



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, and gigabit network (NFS, iSCSI, SMB)
- Destination outputs – Dual eSATA (SATA) ports to store acquired data on one or two disks, SD card, or gigabit network (iSCSI, NFS, SMB)
- Data acquisition modes – physical image DD, physical image E01 with empty block compression, logical image L01, clone, and simultaneous clone & image.
- Hash types - MD5, SHA-1, MD5 + SHA-1
- Remote usage – Perform operations using the web browser interface from any remote networked location in the world
- System configuration management via front panel LCD or web browser interface
- 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 a user-specific document
- Stealth Mode available for use with night vision goggles (not included)





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1 PRE-INSTALLATION STEPS

1.1 PACKAGE CONTENTS

The following list contains the items that are included in the complete configuration for this device. Please contact CRU if any items are missing or damaged:

Ditto Forensic FieldStation 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	1

1.2 IDENTIFYING PARTS

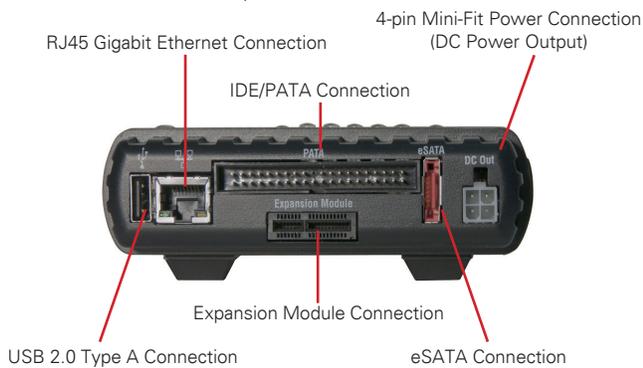
Take a moment to familiarize yourself with the parts of the Ditto Forensic FieldStation. This will help you to better understand the following instructions.



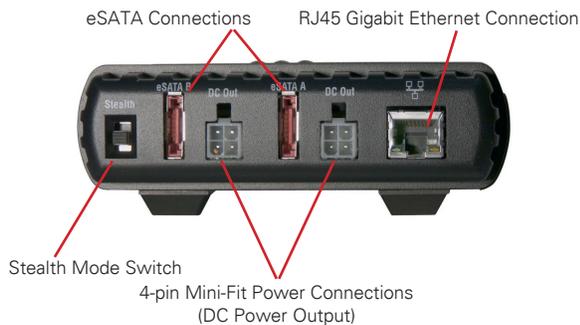


SOURCE INPUTS

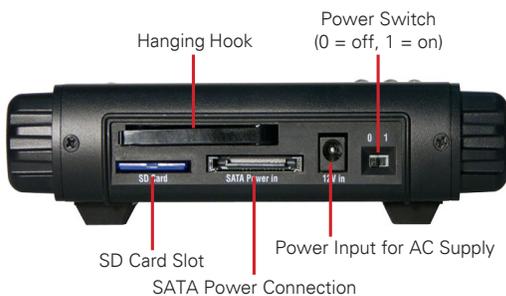
(all inputs are write-blocked)



DESTINATION OUTPUTS



REAR OF THE UNIT



2 SETUP

Plug the “suspect” disks or devices into the **Source Inputs** side of the Ditto Forensic FieldStation. All source inputs are write-blocked to prevent alteration. The source inputs include a USB 2.0 connection for USB devices, an RJ45 gigabit Ethernet connection, an IDE/PATA disk connection, and an eSATA connection for SATA disks or an eSATA device. The expansion module connection is used with the SAS, USB 3.0, and other Ditto Forensic FieldStation expansion modules.

Use the **Destination Outputs** side of the Ditto Forensic FieldStation to store acquired data. The destination output connections include two eSATA connections for SATA disks or eSATA devices and an RJ45 gigabit Ethernet connection.

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

NOTE CRU recommends that you switch the power off to the Ditto when you add or remove a device from it in order to avoid disk damage and data corruption.

3 BROWSER INTERFACE

The Ditto Forensic FieldStation can be configured and operated either from the Front Panel (see Section 9) or through a web browser.

3.1 ACCESSING THE BROWSER INTERFACE

3.1.1 Accessing Via A Network

- Plug an Ethernet cable into the Ethernet port on the “Source Inputs” side of the Ditto Forensic FieldStation.
- 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.
- Connect the power cable to the rear of the Ditto Forensic FieldStation and to the provided AC adapter or to SATA power.
- Turn on the Ditto Forensic FieldStation’s power using the switch on the rear panel. (0 = off, 1 = on)



- e. Type the Ditto Forensic FieldStation's source IP address into your web browser. If you know the address, go down to the last step of this section. If you do not know the address, continue to the next step.
- f. Press the **Down** navigation button on the Ditto Forensic FieldStation 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 The Ditto Forensic FieldStation is configured by default to use DHCP for IP assignment. If you need to change to a static IP address, check with your network administrator and see Section 3.3.2 of this manual.

- i. Log into the browser interface (the default user name and password for the administrator account are both "**admin**").

NOTE CRU recommends that you change the admin account password and create user accounts for individual users as best data management practices.

You are now ready to use the browser interface to configure settings and preview, image, or clone attached disks.

3.1.2 Accessing Via Direct Connection to Your Computer

- a. Plug an Ethernet cable into the Ethernet port on the "Destination Outputs" side of the Ditto Forensic FieldStation.
- b. Connect the other end of the Ethernet cable to your computer's Ethernet port.

STOP! The destination Ethernet port can be configured to act as a server. Attaching a Ditto Forensic FieldStation acting as a server to an existing network through the destination Ethernet port will cause network conflicts. Therefore it is important to attach the Ditto Forensic FieldStation directly to your computer instead. To change this setting so that the Ditto Forensic FieldStation no longer acts as a server, see Section 5.2.3.

