Protecting
Your Digital
Assets™

Ditto® Forensic FieldStation
User Manual

Features

- Source inputs (write-blocked) – eSATA (SATA), PATA, USB 2.0, PCIe x 1 Expansion Port, Gigabit Network (NFS, iSCSI, Samba)
- Destination outputs – Dual eSATA (SATA) ports to store acquired data on one or two drives in a single pass, SD card, Gigabit Network (NFS, iSCSI, Samba)
- Data Acquisition Modes – image DD, image E01 with Empty Block Compression, clone. Hash types - MD5, SHA-1, MD5+SHA-1
- System configuration management via front panel LCD or web browser interface
- Web browser allows file system exploration, file preview, and file download of attached drives
- User profiles can be password protected and assigned specific permission levels
- Data log captures a complete history of data acquisitions and can be managed and printed from web browser or extracted to user-specific document
- Ability to erase destination drives using preset erase modes or user configurable option
- Stealth Mode for use with night vision goggles (not included)

Table of Contents

1. Pre-Installation Steps

1.1 Box Contents

The following list contains the items that are included in the complete configuration for this device. Depending on which configuration and accessories you purchased, the package may include fewer items than what are listed here. Please contact CRU if any items are missing or damaged:

Ditto Unit	1
Unitized SAS to eSATA + mini-fit power cable	3
IDE cable	1
12V Power Supply	1
Power cord	1
Legacy Power to mini-fit cable	1
Ethernet cable (RJ45)	1
2.5 IDE to 3.5 IDE and mini-fit cable	1
Power adapter, legacy to SATA	1
Velcro cable wrap	6
eSATA cable	2
SD card (pre-installed)	1
Quick Start Guide and Warranty Info	1

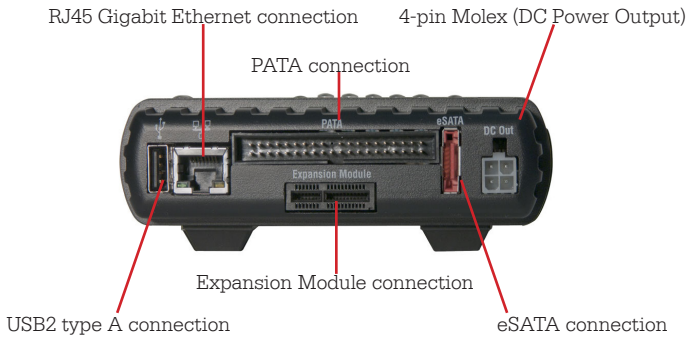
1.2 Identifing Parts

Take a moment to familiarize yourself with the parts of the Ditto. This will help you to better understand the following instructions.

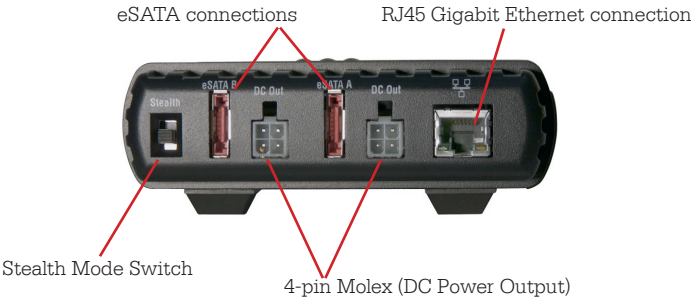
Top of Unit

Source Inputs

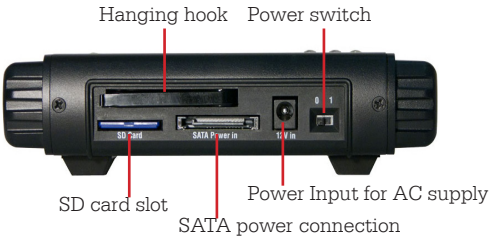
(all inputs are write-blocked)



Destination Outputs



Rear of Unit



2. Setup

Plug the "suspect" drives or devices into the "Source Inputs" side of Ditto. All source inputs are write-blocked to prevent alteration. The source inputs include a USB 2 connection for USB devices, an RJ45 Gigabit Ethernet connection, a PATA drive connection, and an eSATA connection for SATA drives or an eSATA device. The expansion module connection is used with Ditto expansion modules (available soon).

Use the "Destination Outputs" side of Ditto to store acquired data. The destination output connections are two eSATA connections for SATA drives or eSATA devices and an RJ45 Gigabit Ethernet connection.

When you add or remove a drive or enclosure from Ditto, CRU recommends that you switch the power off to Ditto to avoid drive damage or data corruption.

The rear of Ditto has an SD card slot and two powering options: a 12V input for the power supply, and a SATA power connection. The rear of Ditto also has a hanging hook for hanging the unit inside the computer case or workstation.

3. Web Browser Interface

Ditto can be configured and operated either from the LCD interface (see section 9) or through a web browser interface.

3.1 Accessing the Web Browser Interface

a. Plug an Ethernet cable into the Ethernet port on the "Source Inputs" side of Ditto.

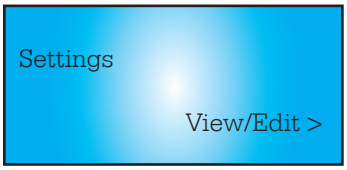
b. Connect the other end of the Ethernet cable to your network. This usually means plugging it into a router or hub. In an office environment, you may have a network jack built into your office wall.

c. Connect the power cable to the rear of Ditto and to the provided AC adapter or to SATA power.

d. Turn on Ditto's power using the switch on the rear panel. (0 = off, 1 = on)

e. Type your source IP address into your web browser. If you know the address, skip to step "i." If you do not know the address, continue with step "f."

f. Press the DOWN navigation button on Ditto until you reach the "Settings" menu. Then Press ENTER.



g. Press the UP or DOWN navigation buttons until you reach the "Source IP Address" screen.

h. Type the IP address shown into your web browser.

• Note that Ditto is configured to use DHCP for IP assignment. If you need to change to a Static IP, check with the network administrator and see section 3.3.2 of this manual.

i. Log into the web browser interface. (the default username and password are both "admin")

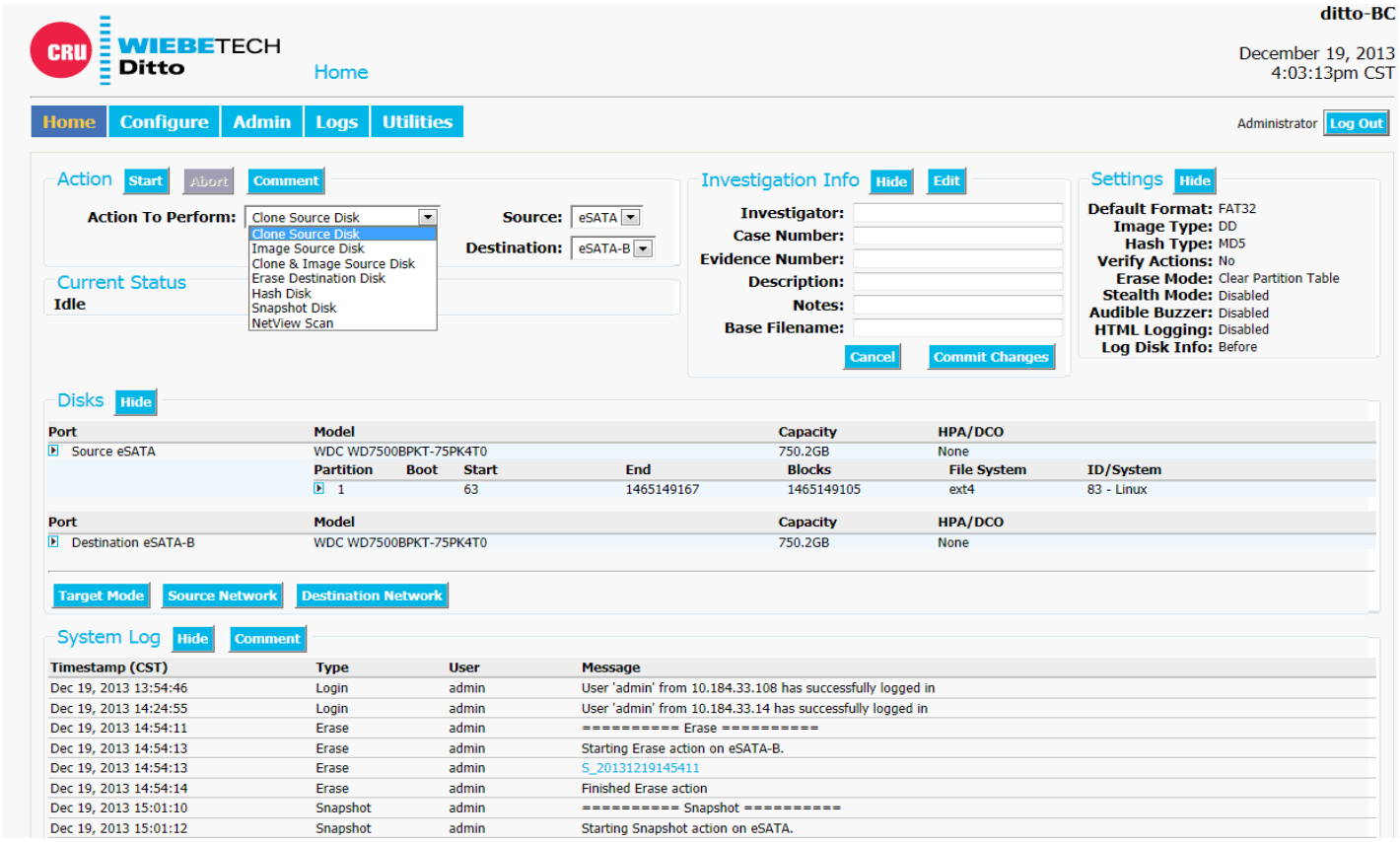
• CRU recommends changing the admin password and setting the users accounts for best data management.

