash drive.

It is recommended to use an empty USB flash drive.

Download the latest software from the EchoPlus-NG product support page at https://www.logicube.com/knowledge/echoplus-ng

1. Download the zip file from the download page.
2. Extract the contents of the downloaded zip file to the root of the USB flash drive (the file must not be in any folder). Do not connect the USB flash drive yet. The EchoPlus-NG will display a message when to connect the USB drive.

   If the computer being used to extract the contents of the downloaded zip file has the software WinZip, or other third-party zip software, please review ***Section 7.1.2.1*** before proceeding.

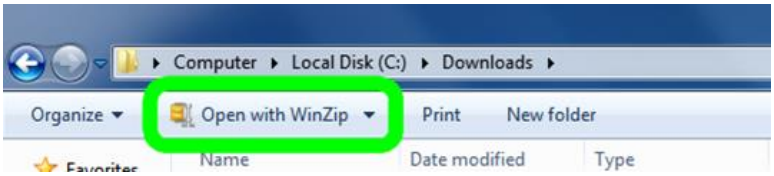
3. From the main screen, tap the ***Software Updates*** icon.
4. Select ***From USB Drive***. The EchoPlus-NG will prompt for the USB drive to be connected to USB_M.
5. Connect the USB drive to USB_M. EchoPlus-NG will then check for the version of the software on the USB drive and will display that version on the box next to the selected location.
6. Tap the Update icon to begin the update. A confirmation screen will appear. Tap ***Yes*** to continue the update. Do not interrupt the update process. It may take several minutes. Once completed, a 'Successful' screen will appear.
7. Reboot the EchoPlus-NG by turning the unit off then back on using the Power switch in the back of the unit.
8. Verify the software version at the top of the 'Software Updates' screen.

7.1.2.1 Extracting the software download on a computer with WinZip (or other third-party zip software)

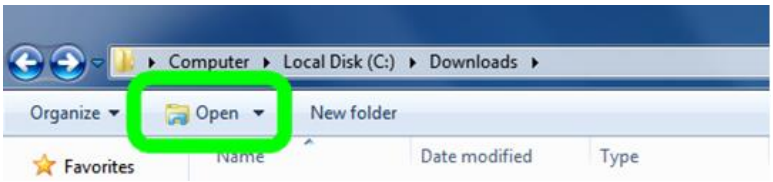
WinZip and other third-party zip software may improperly extract the files required for the software update. There are compressed files within the download that need to stay compressed.

If the computer being used to extract the software download has WinZip or other third-party zip software, it is highly recommended to use the built-in utility in Windows.

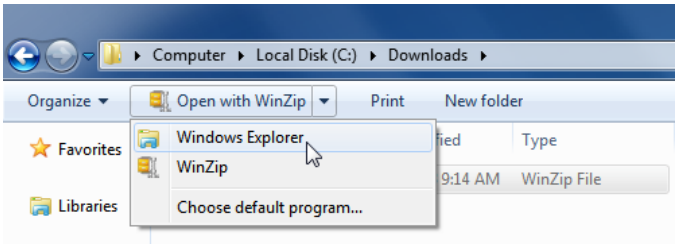
If the downloaded zip file is highlighted and WinZip is installed, there will be an option to 'Open with WinZip'.



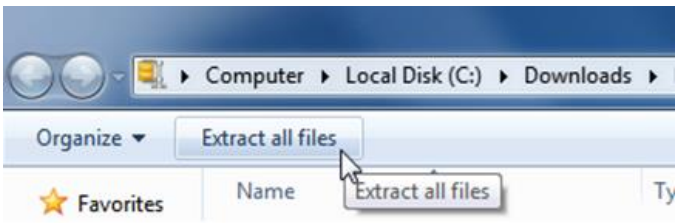
A computer without WinZip installed will have an option to 'Open' when the file is highlighted.