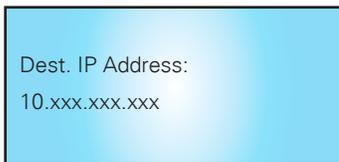
- c. Connect the power cable to the rear of the Ditto Forensic FieldStation and to the provided AC adapter or to SATA power.
- d. Turn on the Ditto Forensic FieldStation's power using the switch on the rear panel. (0 = off, 1 = on)



- e. Type the Ditto Forensic FieldStation’s destination IP address into your web browser. This is the default IP address for the destination Ethernet port is **10.10.10.1**. If you have changed the address and do not remember it, continue to the next step. Otherwise, go down to the last step of this section.
- f. Press the **Down** navigation button on the Ditto Forensic FieldStation until you reach the “Settings” menu. Then press **Enter**.



- g. Press the **Up** or **Down** navigation buttons until you reach the “Dest. IP Address” screen.
- h. Type the IP address shown into your web browser.



- i. Log into the browser interface (the default user name and password for the administrator account are both “**admin**”).

NOTE CRU recommends that you change the admin account password and create user accounts for individual users as best data management practices.

You are now ready to use the browser interface to configure settings and preview, image, or clone attached disks.

3.2 ICONS USED IN THE BROWSER INTERFACE

The browser interface uses several icons that may be clicked on to perform certain actions.

ICON	ACTION
 Information	Opens a window with a brief description of the setting the information icon appears next to.
 Refresh	Refreshes the field that the icon appears next to in order to give updated information.
 Reset	Loads the defaults for the setting that the Refresh icon appears next to.

3.3 USER ACCOUNTS

The Ditto Forensic FieldStation employs a user account system to control access to its features. The “Login” screen presents you with the ability to log in through http, or you can click the **Secure Login (HTTPS)** link to log in securely. Accept the certificate and/or continue to the website, even if your browser tells you it does not recognize it.

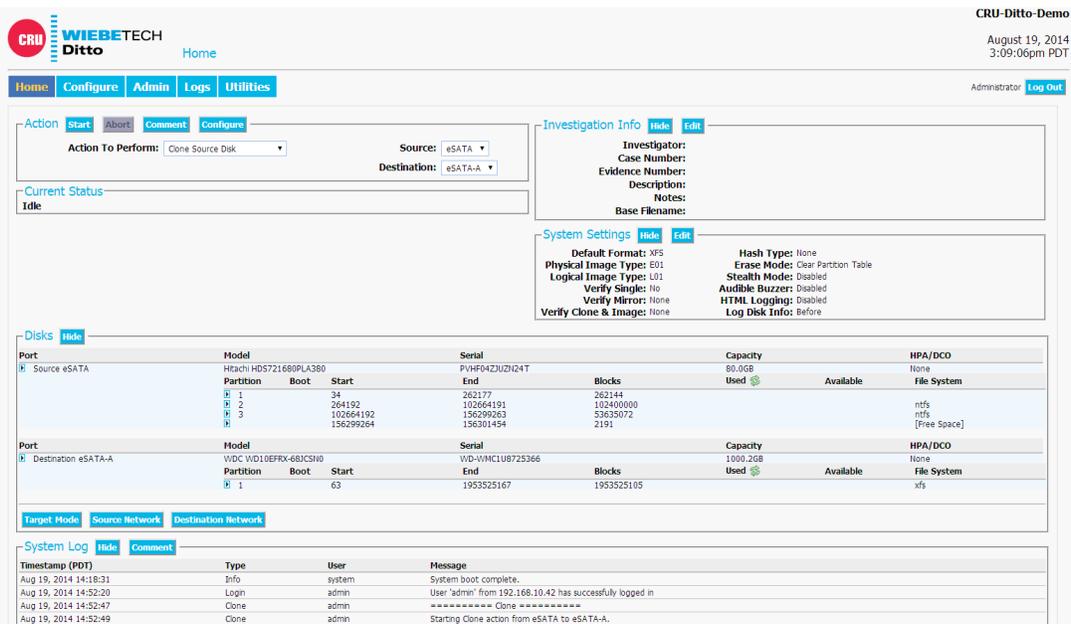


Figure 1. The “Home” screen.

The default user name and password for the Administrator account are both “**admin**”. CRU recommends that you change the admin account password and create user accounts for individual users as best data management practices.

Click on the **Log Out** button at the top right of the browser interface to log out.

4 HOME SCREEN

The “Home” screen is where you will perform most of your operations with the Ditto Forensic FieldStation, and is the default screen to load upon logging into the browser interface. Click on the **Home** tab to access the “Home” screen from any other area of the browser interface.

4.1 ACTION

The “Action” panel lets you start, abort, and document the following actions. The “Start” button begins the action. The “Abort” button stops the action in progress. Click the **Comment** button to write a note that will be appended to the log. Click the **Configure** button to modify the default settings for each action, which can also be modified on the “Configure” screen (See Section 5).

4.1.1 Clone Source Disk

The Ditto Forensic FieldStation makes an exact duplicate of the source disk and can clone to a single or mirrored destination disk.

NOTE

While cloning the source disk, the Ditto Forensic FieldStation can also hash the source disk using the MD5, SHA-1, or MD5 + SHA-1 algorithms. Select the hash type under the “System Settings” panel on the “Home” screen. See Section 4.3. Hashing while using both MD5 + SHA-1 significantly reduces performance.