Alternatively, the web browser interface can be accessed via a computer. Connect an Ethernet cable from the "Destination Outputs" Ethernet port to your laptop. Your Ditto is pre-programmed with a static IP address of 10.10.10.1 on the destination side. (The Destination IP Address can also be seen in the LCD's Settings menu). Type this IP address into your web browser to access the Ditto's web browser interface.

WARNING: The destination Ethernet port may also be configured as a DHCP server. Attaching the Ditto to a network with an existing DHCP server will cause network issues.

You are now ready to use Ditto's web interface to configure settings, preview the attached drives, run an image or clone.

4. Home Screen



4.1 Action – The Main screen lets you start, abort, and make notes about the following actions:

4.1.1 Clone Source Disk: Ditto makes an exact duplicate of the source disk. While cloning the source disk, the Ditto is also able to hash the source drive using MD5, SHA-1, or MD5 + SHA-1 and save the hash value. Ditto can clone to one destination drive or two destination drives (Mirror feature).

4.1.2 Image Source Disk: Ditto makes a copy of the source drive into files on to one destination drive or two destination drives (Mirror feature). E01 and DD are the two imaging types. While imaging the source disk, the Ditto also can hash the source disk using MD5, SHA-1, or MD5 + SHA-1. TIP: For fastest performance we recommend utilizing EXT4 file system for Windows, HFS+ for Mac, and XFS for Linux machines.

Note: For the Mirror feature to be shown, both destination drives must be empty. Tip: A quick way to accomplish this is to use Ditto to erase each drive using the setting "Clear Partition Table".'

4.1.3 Clone and Image Source Disk: This action simultaneously performs a clone to one destination disk and perform an image to the second destination disk. Two destination disks are required for this action.

Note: While running a clone and image, the hash algorithm saved under clone setting will be used.

4.1.4 Erase Destination Disk: Ditto erases the destination drive using the pre-configured erasure method.

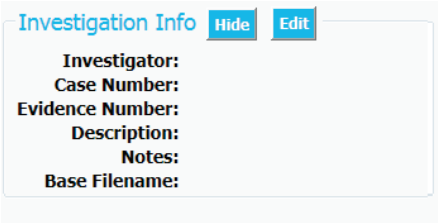
4.1.5 Hash Disk: Ditto hashes either the source or the destination disk (user select) with the hash algorithm pre-configured. Hash values are saved in the log.

4.1.6 Snapshot Disk: Ditto provides SMART and HDParm information whenever needed. No clone or image request needs to be done.

4.1.7 NetView Scan: NetView is a network probing tool which can be used to discover machines on a network and even probe them for specific services which they may be running. This capability may help an Investigator locate physically hidden computer and quickly determine whether or not a machine is acting as a data storage device which may be imaged by Ditto.

See section 4.7.1 for more information about the NetView Scan feature.

4.2 Investigation Info Panel: The Investigation Info Panel groups related information that may also be used in the customized directory and file names.



The Investigation Info panel allows clients to enter a default base computer filename for either E01 or DD imaging along with information about the Investigator, Case Number, Evidence Number, Description, and Notes.

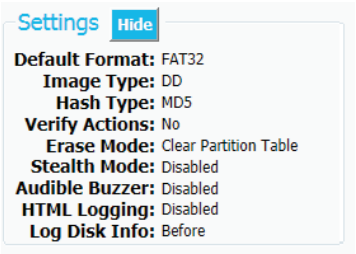
Each field is filtered to block non printable ASCII characters and generates an error dialog if entered text is not allowed. Each field can have a maximum length of 58 characters and generates an error dialog if entered text is too long.

Although each field in the Investigation Info panel is filtered to block non printable ASCII characters, when the final directory or filename that uses any of these fields is created another level of filtering is applied.

At the file system level any characters that may not be safe for a directory name or file name will be filtered out and replaced with an underscore. Only printable ASCII characters are currently allowed for directory and filenames. Multiple underscores will also be reduced to a single underscore per naming item.

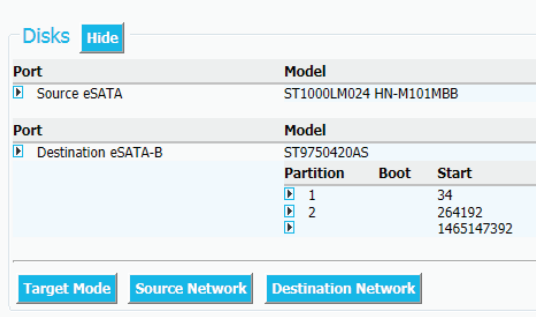
NOTE: Using apostrophes (‘) in the name fields will cause an error when the file or folder name is created. They should not be used in the Investigation Info fields.

4.3 Settings: Displays current configuration settings of Ditto for at-a-glance setting confirmation.

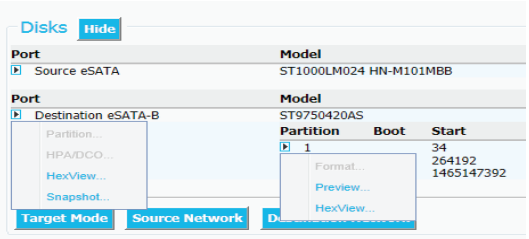


4.4 Current Status: Reports either as “Idle” or displays info about the action that Ditto is currently performing.

4.5 Disks: Displays information about the attatched drives that are currently connected to Ditto.

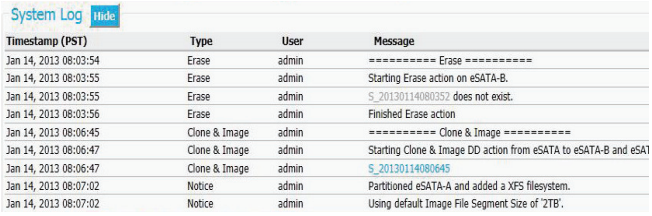


To view disk info, click on the drive name under “Port”, and then select “HexView”or “Snapshot”. To view disk data , click on the partition name under “partition” and then select “preview” or “HexView”.



For more detailed information about using Target Mode, see section 4.7.2. For more detailed information about using Network Source and Destination under “Disks,” see section 4.7.3

4.6 System Log: Shows the actions that Ditto has performed since its last reboot.



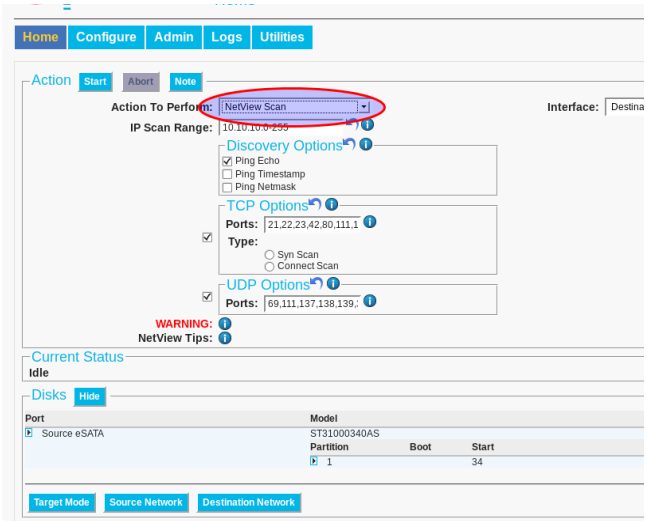
Logs are permanently saved on the SD card. If there is no SD card, logs are saved in volatile memory, which will be deleted after the Ditto is powered down.

To view the log details of a particular action, click on the link under “message.”