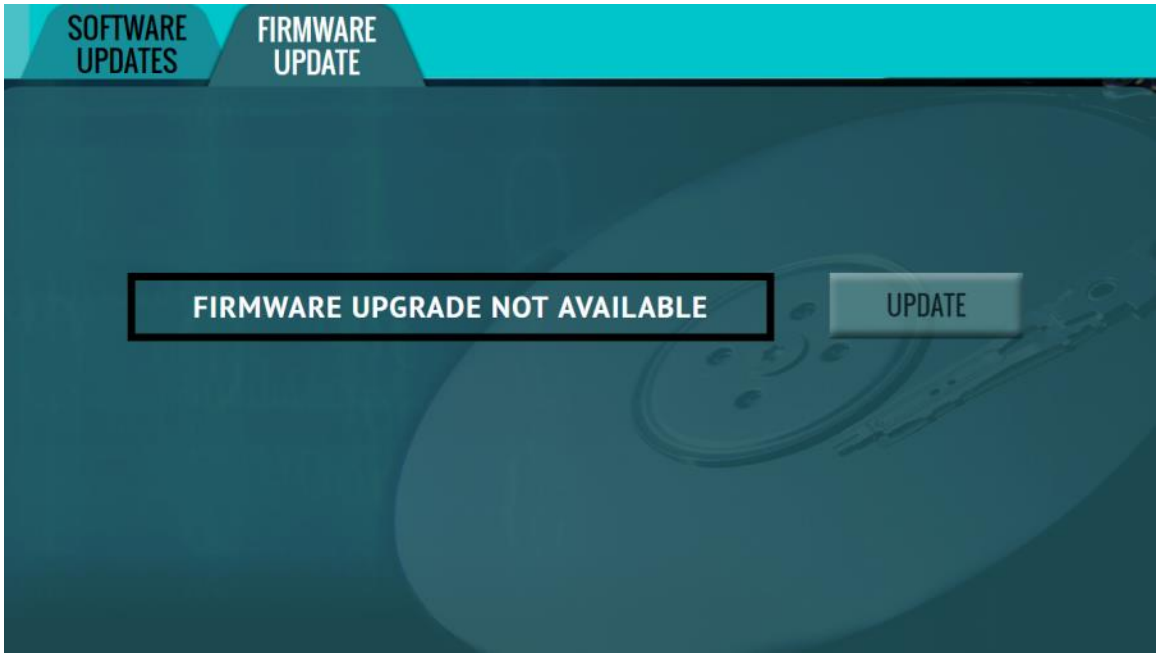
If WinZip is installed, highlight the downloaded zip file then click the arrow pointing downward next to 'Open with WinZip'. A drop-down menu will appear. Select ***Windows Explorer***.



Windows Explorer will open the zip file and the files can be extracted using the ***Extract all files*** function to the USB flash drive. This will bypass WinZip and use the built-in utility in Windows.



7.2 Firmware Loading Instructions



Some software releases may contain a firmware upgrade. The steps below outline how to check if the EchoPlus-NG requires a firmware upgrade:

1. After the software is updated on the EchoPlus-NG, from the main menu, tap the down arrow twice then tap the ***Software Updates*** icon.
2. Tap the "Firmware Update" page. One of two screens will appear:
   a. ***FIRMWARE UPGRADE AVAILABE –*** Tap the ***Update*** icon. A message will appear: "FIRMWARE UPDATE COULD TAKE UP TO A FEW MINUTES TO COMPLETE; PLEASE DO NOT INTERRUPT POWER DURING THIS TIME. ON COMPLETION THE UNIT WILL AUTO-RESTART AND CONFIRM THE UPDATE." Tap the ***OK*** icon to start the firmware update process.

   > When the ***OK*** icon is tapped, the screen may appear to do nothing. Do not keep tapping the ***OK*** icon. The firmware update will take no more than 60 seconds. When the firmware update finishes, the EchoPlus-NG will reboot automatically.

   b. ***FIRMWARE UPGRADE NOT AVAILABLE –*** This message will appear if the device does not require a firmware update. No further action is necessary if this message appears.