To clone, follow these steps:

- a. Using the browser interface, select **Clone Source Disk** from the “Action to Perform” drop-down box.
- b. Select the source disk to clone from the “Source” drop-down box.
- c. Select the destination disk from the “Destination” drop-down box. To clone to two destination disks at the same time, select the **Mirror** option. Destination disks do not have to be the same physical media as the source disk, but each must be larger than the source disk.

NOTE For the Mirror feature to be shown, two destination disks must be attached.

- d. Click the **Start button**. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

NOTE You can increase the performance of the operation by clicking off of the browser interface window so that it is not continually updated.

You can view the results of the clone action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a filename with a date/timestamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

4.1.2 Physical Image Source Disk

The Ditto Forensic FieldStation creates an E01 or DD image of the source disk on one or two destination disks.

NOTE While imaging the source disk, the Ditto Forensic FieldStation can also hash the source disk using the MD5, SHA-1, or MD5 + SHA-1 algorithms. Select the hash type under the “System Settings” panel on the “Home” screen. See Section 4.3. Hashing while using both MD5 + SHA-1 significantly reduces performance.

For the fastest performance, we recommend utilizing an NTFS file system for Windows, HFS+ for Mac, or XFS for Linux machines. To create a physical image, follow these steps:

- a. Using the browser interface, select **Physical Image Source Disk** from the “Action to Perform” drop-down box.
- b. Select the source disk to image from the “Source” drop-down box.
- c. Select which partition(s) to image from the “Partition” drop-down box. Choose **All** to image the entire source disk.



Figure 2. The “Action” section on the “Home” screen, showing the options available for the “Clone Source Disk” action.



Figure 3. The “Action” section on the “Home” screen, showing the options available for the “Physical Image Source Disk” action.



- d. Select the destination disk for the image from the “Destination” drop-down box. To image to two destination disks at the same time, select the **Mirror** option. Destinations do not have to be the same physical media as the source disk, but each must be larger than the source disk.

NOTE For the Mirror feature to be shown, both destination disks must be empty. A quick way to accomplish this is to use the Ditto Forensic FieldStation to erase each disk by selecting **Erase Destination Disk** from the “Action to Perform” drop-down box and clearing each disk’s partition table (see Section 4.1.5). You must also go to the **Erase tab** on the “Configure” Screen and make sure that “Format After Erase” is unchecked (see Section 5.6), because if a destination disk has a partition on it, the “Mirror” option will not appear.

- e. Select which type of physical image you would like to create from the “Physical Image Type” drop-down box. The image types available are **E01** or **DD**. (You can modify which image type appears by default in the drop-down box on the “Configure” screen’s “System” tab. See Section 5.1.)
- f. Click the **Start button**. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

NOTE You can increase the performance of the operation by clicking off of the browser interface window so that it is not continually updated.

You can view the results of the image action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a filename with a date/timestamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

4.1.3 Logical Image Source Disk

Logical imaging allows an investigator to quickly scan the contents of a hard disk and image only the files and folders relevant to the investigation into an L01, ZIP, TAR, or LIST file format. Data can be imaged to one or two destination disks. To create a logical image, follow these steps:

- a. Select **Logical Image Source Disk** from the “Action to Perform” drop-down box.
- b. Select the source disk to image from the “Source” drop-down box, then choose which of the partition(s) to image from the “Partition” drop-down box.
- c. Select the destination disk for the logical image from the “Destination” drop-down box, then choose the destination disk partition from the “Partition” drop-down box. To image to two destination disks at the same time, select the **Mirror** option. Destination disks do not have to be the same physical media as the source disk, but each must be larger than the source disk.

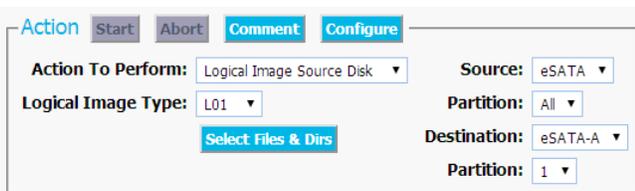


Figure 4. The “Action” section on the “Home” screen, showing the options available for the “Logical Image Source Disk” action.



NOTE For the Mirror feature to be shown, both destination disks must be empty. A quick way to accomplish this is to use the Ditto Forensic FieldStation to erase each disk by selecting **Erase Destination Disk** from the “Action to Perform” drop-down box and clearing each disk’s partition table (see Section 4.1.5). You must also go to the **Erase tab** on the “Configure” Screen and make sure that “Format After Erase” is unchecked (see Section 5.6), because if a destination disk has a partition on it, the “Mirror” option will not appear.

- d. Select which type of logical image you would like to create from the “Logical Image Type” drop-down box. The format options available are L01, TAR, ZIP, or LIST. (You can modify which logical image type appears by default in the drop-down box on the “Configure” screen’s “System” tab. See Section 5.1.)

NOTE “Logical Image Source Disk” actions create a report of directories and files chosen from the source disk as well as their file sizes and any error messages encountered. This report can be viewed from within the browser interface and can be exported as an Excel spreadsheet. See Section 7.1.4.

- e. Click on **Select Files & Dirs**. A dialog box will open.
- f. Use the navigation tree to select the files and folders you wish to image (See Figure 5).
- g. Click the **Start button** at the bottom of the dialog box. A “Completed” message box will pop up when the action has finished. Click on the message to continue.



Figure 5. The File Navigation Tree.

You can view the results of the logical image action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a filename with a date/timestamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

4.1.4 Clone and Image Source Disk

This action simultaneously creates a clone of the source disk on one destination disk and creates an image on a second destination disk. **Two destination disks are required for this action.**

NOTE While cloning and imaging the source disk, the Ditto Forensic FieldStation can also hash the source disk using the MD5, SHA-1, or MD5 + SHA-1 algorithms. Select the hash type under the “System Settings” panel on the “Home” screen. See Section 4.3. Hashing while using both MD5 + SHA-1 significantly reduces performance.