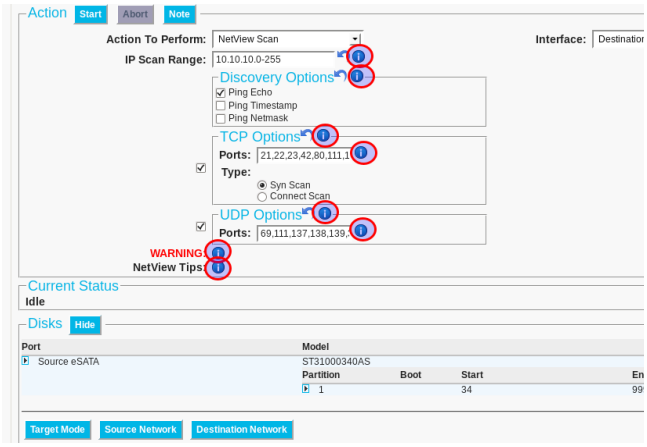
4.7 Advanced features/functions from Home Screen

4.7.1 Usage of Netview Scan: This type of network probing is VERY noisy and WILL trigger any IT related Intrusion Detection Devices (IDSs) which may be on the network. Please be sure to run this action in a very controlled and isolated environment.

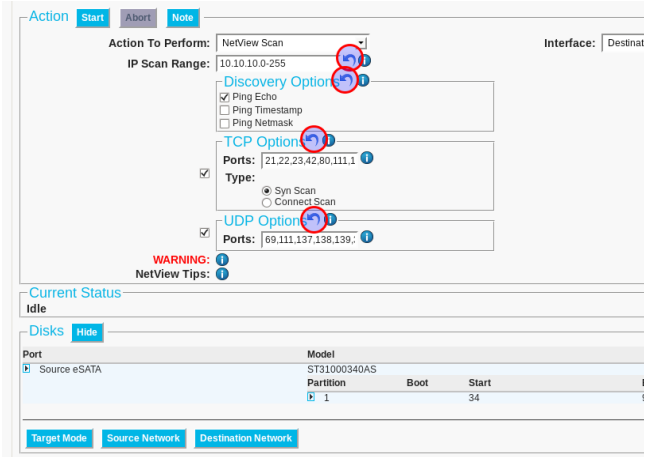
Using the drop-down menu next to “Action to Perform”, select “NetView Scan”.



4.7.1.1 Info Feature: At any time you may click on the information icons for a brief description of each individual setting.

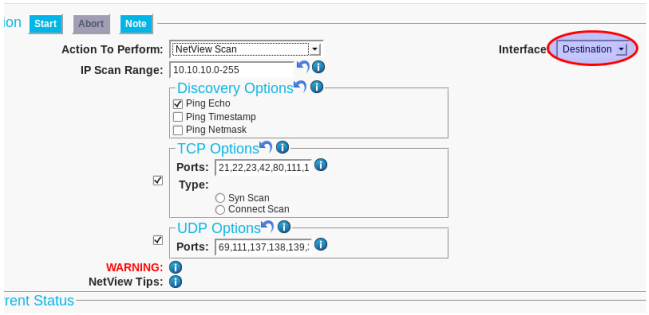


4.7.1.2 Reset Feature: At any time you may click on one of the Reset icons to load the defaults for that particular setting.

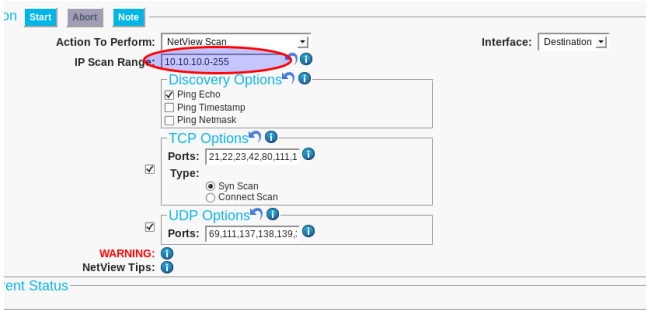


4.7.1.3 Interface Selection: Select either Source or Destination from the "Interface" drop-down.

WARNING: When the scan is started the selected interface will used. This will cause heavy network traffic load and almost certainly alert your IT department that the network is under some sort of threat. Ensure that the selected interface is attached to a controlled and isolated network.



4.7.1.4 IP Scan Range: By default the last octet of the IP address of the selected interface will be scanned. You may change this value and enter a list of IP address, a range of IP addresses, or a combination of both.



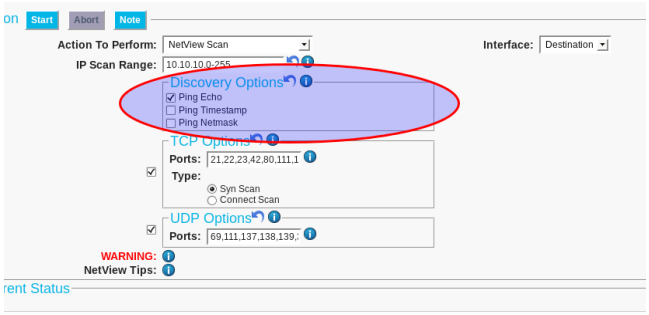
Examples:

1. Range: 10.10.10.0-255
   - This will scan the addresses 10.10.10.0 through 10.10.10.255.
2. Range 2: 10.10.10-12.0-255
   - This range will scan addresses 10.10.10.0-255, 10.10.11.0-255, and 10.10.12.0-255.
3. List: 10.10.10.1
   - This will only scan IP address 10.10.10.1
4. List 2: 10.10.10.2,10.10.10.3
   - This will scan only hosts 10.10.10.2 and 10.10.10.3
5. Combo: 10.10.10.1,10.10.10.2,10.10.10.50-100
   - This will scan hosts 10.10.10.1, 10.10.10.2 and hosts 10.10.10.50 through 10.10.10.100.

Remember that the "Reset" button may be used to reset the IP Scan Range back to its default values.

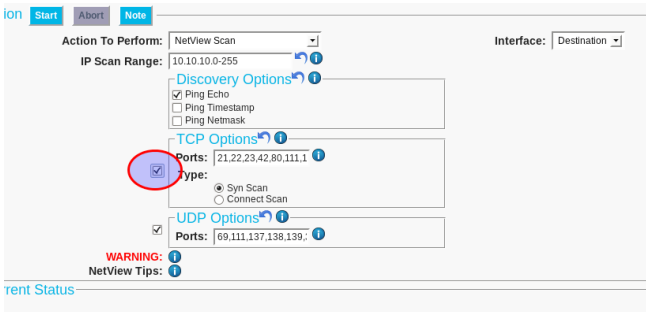
4.7.1.5 Discovery Options: There are 3 optional host (machine) discovery options available. By default, the "Ping Echo" should be enough in most cases. Some machines may be configured to ignore pings and not respond, so there are 2 other specialized Ping options which may be useful.

Zero or more of these discovery options may be selected, and the "Reset" button may be used to reload the defaults.



4.7.1.6 TCP Options: NetView can optionally scan the specified hosts for open TCP ports. By default Ditto scans for commonly used services as well as services to which Ditto may be able to connect, such as NFS, iSCSI, and Samba.

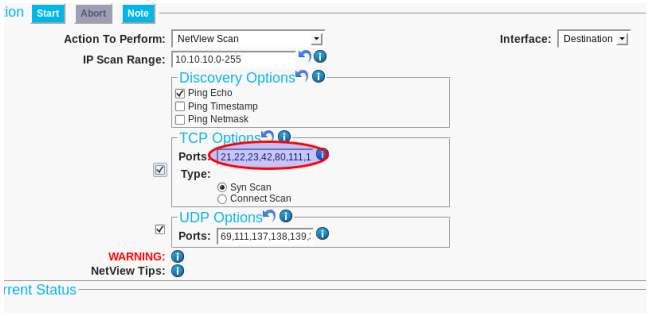
Checking the box next to "TCP Options" enables this features and expands more options. Again, the "Reset" button may be pressed to reset all TCP Options back to their default values.



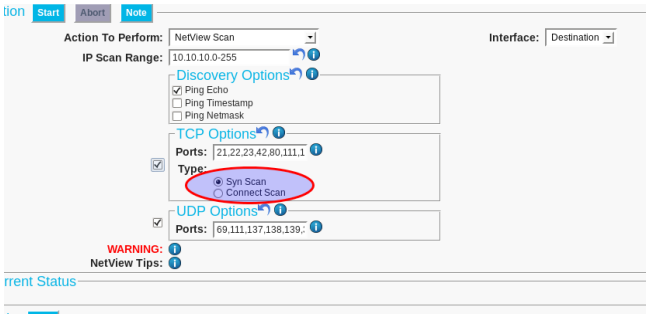
Once the TCP Options are expanded we then have more options.

4.7.1.7 TCP Ports: Similar to the IP Scan Range text box, the Ports text box can be used to specify lists or ranges of TCP ports which you would like Ditto to scan. Only the specified ports will be scanned. Examples:

1. Range: 1-1000
   - This will scan TCP ports 1 through 1000
2. List: 22,80
   - This will only scan TCP ports 22 (SSH) and 80 (HTTP)
3. Combo: 1-25,80
   - This will scan TCP ports 1 through 25 and TCP port 80.