8: Remote Operation

8.0 Remote Operation - Introduction

The EchoPlus-NG comes with two gigabit network connections in the back of the unit. Connecting the EchoPlus-NG to a network allows remote access to the EchoPlus-NG from any computer within the same network.

The EchoPlus-NG is configured for DHCP by default. See ***Section 8.6*** for instructions on how to configure the EchoPlus-NG with a Static IP address.

The EchoPlus-NG is setup with a Zero Configuration Network (Zeroconf). There are two ways to access the EchoPlus-NG:

- Web interface – A graphical interface using an Internet browser where the screens are shown exactly the way they appear on the EchoPlus-NG
- Command Line Interface (CLI) – A text only command line interface that can be accessed one of two ways:
  - i. Telnet (via a network connection)
  - ii. SSH (Secure Shell via a network connection)

BROWSER COMPATIBILITY: Google Chrome and Mozilla Firefox are recommended. Other browsers may not display the Graphical User Interface (GUI) properly.

8.1 Web Interface

Using a web browser, go to the IP address or the name of the EchoPlus-NG with its serial number. Both IP address and serial number can be found by going to the ***Statistics*** screen on the EchoPlus-NG. For example, browse to http://192.168.1.100 or http://echo-XXXXXX where XXXXX is the 6-digit serial number of the EchoPlus-NG. The EchoPlus-NG's web interface will appear on the browser screen. All screens and operations available on the EchoPlus-NG will be available on the browser.

On some browsers or Operating Systems, the EchoPlus-NG will need to be accessed by browsing to http://echo-XXXXXX.local.

The EchoPlus-NG can be controlled by clicking on the icons appearing on the browser window.

8.2 Command Line Interface (CLI)

The EchoPlus-NG also has a CLI, or Command Line Interface. This interface has no graphical content and is all command line (text) based and is for advanced users who have knowledge of command line functions. This type of connection requires a Telnet or SSH client. There are several Telnet and SSH clients available from different software companies. Microsoft Windows also has a built-in Telnet client that can be used.

- Windows Vista, 7, 8, 8.1, and 10 have a built-in Telnet client but is not installed by default. Installing the Telnet client may require the assistance of a Network or Systems Administrator. Other third-party Telnet programs are available.
- All versions of Windows do not have a built-in SSH client.
- For assistance on the installation of any SSH or Telnet software (including Microsoft's Telnet client) please check with your IT administrator.

8.3 Connecting via SSH

Connecting to the EchoPlus-NG via SSH (Secure Shell) is similar to connecting via Telnet. Since Windows does not have a built-in SSH client, a third party SSH client will need to be downloaded and installed to connect via SSH. For instructions and support on how to use third party SSH clients, please contact the SSH client's manufacturer.

1. Connect the EchoPlus-NG to the network by attaching a network cable to the RJ45 connector in the back of the EchoPlus-NG.
2. Turn the EchoPlus-NG on and allow it to boot up completely.
3. Open the SSH client and select an SSH connection.
4. Connect to the EchoPlus-NG either by IP address or by name. The name of the EchoPlus-NG will be **EchoPlus-NG-*XXXXXX*** where XXXXXX is the serial number of the EchoPlus-NG).

   On some Operating Systems, the EchoPlus-NG will need to be accessed by opening EchoPlus-NG-XXXXXX.local.

5. Login with the username "***it***" (without the quotes) and the password "***it***" (without the quotes).
6. A prompt should appear in the SSH window.
7. The EchoPlus-NG can now be configured or managed via the command line interface.

8.4 Connecting via Telnet

By default, the Windows Telnet Client is not installed with Windows, but it can be installed it by following the steps below:

a. Open ***Control Panel*** and select either ***Programs & Features*** or ***Programs***.

b. Click ***Turn Windows features on or off***. If a prompt for an administrator password or confirmation, type the administrator password or provide confirmation (A Network or Systems Administrator may be required for administrator access).

c. In the Windows Features dialog box, select the Telnet Client check box.

d. Click OK. The installation might take several minutes.