To simultaneously create a clone and a physical image of the source disk, follow these steps:

- a. Select **Clone & Image Source Disk** from the “Action to Perform” drop-down box.
- b. Select the source disk to clone and image from the “Source” drop-down box.



Figure 6. The “Action” section on the “Home” screen, showing the options available for the “Clone & Image Source Disk” action.



- c. Select the destination disk for the clone from the “Clone Destination” drop-down box and the destination disk for the image from the “Image Destination” drop-down box. Destination disks do not have to be the same physical media as the source disk, but each must be larger than the source disk.
- d. Select the destination disk partition on which to save the image file from the “Image Partition” drop-down box.
- e. Select which type of physical image you would like to create from the “Physical Image Type” drop-down box. The image types available are **E01** or **DD**. (You can modify which image type appears by default in the drop-down box on the “Configure” screen’s “System” tab. See Section 5.1.)
- f. Click the **Start button**. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

You can view the results of the clone and image action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest links, which will be denoted by a filename with a date/timestamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

4.1.5 Erase Destination Disk

The Ditto Forensic FieldStation erases the destination disk using your preferred Erase Mode. The Erase Modes available are Clear Partition Table, Quick Erase, Custom Erase, Secure Erase Normal, Secure Erase Enhanced, DOD Clear, DOD Sanitize, NIST800-88 Clear, and NIST800-88 Purge.

To erase a disk, follow these steps:

- a. Select Erase Destination Disk from the “Action to Perform” drop-down box.
- b. Select the Erase Mode to use from the “Erase Mode” drop-down box. (You can modify which erase mode appears by default in the drop-down box on the “Configure” screen’s “System” tab. See Section 5.1.)
- c. Select the target destination disk from the “Target” drop-down box.
- d. Click the **Start button**. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

You can view the results of the erasure action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a date/time-stamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.



Figure 7. The “Action” section on the “Home” screen, showing the options available for the “Erase Destination Disk” action.



Format After Erase

You can configure the Ditto Forensic FieldStation to automatically format a disk after you erase it. Click on the **Configure tab** to go to the “Configure” screen. Then click on the **Erase tab** make sure that “Format After Erase” is checked for each of the erase modes on which you’d like to enable this setting.

4.1.6 Hash Disk

The Ditto Forensic FieldStation will hash any source or a destination disk using your preferred algorithm. Hash values are saved in the System Log. The available algorithms are “MD5”, “SHA-1”, or “MD5 + SHA-1”.

To hash a disk, follow these steps:

- a. Select **Hash Disk** from the “Action to Perform” drop-down box.
- b. Select your preferred hash algorithm from the “Hash Type” drop-down box. (You can modify which hash algorithm appears by default in the drop-down box on the “Configure” screen’s “System” tab. See Section 5.1.)
- c. Select the target disk from the “Target” drop-down box.
- d. Select the partition you want to hash from the “Partition” drop-down box.
- e. Click the **Start button**. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

You can view the results of the hash action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a filename with a date/timestamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

4.1.7 Snapshot Disk

The Ditto Forensic FieldStation provides S.M.A.R.T. and hdparm information for any source or destination disk connected to itself. No clone or image request needs to be done.

To create a snapshot of a disk, follow these steps:

- a. Select **Snapshot Disk** from the “Action to Perform” drop-down box.
- b. Select the target disk from the “Target” drop-down box.
- c. Click the **Start button**. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

You can view the results of the snapshot action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a date/time-



Figure 8. The “Action” section on the “Home” screen, showing the options available for the “Hash Disk” action.



Figure 9. The “Action” section on the “Home” screen, showing the options available for the “Snapshot Disk” action.



stamp format: "S_yyymmddhhmmss". Alternatively, you can click on the **Logs** button from the top menu bar.

Scroll to "eSATA Extended Disk Info" to see recorded data, including S.M.A.R.T. and hdparm information.

4.1.8 NetView Scan

NetView is a network tool that can be used to discover machines on a network and even probe them for specific services that they may be running. This capability can help an investigator locate physically hidden computers or quickly determine whether a machine is acting as a data storage device that the Ditto Forensic FieldStation can image.

See Section 11.1 for more information about the NetView Scan feature.

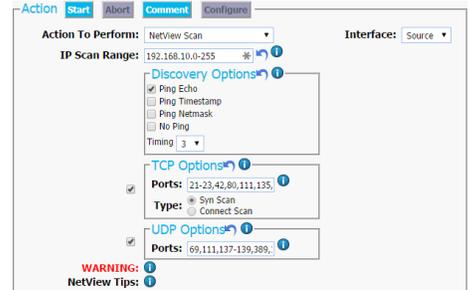


Figure 10. The "Action" section on the "Home" screen, showing the options available for the "Netview Scan" action.

4.2 INVESTIGATION INFO

The Investigation Info panel groups related information that may also be used in creating custom directories and file names (see Section 5.8). The "Hide" button allows you to minimize the panel.

Click the **Edit** button to enter information about the Investigator, Case Number, Evidence Number, Description, Notes, and a Base Filename prefix for an E01 or DD image.

Each field is filtered to block non-printable ASCII characters. Any characters at the file system level 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.

The Ditto Forensic FieldStation will generate an error message if you enter a non-printable ASCII character or if your message exceeds the 58 character limit. Additionally, when the final directory or filename that uses any of these fields is created, another level of filtering is applied.



Figure 11. The "Investigation Info" section.

STOP! 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 SYSTEM SETTINGS

Displays the current configuration settings of the Ditto Forensic FieldStation. These settings are loaded as the default settings for the actions you perform in the "Action" panel. The "Hide" button allows you to minimize the panel. Click the **Edit** button to customize these settings. See Section 5.1 for details on each option.