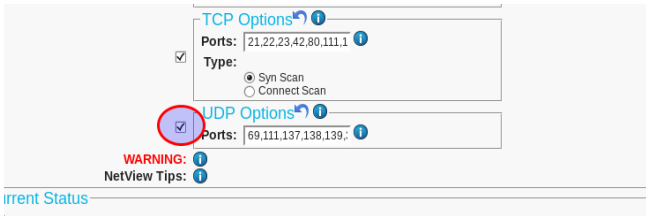


4.7.1.8 TCP Scan Types: There are two TCP scanning options. Only one may be selected at a time and a selection is mandatory. By default the "Syn Scan" is selected, which is appropriate for most cases. The "Connect Scan" option may be used if you want Ditto to attempt to create a system level connection to the specified services. The "Connect Scan" should only be used by advanced users.

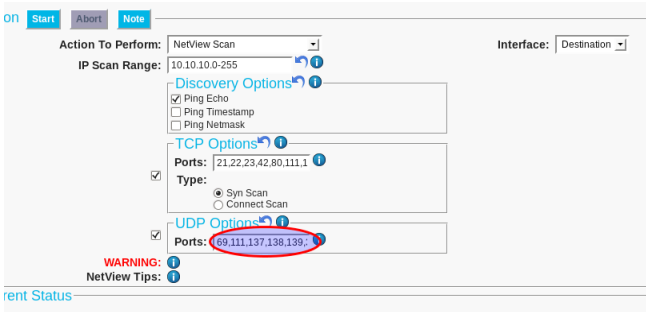


4.7.1.9 UDP Options: NetView can optionally scan the specified hosts for open UDP ports. By default Ditto scans for commonly used services as well as services to which Ditto may be able to connect, such as NFS, iSCSI, and Samba. UDP port scanning takes much longer than TCP port scanning due to the connectionless nature of the UDP protocol, which makes it difficult to determine whether the packet sent to the port has been lost or the port is simply not open.

Checking the box next to "UDP Options" enables this features and expands more options. Again, the "Reset" button may be pressed to reset all UDP Options back to their default values.



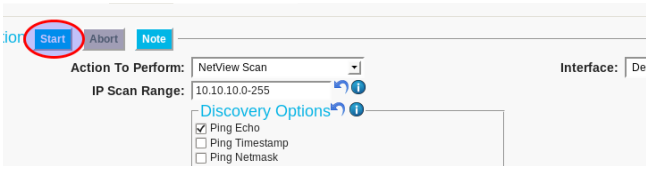
Similar to the IP Scan Range text box, the Ports text box can be used to specify lists or ranges of UDP ports which you would like Ditto to scan. Only the specified ports will be scanned.



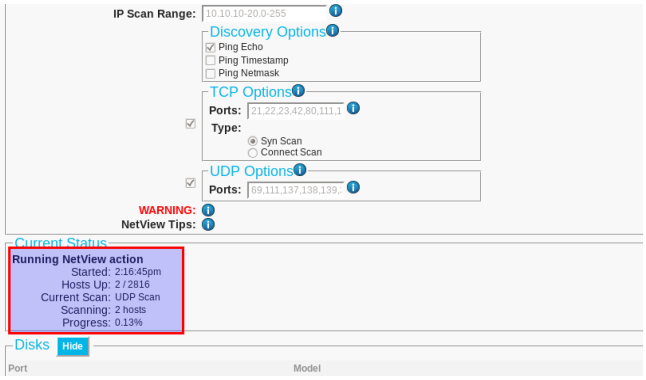
Examples:

1. Range: 1-1000
   - This will scan UDP ports 1 through 1000
2. List: 69,137
   - This will only scan UDP ports 69 (tftp) and 137 (netbios)
3. Combo: 1-25,137
   - This will scan UDP ports 1 through 25 and UDP port 137.

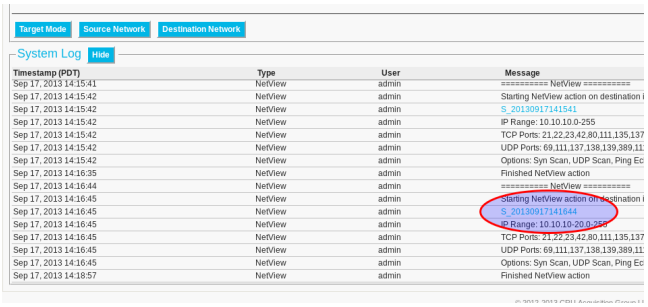
4.7.1.10 Starting the Scan: To start the NetView scan using the present configuration click on the "Start" button.



Similar to when other actions run, you should see status information about the scan. Note that the progress estimates are VERY crude and still being developed. The user should see updates every few seconds describing the current scan being executed, the number of host discovered, and the progress of the current scan.



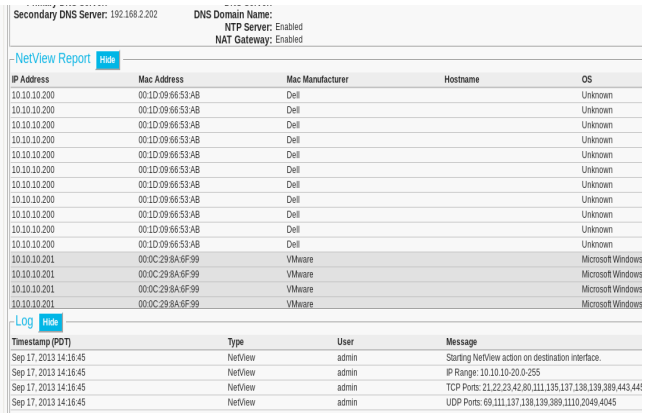
4.7.1.11 NetView System Log Results: The system log will display a summary of the NetView action as it runs. Once complete you should see the complete scan system log summary. Displayed will be a link to the Session (Action) log, arguments used during the scan, and a "Finished" entry.



4.7.1.12 NetView Session (Action) Log: When you click on the Session log link in the System Log, then you will be presented with a NetView session log. The NetView session log will contain a section which summaries the discovered hosts. The IP Address, MAC address, Service, Port #, Protocol and State fields should all contain information.

The MAC Manufacturer field may contain the name of the manufacture associated with the MAC address if this information can be determined.

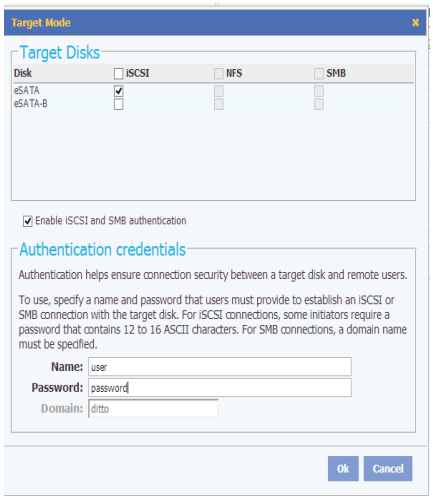
The Hostname will be blank if a DNS lookup could not associate the hosts IP address to a name.



4.7.2 Target Mode: It is possible to mount drives connected to Ditto on your computers via iSCSI. This can be very useful if you wish to scan, image, or otherwise use the disk with 3rd party software.

Using either the source or destination network port works equally well.

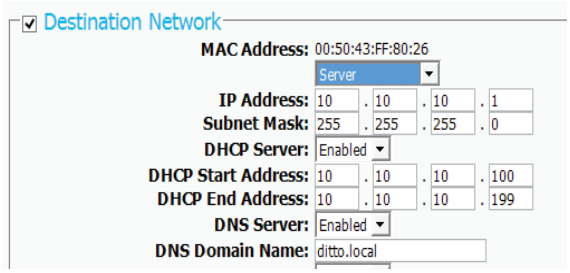
To prepare devices connected to Ditto for iSCSI mounting select Target Mode from the Home tab under "Disks." Select the check box for each device you would like to mount via iSCSI. If you wish to use authentication, select the authentication checkbox and input your desired authentication information.



4.7.3 Using Network Source and Destination

4.7.3.1 Using iSCSI Source and Destination: To mount these devices to your computer, you'll just need to use Ditto's IP address with your iSCSI initiator. Initiators can vary, but typically you'll just add the IP address to the "Discovery" section of your initiator

If you do not wish to connect the iSCSI device to your network, (such as a suspect device with unknown properties) you can easily isolate the iSCSI device to Ditto's Destination side Ethernet port.



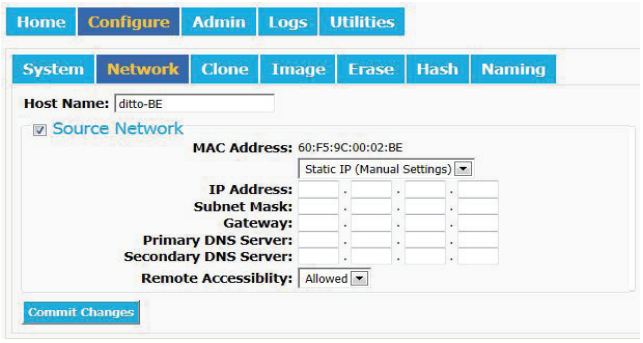
First, ensure that the Destination side of Ditto is configured as a server. To do this, go to Configure, then Network (see section 3.2). The Destination network settings are on the right.