Once the Telnet client is installed, follow the steps below to connect using the Windows Telnet client.

1. Connect the EchoPlus-NG to the network by attaching a network cable to the RJ45 connector in the back of the EchoPlus-NG.
2. Turn the EchoPlus-NG on and allow it to boot up completely.
3. Open the Telnet client.
4. Type ***open*** followed by the IP address or name of the -NG. For example, ***open 192.168.1.100*** or ***open EchoPlus-NG-XXXXXX*** where XXXXXX is the 6-digit serial number of the EchoPlus-NG, then press Enter. The EchoPlus-NG login screen should appear.

   Note: On some Operating Systems, the EchoPlus-NG will need to be accessed by opening EchoPlus-NG-XXXXXX.local.
5. Login with the username "***it***" (without the quotes) and the password "***it***" (without the quotes).
6. A prompt should appear on the Telnet window.
7. The EchoPlus-NG can now be configured or managed via the command line interface.

8.5 Zero Configuration Networking (Zeroconf)

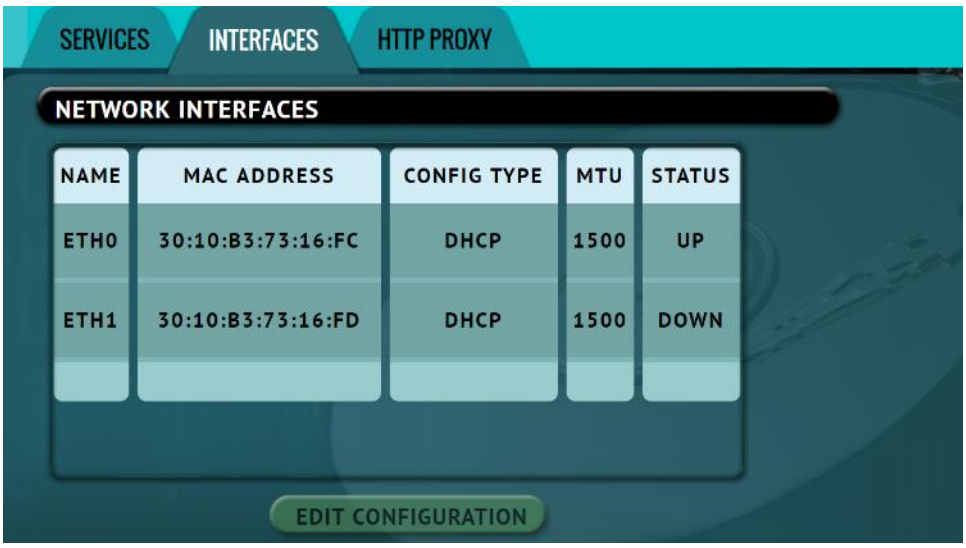
The EchoPlus-NG has the capabilities for Zero Configuration Networking (Zeroconf). Zeroconf allows devices to automatically create a usable computer network based on the Internet Protocol Suite (TCP/IP).

For example, when the EchoPlus-NG is connected (connected via a network cable) directly to a Windows based computer that is DHCP enabled, both the EchoPlus-NG and the Windows based computer will automatically configure themselves to be seen by each other using TCP/IP.