Figure 12. The "System Settings" section.

4.4 CURRENT STATUS

Reports either as "Idle" or displays info about the action that the Ditto Forensic FieldStation is currently performing.

4.5 DISKS

Displays information about the attached disks that are currently connected to the Ditto Forensic FieldStation. The "Hide" button allows you to minimize the panel. To see the

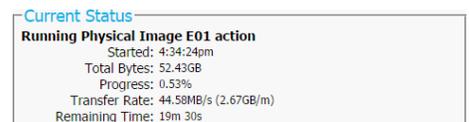


Figure 13. The "Current Status" section, displaying the status of a Physical Image action.



Disks Hide								
Port	Model	Serial			Capacity	HPA/DCO		
Source eSATA	Hitachi HDS721680PLA380	PVHF04ZJUZ24T			80.0GB	None		
	Partition	Boot	Start	End	Blocks	Used	Available	File System
	1	34		262177	262144			
	2		264192	102664191	102400000			ntfs
	3		102664192	156299263	53635072			ntfs
			156299264	156301454	2191			[Free Space]
Port	Model	Serial			Capacity	HPA/DCO		
Destination eSATA-A	WDC WD10EFRX-68JCSN0	WD-WMC1U8725366			1000.2GB	None		
Port	Model	Serial			Capacity	HPA/DCO		
Destination eSATA-B	ST2000DM001-9YN164	Z240A3R3			2000.4GB	None		
	Partition	Boot	Start	End	Blocks	Used	Available	File System
	1	63		3907029167	3907029105			ntfs

Target Mode Source Network Destination Network

Figure 16. The “Disks” section on the “Home” screen.

available space a disk has, click the **green double arrow icon** next in the “Used” column header (see Figure 14). The disk usage will refresh and give an updated amount.

The “Target Mode” button allows you to view disks attached to the Ditto Forensic FieldStation with third party data acquisition tools. The “Source Network” and “Source Destination” buttons are used for attaching iSCSI devices as well as NFS and SMB shares to the Ditto Forensic FieldStation. For more information, see Section 11.

4.5.1 Previewing and Browsing Disks

To browse or download disk data, click on a partition’s number under the disk’s “Partition” column and then select **Preview** (see Figure 15). This opens up a file explorer window where you can navigate through the files and folders on the disk.

Used	Available
6.3G (0%)	1.8T

Figure 15. Clicking the green double arrow icon displays and updates amount of space currently used and available.

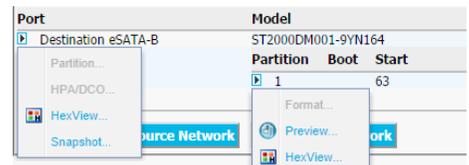


Figure 14. Drop-down menus for a disk (left) and a disk’s partition (right).

Directory Toolbar

ICON	ACTION
Home	Returns to the root of the partition that you are Previewing.
Reload	Refreshes the “Directory” list in order to give updated information.
Search	Opens a “Search” dialog that allows you to perform keyword searches for subdirectories or file content that exist within the current subdirectory.
View	Opens the selected file. Images and PDF files will open in a preview window. Other files will open a dialog box to download the file to your computer.
HexView	Opens the file in the Ditto Forensic FieldStation’s built-in hexadecimal viewer.
Download	Opens a dialog box to download the selected file to your computer.
About...	Displays information about the engine used to preview disks.
Show Directories	Toggleable switch that hides or shows directories in the “Directory” list.



System Log			
Timestamp (PDT)	Type	User	Message
Aug 19, 2014 14:18:31	Info	system	System boot complete.
Aug 19, 2014 14:52:20	Login	admin	User 'admin' from 192.168.10.42 has successfully logged in
Aug 19, 2014 14:52:47	Clone	admin	===== Clone =====
Aug 19, 2014 14:52:49	Clone	admin	Starting Clone action from eSATA to eSATA-A.
Aug 19, 2014 14:52:49	Clone	admin	S_20140819145247
Aug 19, 2014 14:52:50	Clone	admin	Filling eSATA-A to End of Disk.
Aug 19, 2014 14:53:08	Abort	admin	Aborting Clone action
Aug 19, 2014 14:53:08	Error	admin	Failed to fill eSATA-A to end of disk.
Aug 19, 2014 14:53:08	Abort	admin	Clone action has been aborted
Aug 19, 2014 14:53:51	Logical Image	admin	===== Logical Image =====
Aug 19, 2014 14:54:00	Notice	admin	Partitioned eSATA-A and added XFS filesystem.
Aug 19, 2014 14:54:00	Notice	admin	Using default Image File Segment Size of '8E'.
Aug 19, 2014 14:54:01	Logical Image	admin	Starting Logical Image L01 action from eSATA, partition 2 to eSATA-A.
Aug 19, 2014 14:54:01	Logical Image	admin	S_20140819145351
Aug 19, 2014 14:56:12	Logical Image	admin	Finished Logical Image L01 action.
Aug 19, 2014 15:37:37	Snapshot	admin	===== Snapshot =====

Figure 17. The “System Logs” section on the “Home” screen.

NOTE If you right-click on a file, the “View”, “HexView”, and “Download” options may be selected, depending on the file type.

4.5.2 View Hexidecimal Data

To view a disk’s hexadecimal data, click on the disk name under the “Port” column and then select **Hex-View**. To view a disk partition’s hexadecimal data, click on the partition’s number under the disk’s “Parti-tion” column and then select **HexView** (see Figure 14).

4.5.3 View Snapshot Data

To view a disk’s snapshot information, click on the disk name under the “Port” column and then select **Snapshot**.