Select "Server" from the dropdown box and commit the changes. Now connect the iSCSI device to Ditto's Destination Ethernet port. The iSCSI device will be assigned a new IP address, as long as the iSCSI device is configured to obtain an IP from DHCP. Obtain the newly assigned IP address from the iSCSI device.

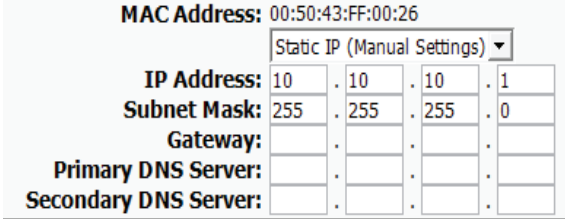
On the home screen select iSCSI Sources or Destinations as appropriate. Input the IP of the iSCSI device into the Target Host field. Press "Discover." Ditto will detect any IQNs attached to the IP address. Select the IQN you wish to attach to and press "Add." Close the iSCSI pop-up. The iSCSI device has now been added to the list of disks.

If you do not have a network that you can attach Ditto and the iSCSI device to, and the Destination port is in use (such as by a direct connection to a computer) then you'll need to connect the iSCSI device to the Source Ethernet port and manually configure the IP address of both Ditto and the iSCSI device. This is an advanced usage model.

To manually set the IP of Ditto go to "Configure", then "Network" in the web interface. Select Static IP (Manual Settings) from the dropdown box in the Source Network section.



There are many valid settings for static IP addresses. When directly connecting to an iSCSI device, we only need to concern ourselves with the IP Address and Subnet Mask. Here is one example.



The most important thing to know when manually setting an IP address is that the iSCSI device must use some specific settings. The IP address of the iSCSI device must have the same digits in its IP address as the Ditto, and the subnet mask must be the same. In addition, be sure to set the default gateway to the IP address of the Ditto.

From the example above, a valid setup for an iSCSI device would be as follows:

IP address: 10.10.10.100
Subnet mask: 255.255.255.0
Default Gateway: 10.10.10.1

After these settings are configured on Ditto and the iSCSI device, simply ensure that the iSCSI device is connected to the Source Ethernet port.

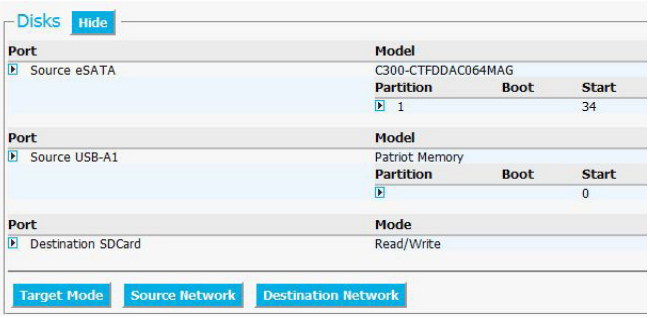
On the home screen select "iSCSI Sources" or "iSCSI Destinations" as appropriate. Input the IP of the iSCSI device into the Target Host field. Press "Discover." Ditto will detect any IQNs attached to the IP address. Select the IQN you wish to attach to and press "Add." Close the iSCSI pop-up. The iSCSI device has now been added to the list of disks.

If an iSCSI volume needs to be removed, be sure to select it from the iSCSI Sources or Destinations window and press "Remove" before physically removing it from the network. This will prevent timeout issues where Ditto attempts to connect to an iSCSI volume that does not exist.

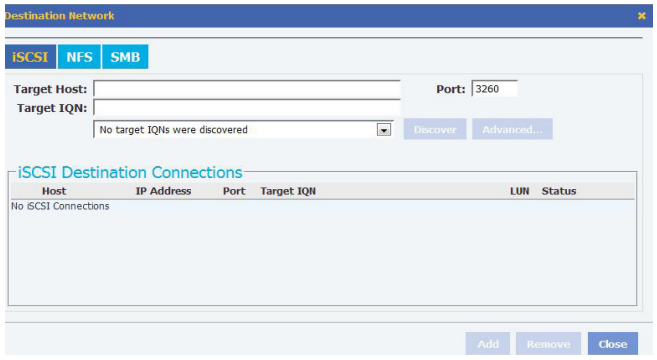
4.7.3.2 Using NFS/Samba Sources and Destinations: Ditto can interact with drives or folders over the network.It can be used to image from the attached source drives to network destinations via NFS and Samba Shares.

Ditto comes pre-configured to attach to NFS and Samba Shares. To connect your Ditto to an NFS or Samba Share, ensure that the directory is available. For details on creating an NFS or Samaba Share, contact your IT Department.

Select either "Source Network" or "Destination Network" from the Home screen in the web browser interface.

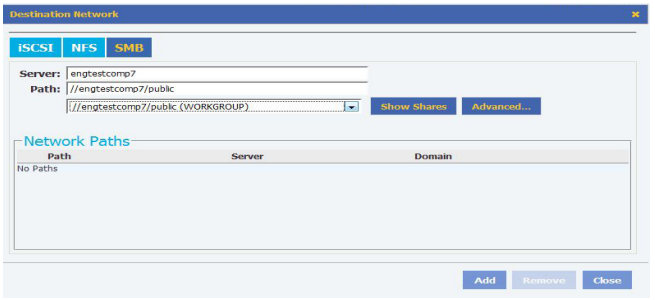


A Network pop-up will open.

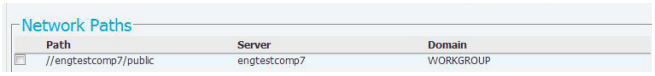


Enter the Server name or the path to the NFS or Samba Share and select "Show Shares." This will bring up the available Shares.

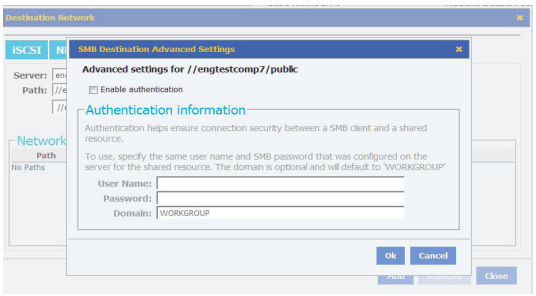
Select the appropriate Shares then select "Add."



The shared drive will now be listed in the Network Paths window on the Network pop-up.

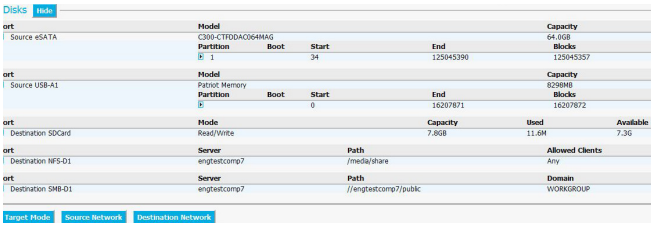


If Authentication is require for a Samba Share select Advanced and enter the User Name and Password



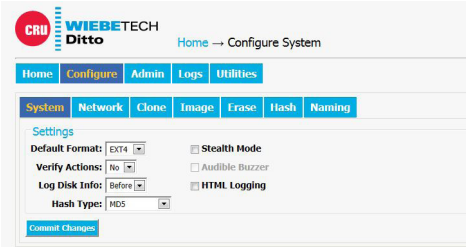
Once you verify that that the shared drive is listed, select "close."

The Shares will now be available and added to the list of disks.



To remove the shares, click on "Source Network" or "Destination Network" as appropriate. Select the iSCSI or NFS or Samba tab and check the box next to the share(s) you wish to remove. Click the "Remove" button to remove that share.

5. Configure Screen



5.1 System: Here, you can customize the above system settings. You can view the current settings under Settings on the Main screen.

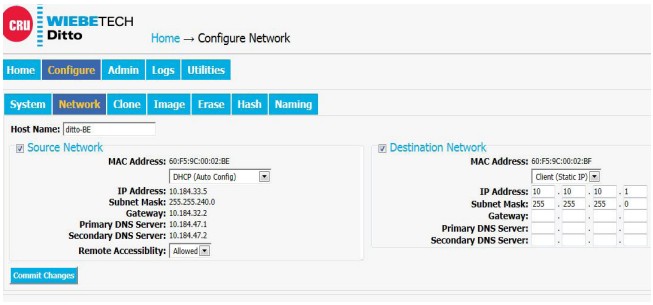
Information that you can adjust includes the default file system format of the destination disks and whether or not to verify the actions Ditto performs. With verification, Ditto hashes the destination drive and compare the hash value with the source drive hash value.

You can log disk info (HDPARM and SMART) before running an action, after running an action, or both. You can also select 'off' to disable logging.

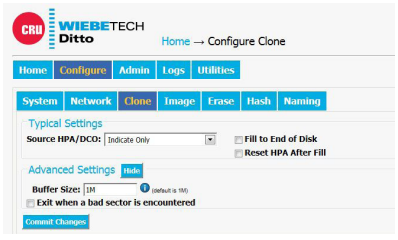
Cofigurable hash types include none, MD5, SHA-1, MD5 and SHA-1. Tip: Performance is affected by which hash type is chosen.