8.6 Configuring the EchoPlus-NG with a static IP address

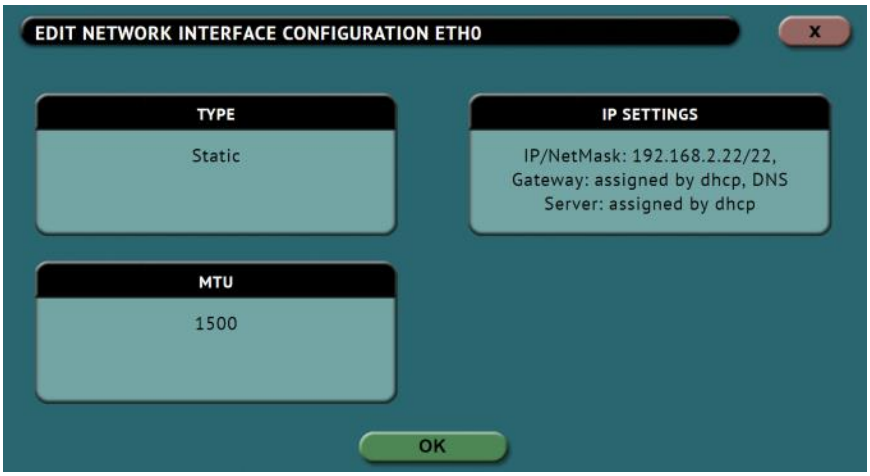
The EchoPlus-NG is DHCP enabled by default. Some networks do not support DHCP and require a static IP address. The EchoPlus-NG can be configured with a static IP.

8.6.1 Step-by-step instructions – Static IP address



1. Select ***Network Settings*** from the types of operation on the left side.
2. Select the ***Interfaces*** tab.
3. Tap ***ETH0*** or ***ETH1*** to highlight a network port to be configured.
4. Tap ***Edit Configuration*** to edit the entry. The ***Edit Network Interface Configuration*** screen should appear.

5. Tap the ***Type*** box and select ***STATIC*** then tap the ***OK*** icon. The ***IP SETTINGS*** box should now be selectable.



6. Tap the ***IP SETTINGS*** box to manually set the IP address, NetMask, Gateway, and DNS Server. When finished, tap the ***OK*** icon.

To save the settings so that the EchoPlus-NG boots up with the static IP address, see ***Section 5.6.1*** for more information on how to save a profile.

10: FREQUENTLY ASKED QUESTIONS

10.0 FAQs

Q. Why are SAS drives not being detected?

A. The EchoPlus does not support SAS drives.

Q. How many concurrent tasks can the EchoPlus-NG run?

A. The EchoPlus-NG can run one task at a time.

Q. Can the EchoPlus-NG clone Linux partitions?

A. Yes. EchoPlus-NG can clone Linux partitions using Mirror or Clever clone.

Q. Can the EchoPlus-NG clone to smaller capacity Target drives?

A. Yes. For details on how to clone to smaller capacity Target drives, see ***Section 3.1.2***.

Q. How does the EchoPlus-NG handle bad sectors on the Master drive?

A. EchoPlus-NG will retry the bad sector 7 times. After the 7th attempt, if the sector still cannot be read, it will skip that sector and list the sector in the log file.

Q. What operating system does EchoPlus-NG use?

A. EchoPlus-NG uses a Linux-based operating system. A Linux-based operating system provides increased stability and security over Windows-based systems.

Q. What file format does EchoPlus-NG use when formatting target drives?

A. EchoPlus-NG can format target drives using the NT File System (NTFS) or EXT4 file system.

Q. Does the EchoPlus-NG provide log files?

A. Yes, each clone, hash, or wipe task produces a log file. See ***Section 3.4*** and ***Section 5.4*** for more information on log files.

Q. If I am imaging to or from USB enclosures, will the EchoPlus-NG's USB ports power my devices or will an additional power source be required?

A. Each of the EchoPlus-NG's USB ports meets the standard specification of up to 5V of power. If your USB device has higher power requirements an external power source will be necessary. Check with the manufacturer of your USB device to determine the exact power requirements.

11: Index

Technical Support Information

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**

Software Attribution

Ubuntu 12.04 LTS (http://www.ubuntu.com)
Linux Kernel (3.2.48) (GPL v2) (http://www.kernel.org) (modified)
libcli (1.9.5) (LGPL v2.1) (https://github.com/dparrish/libcli) (modified)
monitorix (3.2.1) (GPL v2) (http://www.monitorix.org) (modified)