4.6 SYSTEM LOG

Shows the actions that the Ditto Forensic FieldStation has performed. The “Hide” button allows you to mini-mize the panel. The “Comment” button allows you to write a note that is appended to the log.

If there is no SD card present in the SD card slot, this panel displays the logs that have been stored in vola-tile memory since the Ditto Forensic FieldStation’s last power cycle. These logs are deleted when the Ditto Forensic FieldStation is powered down. If there is an SD card present, this panel displays all actions saved on the SD Card.

To view the log details of a particular action, click on the link under the “Message” column. which will be denoted by a filename with a date/timestamp format: “S_yyyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

5 CONFIGURE SCREEN

The “Configure” screen allows you to modify the way the Ditto Forensic FieldStation functions to suit your spe-cific needs. Click on the **Configure tab** to access the “Configure” screen from the browser interface.

5.1 SYSTEM

The “System” tab allows you to view and customize the following settings. This information is also displayed in the “System Settings” panel on the “Home” screen. When you are finished, click the **Commit Changes** button to save the changes.

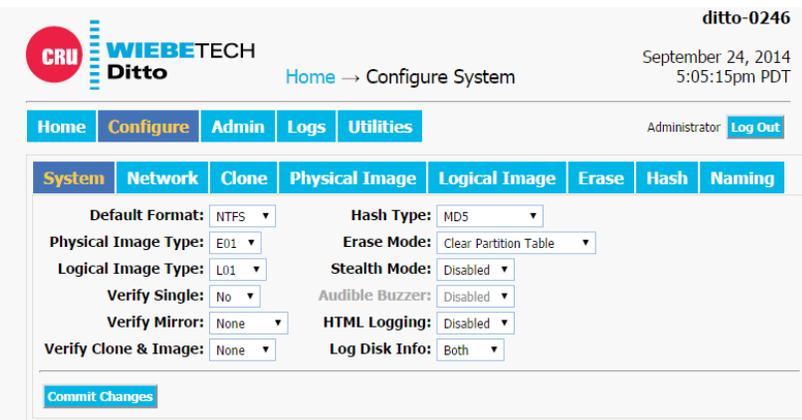


Figure 18. The “Configure” screen, showing the “System” tab.

- **Default Format:** This is the default file system that will be used to format destination disks when they are used in actions that the Ditto Forensic FieldStation performs.
- **Physical Image Type:** Sets the default physical image type for all actions that create a physical image.
- **Logical Image Type:** Sets the default logical image type for the “Logical Image Source Disk” action.
- **Verify Single:** Determines whether individual destination disk are hashed and compared to the hash value of the source disk’s hash value.
- **Verify Mirror:** Determines whether mirrored destination disks are hashed and compared to the hash value of the source disk’s hash value(s). You can choose to verify eSATA-A or eSATA-B individually, both disks, or none.
- **Verify Clone & Image:** Determines whether cloned and imaged disks are hashed and compared to the hash value of the source disk’s hash value during a “Clone & Image Source Disk” action. You can choose to verify the clone, the image, both, or none.
- **Hash Type:** Sets the default hash algorithm that will be used for disk verification and the “Hash Disk” action. The available algorithms are MD5, SHA-1, or MD5 + SHA-1. Note that hashing while using both MD5 + SHA-1 significantly reduces performance.
- **Erase Mode:** Sets the default erase mode that will be used for all actions that require erasing disks.
- **Stealth Mode:** Turns off all LEDs and LCDs on the Ditto Forensic FieldStation. The physical “Stealth Mode” Switch serves the same purpose (see Section 1.2). If Stealth Mode is enabled from the browser interface, the physical switch cannot override it.
- **Audible Buzzer:** This is a planned feature that is not currently implemented. The audible buzzer will alert the user to various actions that occur when using the Ditto Forensic FieldStation.
- **HTML Logging:** Logs are always saved in .XML format. This option causes the Ditto Forensic FieldStation to save logs in HTML format as well.
- **Log Disk Info:** Determines whether S.M.A.R.T. and hdparm disk information is logged before running an action, after running an action, both, or not at all. CRU recommends that you log both types of disk information.



5.2 NETWORK

The “Network” tab allows you to view and customize the following settings. If you are unsure or have questions about changing your network settings, contact your network administrator. When you are finished, click the **Commit Changes** button to save the changes.

5.2.1 Host Name

Allows you to change what name for the Ditto Forensic FieldStation will be displayed on a network. Host names are **not** case sensitive, but **must** begin with any letter “A-Z”. They can contain the the letters A-Z, numbers 0-9, underscore “_”, and dash “-” characters. Host names must also be limited to 64 characters.

5.2.2 Source Network

The “Source Network” section displays the source Ethernet port’s MAC Address as well as its IP assignment method. You can choose either “DHCP (Auto Config)” or “Static IP (Manual Settings)” from the top drop-down box.

The “Remote Accessibility” drop-down box allows you to choose whether or not the Ditto Forensic Field-Station responds to any network traffic via the source Ethernet port.

5.2.3 Destination Network

The “Destination Network” section displays the source Ethernet port’s MAC Address as well as its networking mode. You can choose either “Server”, “Client (DHCP)”, or “Client (Static IP)” from the drop-down box.

Server

“Server” allows you to configure the Ditto Forensic FieldStation for use as a server. This can be helpful if you are connecting an iSCSI device to the destination Ethernet port, for example (see Section 11.3.2), or you are connecting Ditto directly to your computer instead of through your office network. The default settings below will work for most environments. This is an advanced option, so do not customize the default server configuration below unless directed to do so by your network administrator.