Stealth Mode will turn off all LEDs and LCDs on the Ditto. A physical 'Stealth' switch on the Ditto also serves the same purpose. HTML Logging will save the action log in HTML format as well as the default XML format in the image of the destination drive.

5.2 Network: This screen lets you alter various network settings. If you are unsure or have questions about changing your network settings, contact your network administrator.



5.3 Clone Settings: You can alter Ditto's cloning actions through both typical and advanced settings.

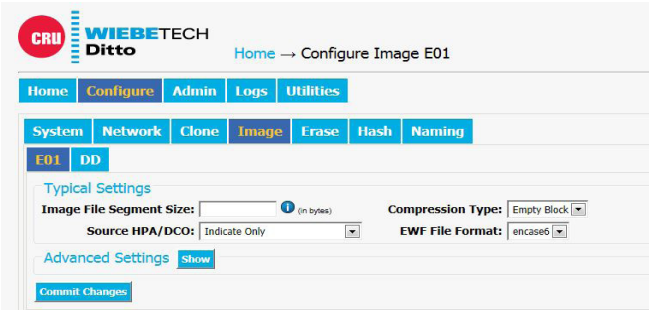


5.3.1 Typical Clone Settings: Through typical settings, you can configure the way that Ditto handles host protected areas (HPAs) and device configuration overlays (DCOs). The options for handling HPAs and DCOs are Indicate Only, Temporarily Bypass HPA, Permanently Unhide HPA, and Permanently Unhide HPA/DCO. Under Typical settings, you can also select to fill to the end of the disk, and to reset HPA after a fill.

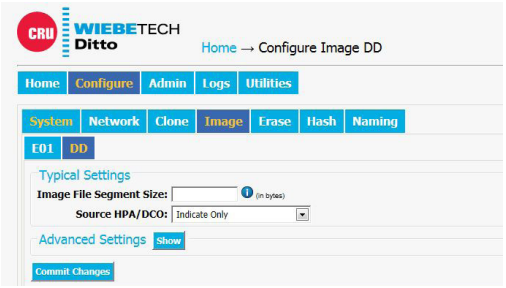
5.3.2 Advanced Clone Settings: Ditto's advanced settings allow you to set the internal buffer size, and to set the force sector size. You can also choose whether or not to exit when a bad sector is encountered

5.4 Image: You can customize typical and advanced settings for both E01 or DD. Click on the E01 or DD tabs directly under "System." To select E01 or DD as the image type, click on the appropriate tab and click "Commit Changes".

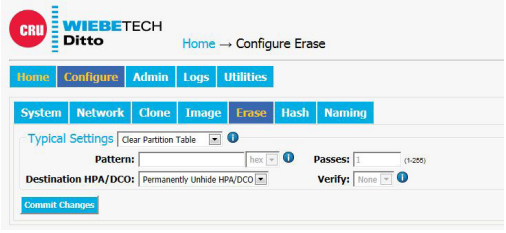
5.4.1 Configurable E01 Image Settings:



5.4.2 Configurable DD Image Settings:



5.5 Erase:

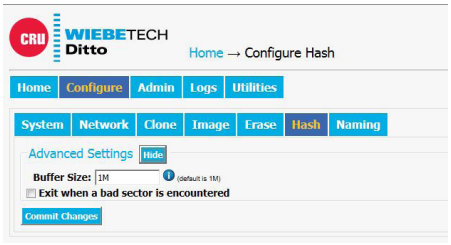


Ditto allows you to select from various erase modes. See the following table for the available erase modes. Find out more about each mode by clicking the "info" button next to the erase mode selection.

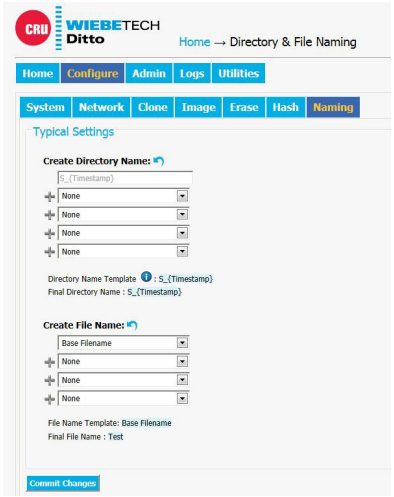
Erase Mode	Explanation
CLEAR PARTITION TABLE	Removes partition table section only
QUICK ERASE	Performs single pass writing all zeroes
CUSTOM ERASE	Performs 1 to 99 passes (user-select-able), overwriting with zeroes or a user-selected pattern
SECURE ERASE N	Initiates the drive's built-in Secure Erase (Normal) function
SECURE ERASE E	Initiates the drive's built-in Secure Erase (Enhanced) function
DOD CLEAR	Performs US Department of Defense "Clear" standard
DOD SANITIZE	Performs US Department of Defense "Sanitize" standard
NIST80088 CLEAR	"Clear" standard defined by NIST special publication 800-88
NIST80088 PURGE	"Purge" standard defined by NIST special publication 800-88

Some of these modes come with pre-set specifications for the erase process. With other modes, you can customize the Pattern (hex or text), HPA/DCO mode (Indicate Only,Permanently Unhide HPA, and Permanently Unhide HPA/DCO), Passes (the number of passes to make, used with custom erase mode only), and Verify (no, minimal, or yes). When these settings are not available, they will appear "grayed-out" on the web browser interface.

5.6 Configuring Advanced Hash Settings: The web browser interface allows you to configure advanced settings used during the Hash Disk Action.

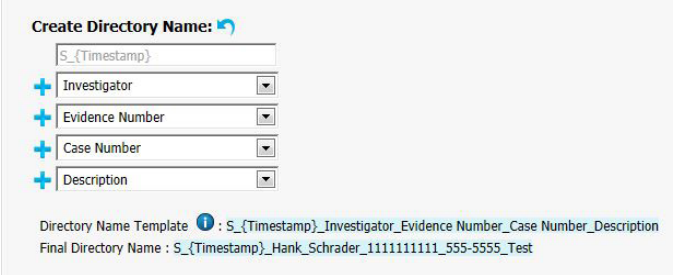


5.7 Naming: In this menu you can configure how directories and files will be named for Imaging actions.

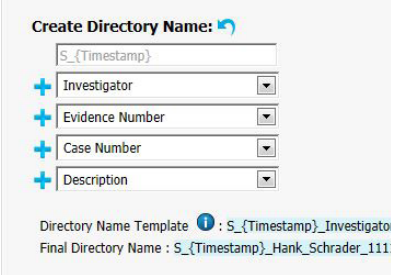


The final directory or filename used in Imaging actions will use the name that is a series of up to four user selectable fields.

As shown below, the user selected fields will be displayed as a template describing the combined current selections. Additionally, the final directory and filename will be displayed using actual values from the Investigation Info panel (see section 4.2) or values detected by Ditto.



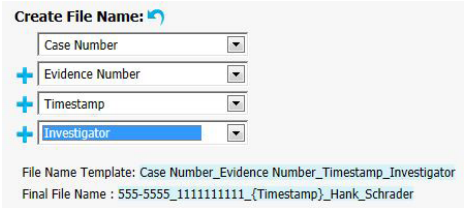
5.7.1 Directory Name Options:



The Create Directory Name section contains four pull down menus that allow the selection of:

- Case Number - User customized field from the Home page Investigation Info panel.
- Description - User customized field from the Home page Investigation Info panel.
- Evidence Number - User customized field from the Home page Investigation Info panel.
- Investigator - User customized field from the Home page Investigation Info panel.
- Source Drive Model Number – Model number of drive attached to the Source eSATA port.
- Source Drive Unique ID – ID or serial number of the drive attached to the Source eSATA port.

The Time Stamp field is shown as grayed out as it is always begins the directory name.



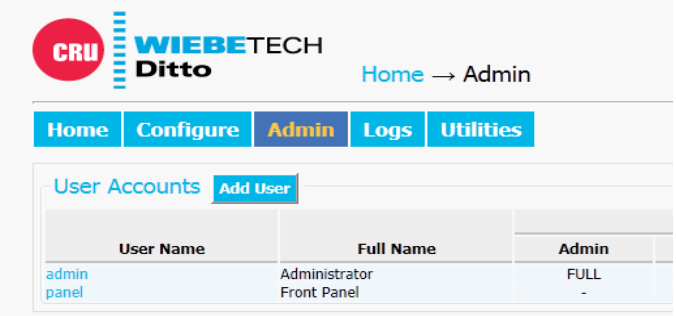
5.7.2 File Name Options: The Create File Name section contains four pull down menus that allow the selection of:

- Base File name - User customized field from the Home page Investigation Info panel.
- Case Number - User customized field from the Home page Investigation Info panel.
- Description - User customized field from the Home page Investigation Info panel.
- Evidence Number - User customized field from the Home page Investigation Info panel.
- Investigator - User customized field from the Home page Investigation Info panel.
- Time Stamp - Time stamp with Year, Month, Day, Hour, Minute and Second.
- Source Drive Model Number – Model number of drive attached to the eSATA port.
- Source Drive Unique ID – ID or serial number of drive attached to the eSATA port.

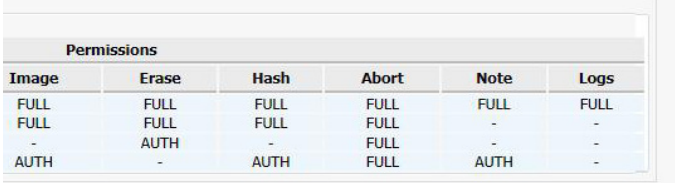
5.7.3 Imaging with Directory & File Naming: After choosing options for the Investigation Info and Naming Directory & Filenames select the Imaging action. You will notice the new directory and file names that you created.

6. Admin

The Admin screen allows the administrator to manage user accounts and assign permission levels for each user. CRU recommends investigator accounts be set up for best practices.



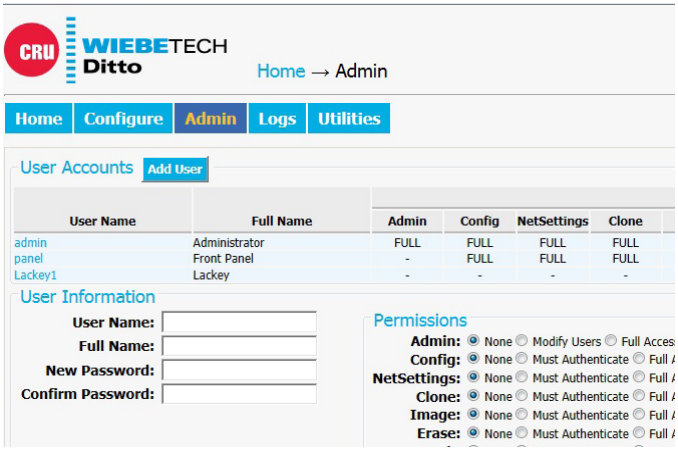
Permission levels on the web browser interface are displayed as FULL, AUTH, or a hyphen. FULL is full access without a password. AUTH is permission level "Must Authenticate" and requires a password to make changes. A hyphen is permission level "none" and permits no access.



Permissions					
Image	Erase	Hash	Abort	Note	Logs
FULL	FULL	FULL	FULL	FULL	FULL
FULL	FULL	FULL	FULL	-	-
-	AUTH	-	FULL	-	-
AUTH	-	AUTH	FULL	AUTH	-

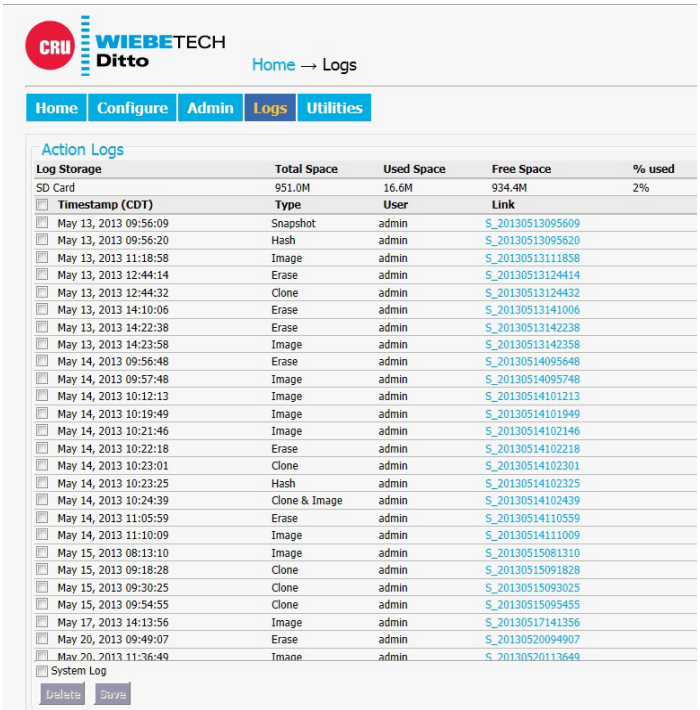
To add a new user, simply click "Add User," enter the user's info, and set the permission levels. When finished, select "Commit Add."

To update a user's name, password, or permissions, simply click on the user name, update the information, and click "Commit Edits."



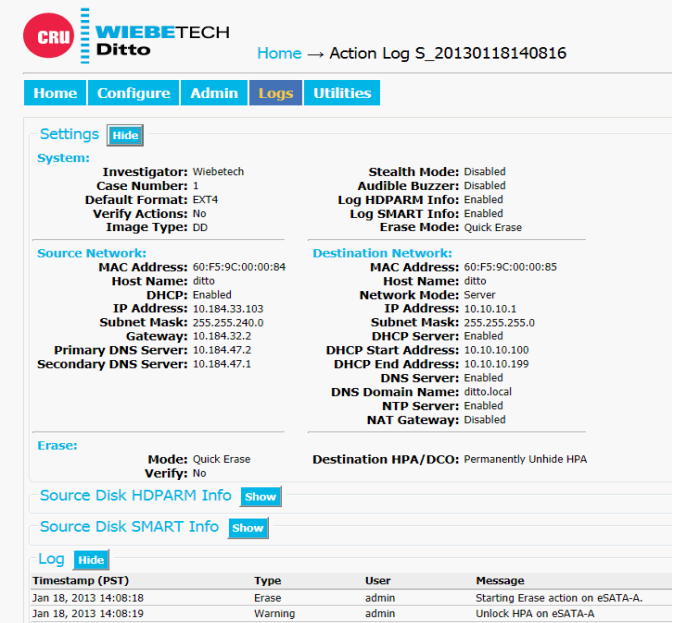
7. Logs

The Logs screen provides information about Ditto's actions. The action logs show the timestamp, the type of action performed, the user, and a link to more information about the performed action.



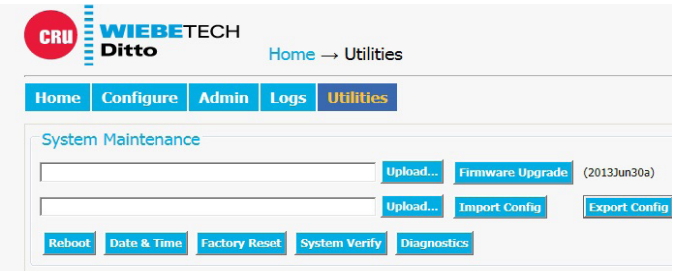
When you click the link, the web browser interface displays the settings that were active when the particular action was run. You can view information on the system settings, the source and destination network, the hash, and the action log. You can also view the source disk HDPARM and SMART information (if configured in "System Settings."

Delete or save an action log entry to a location of your choosing by placing a check next to the entry and selecting "Delete" or "Save" at the bottom of the screen. If you're saving the log, you will be prompted to select either 'XML' or 'HTML' file format. Once you make your selection, click "Submit" to save.



Log information is stored on Ditto's SD card (the SD card slot is on the rear of Ditto). If no SD card is present, the information in the log can be viewed only until Ditto is power cycled. When Ditto is powered down without an SD card, the log becomes blank. Ditto will recognize any log information already present on an inserted SD card and make that information available in the log section of the web interface.

8. Utilities



8.1 System maintenance

Through system maintenance, you can upgrade your Ditto to the latest firmware. Firmware is usually upgraded to add new features or increase compatibility.

Firmware upgrades will be made available on CRU's site www.cru-inc.com/products/Ditto.php. A link will be provided to use for upgrading. Upgrade in one of three ways:

- Use the link provided to upgrade
- Click on the upgrade link, then download the upgrade file to the local computer and browse to it to upgrade
- Download the upgrade file to a USB 2.0 device, and plug that thumb drive into the Ditto. The Ditto will ask if you want to upgrade. (This does not require internet connection or connection to the computer)

To upgrade, paste or type the link into the system maintenance field. Then select "Firmware Upgrade." The web browser interface will then ask you to confirm the upgrade with the current file. You will then be prompted to select "Reboot". The firmware will then be loaded, and the firmware's date is shown next to the "Firmware Upgrade" button.

"Import Config" and "Export Config" save customized configurations. If the user has a standard setup they can save it to a file and then import it to any Ditto they connect to. "Export Config" saves all the current settings on the Configure page.

You may also adjust the date and time, reset Ditto to factory settings, or use "System Verify" to test the firmware and the Ditto to verify the unit is not compromised or corrupted. Select "Diagnostics" to create an HTML file containing information about Ditto's current state and optionally save it to the local file system.

9. Usage of Ditto through the LCD

Ditto can work as a stand alone device with no additional computer required. This can especially be helpful when working with evidence drives in the field.