- IP Address:** 10.10.10.1
- Subnet Mask:** 255.255.255.0
- DHCP Server:** Enabled
- DHCP Start Address:** 10.10.10.100

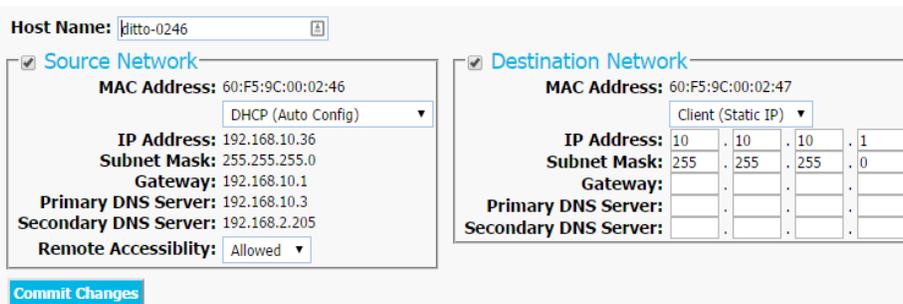


Figure 19. The “Network” tab on the “Configure” screen, showing both the “Source” and “Destination” network settings.



DHCP End Address: 10.10.10.199

DNS Server: Enabled

DNS Domain Name: ditto.local

NTP Server: Enabled

NAT Gateway: Disabled



Do not connect the Ditto Forensic FieldStation to another network while it is configured as a server. Doing so will cause network conflicts and may disrupt network traffic.

Client (DHCP)

This option automatically configures the destination Ethernet port to connect to the attached network.

Client (Static IP)

This option allows you to manually configure the destination Ethernet port to connect to the attached network.

5.3 CLONE

The “Clone” tab allows you to view and customize the following settings for disk cloning actions, including the “Clone & Image Source Disk” action. When you are finished, click the **Commit Changes** button to save the changes.

5.3.1 Typical Settings

- **Source HPA/DCO:** Sets whether the cloning action should indicate in the log that there is an HPA (host protected area) or DCO (device configuration overlay) present, temporarily bypass the HPA, permanently unhide the HPA, or permanently unhide both the HPA and DCO.
- **Fill to End of Disk:** Check this box to enable zeroes to be written to the end of the disk.
- **Reset HPA After Fill:** Sets the HPA on the destination disk so that the capacity of the destination disk is identical to the capacity on the source disk.

5.3.2 Advanced Settings

The advanced settings may be hidden. Click the **Show button** to reveal them.

- **Buffer Size:** Sets the the buffer size used by the Ditto Forensic FieldStation during a cloning action. The minimum size is 512K (kilobytes). The default size of 1M (megabyte) works best for most uses. The maximum size is limited by the target file system.
- **Exit when a bad sector is encountered:** Aborts the cloning action if the Ditto Forensic FieldStation encounters a bad sector on the source disk.

5.4 PHYSICAL IMAGE

The “Physical Image” tab allows you to view and customize the following settings for physical imaging actions, including the “Clone & Image Source Disk” action. There are separate options available for both the “E01” and “DD” image types. When you are finished, click the **Commit Changes** button to save the changes.



5.4.1 E01

Click on the **E01 tab** to reveal the E01 image settings.

Typical Settings

- **Image File Segment Size:** Allows you to specify the size in bytes that image file segments should be. The minimum size is 1M (megabyte). The maximum size is limited by the target file system. If this field is left blank, the maximum size will be used. Click the "I" information icon for more information.
- **Source HPA/DCO:** Sets whether the physical image action should indicate in the log that there is an HPA (host protected area) or DCO (device configuration overlay) present, temporarily bypass the HPA, permanently unhide the HPA, or permanently unhide both the HPA and DCO.
- **Compression Type:** Sets whether the action should use empty block compression or no compression.
- **EWFF File Format:** Choose which EnCase image file format should be used during E01 physical images. CRU recommends using "encase6" for most acquisitions.

Advanced Settings

The advanced settings may be hidden. Click the **Show button** to reveal them.

- **Buffer Size:** Sets the the buffer size used by the Ditto Forensic FieldStation during an E01 physical image action. The minimum size is 512K (kilobytes). The default size of 1M (megabyte) works best for most uses. The maximum size is limited by the target file system.
- **Swap Byte Pairs of the Media Data (endian conversion):** Check this box if you need to convert from big-endian to little-endian or vice-versa, which may be necessary for disks used in older x86 or PowerPC-based systems.
- **Wipe Sectors on Read Error (mimic EnCase-like behavior):** If a read error is encountered during an E01 physical image action, the Ditto Forensic FieldStation will write out zeroes to fill the sector.
- **Read Error Retries:** Specifies the number of tries the Ditto Forensic FieldStation will try to read a sector before moving on to the next sector.

5.4.2 DD

Click on the **DD tab** to configure the DD image settings.

Typical Settings

- **Image File Segment Size:** Allows you to specify the size in bytes that image file segments should be. The minimum size is 1M (megabyte). The maximum size is limited by the target file system. If this field is left blank, the maximum size will be used. Click the "I" information icon for more information.
- **Source HPA/DCO:** Sets whether the physical image action should indicate that there is an HPA (host protected area) or DCO (device configuration overlay) present, temporarily bypass the HPA, permanently unhide the HPA, or permanently unhide both the HPA and DCO.



Advanced Settings

The advanced settings may be hidden. Click the **Show button** to reveal them.

- **Buffer Size:** Sets the the buffer size used by the Ditto Forensic FieldStation during a DD physical image action. The minimum size is 512K (kilobytes). The default size of 1M (megabyte) works best for most uses. The maximum size is limited by the target file system.
- **Exit when a bad sector is encountered:** Aborts the DD physical image action if the Ditto Forensic FieldStation encounters a bad sector on the source disk.