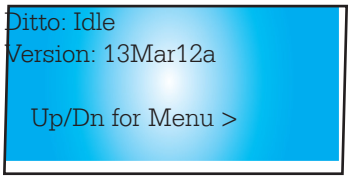
Use the LCD and 4-button navigation interface to clone, image, erase, or hash a disk. You can also adjust settings, view information about the drives and dock, or check on operational status. Which actions and settings can be accessed from the LCD are determined by the permissions set. These are assigned by the system administrator in the web browser interface for the user front panel.
See section 6, Admin.

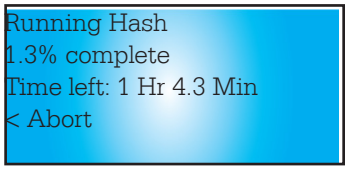
On the 4-button navigation interface, UP and DOWN allow scrolling through options, while ENTER selects and BACK goes back to the previous screen.

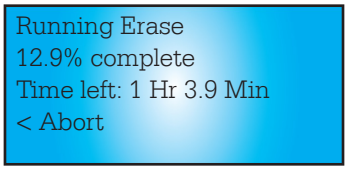
Ditto menu consists of the following screens:

9.1 Status Screen

The Status screen is the default screen. It shows the progress of any current processes or reports the status as idle. The "Idle" Status screen also lists the current firmware on Ditto. Examples of various Status screens are shown below.

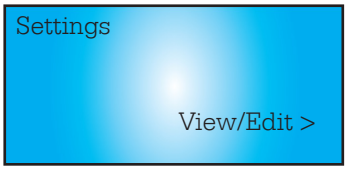




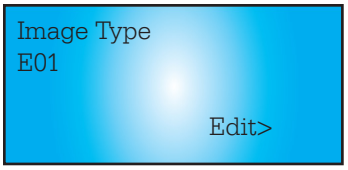


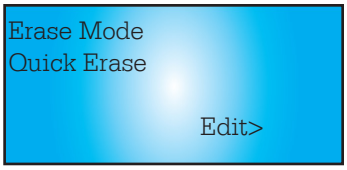
9.2 Settings

From the Settings screen, you can view or edit the current Ditto settings.

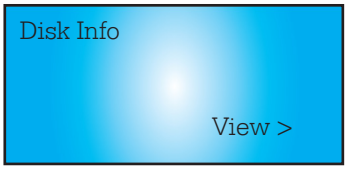


Settings that can be altered include the image type, erase mode, default format, verification, stealth mode, log settings, and various network settings. Examples of setting screens are shown below.





9.3 Disk Info

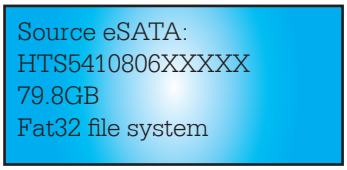


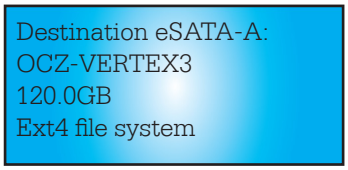
The Disk Info screen shows all available drives attached to either the source or destination ports. Each port is shown only if a drive is connected there.

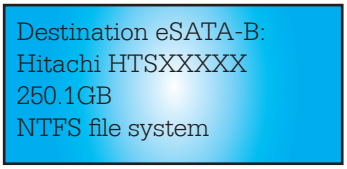
Press ENTER (View) and then UP or DOWN to view the following about each connected drive.

- Model number
- Drive size
- File system

Examples of Disk Info screens are shown below:

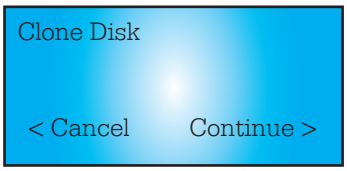


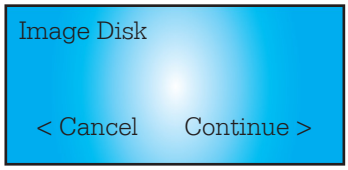


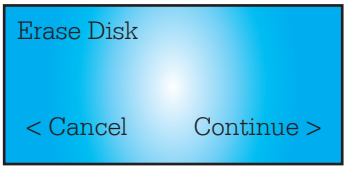


9.4 Perform Action

After you adjust settings to your specifications, you are now ready to put Ditto to work. The Perform Action screen lets you start or abort any of the Ditto's functions using the current settings. With a few punches of the 4-button navigation interface, you can clone, image, clone + image, erase or hash a disk.







As Ditto performs the action, the status and time left will display, along with the option to abort the action.

9.5 Factory Reset

To reset Ditto, press and hold UP, ENTER, and DOWN on the navigation buttons while powering the unit on.

Ditto will start up as normal, but will the LCD will display "Preparing Factory Reset."

You will then be prompted to confirm your choice to reset Ditto.

Press ENTER to continue or BACK to cancel.

You may also use the web browser interface to do a factory reset. See section 8.1 for more information.

10. Technical Specifications

Product name:	Ditto™ Forensic FieldStation
Data Interface Speeds:	• Three eSATA ports each SATA II, 3 Gbps • Two 1000Base-T Ethernet ports both up to 1 Gbps • PATA/IDE up to 133 MB/s • USB 2.0 High Speed up to 480 Mbps
Flash Storage:	• SD slot supports SD, SDHC (MMC, SD, mini SD, microSD compatible with adapters) • Stores Ditto Logs
Drive Types Supported:	• 2.5" and 3.5" SATA and IDE/PATA hard disk drives • SATA Solid State Drives
LED Indicators:	• Power in 5V/12V • USB • Source Network • IDE • eSATA • Expansion • HPA/DCO • Destination Network • eSATA A • eSATA B
Operating System Requirements:	• Windows XP or later • Mac OS X 10.4.x or higher • iOS Tablets/phones • Andriod Tablets/phones • Most versions of Linux
Browser compatibility:	• Internet Explorer • Firefox • Safari • Chrome • Opera
Operating Humidity:	5% to 95%, non-condensing
Power Switch:	2 position: On / Off
DC Power Input:	40W 12V 3.33A barrel connector (center pin positive)
Alternate power input:	SATA power input (computer PSU power connectors)
Compliance:	• EMI Standard: FCC Part 15 Class A • CE • EMC Standard: EN55022, EN55024 • C-Tick
External Material:	All-aluminum construction
Shipping Weight:	5 lbs (2.3kg)
Dimensions:	4.92in x 6.77in x 1.72in (125mm x 172mm x 43.7mm)
Write-Blocked inputs:	• eSATA (SATA), • PATA/IDE, • USB 2.0 • Other input types and drive types supported with Ditto Expansion Modules or drive adapters
Outputs:	Two eSATA (SATA) operable single, dual or mirrored 1000Base-T Ethernet
Stealth Mode:	Disables all lights (LEDs/LCD)
Interface:	Four-line LCD controlled with four soft-touch menu navigation buttons Browser-based Ditto interface allows for direct operation, remote operation, and administration
Image types supported:	• DD • E01
Image/Clone Output modes:	• Single Drive Image • Single Drive Clone • Image and Clone • Image to mirrored disks • Clone to mirrored disks
Hash modes supported:	• None • MD5 • SHA-1 • MD5 + SHA-1 (Hash types are hardware-accelerated; can hash during image or clone)
Erase types supported:	• Clear Partition Table, • Quick Erase, • Custom Erase, • Secure Erase Normal, • Secure Erase Enhanced, • DoD Clear, • DoD Sanitize, • NIST800-88 Clear, • NIST800-88 Purge
Warranty:	3 Years
Support	Your investment in CRU products is backed up by our free technical support for the lifetime of the product. If you need to contact us for any reason, please visit cru-inc.com/support or call us at 1-800-260-9800 or +1-360-816-1800.

TUXERA
LEADING FILE SYSTEM INTEROPERABILITY

Product Warranty
CRU warrants this product to be free of significant defects in material and workmanship for a period of three years from the original date of purchase. CRU's warranty is nontransferable and is limited to the original purchaser.

Limitation of Liability
The warranties set forth in this agreement replace all other warranties. CRU expressly disclaims all other warranties, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose and non-infringement of third-party rights with respect to the documentation and hardware. No CRU dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty. In no event will CRU or its suppliers be liable for any costs of procurement of substitute products or services, lost profits, loss of information or data, computer malfunction, or any other special, indirect, consequential, or incidental damages arising in any way out of the sale of, use of, or inability to use any CRU product or service, even if CRU has been advised of the possibility of such damages. In no case shall CRU's liability exceed the actual money paid for the products at issue. CRU reserves the right to make modifications and additions to this product without notice or taking on additional liability.

FCC Compliance Statement: "This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

In the event that you experience Radio Frequency Interference, you should take the following steps to resolve the problem:

1) Ensure that the case of your attached drive is grounded.
2) Use a data cable with RFI reducing ferrites on each end.
3) Use a power supply with an RFI reducing ferrite approximately 5 inches from the DC plug.
4) Reorient or relocate the receiving antenna.

FC Tested to comply with FCC standards
FOR OFFICE OR COMMERCIAL USE

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