5.5 LOGICAL IMAGE

The “Logical Image” tab allows you to view and customize the following settings for the “Logical Image Source Disk” action. There are different options available for each of the L01, ZIP, TAR, and LIST file types. When you are finished, click the **Commit Changes** button to save the changes.

5.5.1 L01

Click on the **L01 tab** to configure the L01 image settings.

Typical Settings

- **Image File Segment Size:** Allows you to specify the size in bytes that image file segments should be. The minimum size is 1M (megabyte). The maximum size is limited by the target file system. If this field is left blank, the maximum size will be used. Click the “i” information icon for more information.
- **Log File Access/Modify/Change Times:** Check this box to log the access, modify, and change timestamps of files and directories during an L01 logical image action.
- **Compression Type:** Sets whether the action should use empty block compression or no compression.
- **Per File Hash Type:** Sets the default hash algorithm that will be used for individual file verification. The available algorithms are MD5 and SHA-1. The default setting is “None”.

Advanced Settings

The advanced settings may be hidden. Click the **Show button** to reveal them.

- **Buffer Size:** Sets the the buffer size used by the Ditto Forensic FieldStation during an L01 logical image action. The minimum size is 512K (kilobytes). The default size of 1M (megabyte) works best for most uses. The maximum size is limited by the target file system.
- **Read Error Retries:** Specifies the number of tries the Ditto Forensic FieldStation will try to read a sector before moving on to the next sector.



5.5.2 ZIP, TAR, and LIST Settings

Click on the **ZIP**, **TAR**, or **LIST** tabs to configure the settings for each of those logical image types.

- **Log File Access/Modify/Change Times:** Check this box to log the access, modify, and change timestamps of files and directories during the logical image action. This setting is format-dependent.

5.6 ERASE

The Ditto Forensic FieldStation allows you to view and customize settings for how the Ditto Forensic FieldStation erases disks.

5.6.1 Available Erase Modes

ERASE MODE	EXPLANATION
Clear Partition Table	Removes the partition table on the disk
Quick Erase	Performs a single pass writing all zeroes
Custom Erase	Performs 1-99 passes, overwriting the disk with zeroes or a user-selected pattern
Secure Erase Normal	Initiates the disk's built-in Secure Erase Normal function
Secure Erase Enhanced	Initiates the disk's built-in Secure Erase Enhanced function
DOD Clear	Performs the U.S. Department of Defense "Clear" standard
DOD Sanitize	Performs the U.S. Department of Defense "Sanitize" standard
NIST800-88 Clear	Performs the "Clear" standard defined by NIST special publication 800-88
NIST800-88 Purge	Performs the "Purge" standard defined by NIST special publication 800-88

5.6.2 Customizable Settings

Some Erase Modes require several of the following settings to be configured a certain way as part of their standard. In these cases, the settings cannot be modified.

- **Mode Name:** The name of the erase mode.
- **HPA/DCO Handling:** Sets how erase actions using the specified erase mode should handle HPAs and DCOs. It can indicate in the log that there is an HPA (host protected area) or DCO (device config-

Typical Settings

Mode Name	HPA/DCO Handling	Passes	Overwrite Method	Verify	Format After Erase
Clear Partition Table	Indicate Only	1	Write zeros to the first 16KB of the disk.	None	<input type="checkbox"/>
Quick Erase	Indicate Only	1	All Zeroes	None	<input type="checkbox"/>
Custom Erase	Indicate Only	1	Pattern: <input type="text"/> hex	None	<input type="checkbox"/>
Secure Erase Normal	Indicate Only	1	Initiate drive's built-in Secure Erase (Normal) command.	None	<input type="checkbox"/>
Secure Erase Enhanced	Indicate Only	1	Initiate drive's built-in Secure Erase (Enhanced) command.	None	<input type="checkbox"/>
DOD Clear	Permanently Unhide HPA/DCO	1	All Zeroes	None	<input type="checkbox"/>
DOD Sanitize	Permanently Unhide HPA/DCO	3	Overwrite using 0xA pattern, then its complement, then another unclassified pattern.	None	<input type="checkbox"/>
NIST800-88 Clear	Permanently Unhide HPA/DCO	1	All Zeroes	None	<input type="checkbox"/>
NIST800-88 Purge	Permanently Unhide HPA/DCO	1	Initiate drive's built-in Secure Erase (Normal) command.	None	<input type="checkbox"/>

Commit Changes

Figure 20. The "Erase" tab on the "Configure" screen, showing all available erase modes and their customizable settings.



uration overlay) present, temporarily bypass the HPA, permanently unhide the HPA, or permanently unhide both the HPA and DCO.

- **Passes:** For the “Custom Erase” setting only, this allows you to specify the number of passes the disk is overwritten during the erase action. You can specify between 1 and 99 passes.
- **Overwrite Method:** For the “Custom Erase” setting only, you can specify a pattern for the disk to write repeatedly across the entire disk. If “text” is selected from the drop-down box, the “Pattern” field must contain one or more ASCII characters. If “hex” is selected, the “Pattern” field must contain an even number of ASCII characters representing hexadecimal digits (e.g. 17a64F). Leaving the “Pattern” field blank tells the Ditto Forensic FieldStation to use zeroes.
- **Verify:** This is a planned feature that is not currently implemented. The “Verify” drop-down box will allow you to verify the erased disk after it has been fully erased. If “Quick” is selected, the beginning, middle, and end of the disk will be read to ensure that the last pattern was actually written. If “Full” is selected, the entire disk will be read to ensure that the last pattern was actually written. If “None” is selected, no verification will be performed.
- **Format After Erase:** Check this box to format the disk with the default format. The default format can be set in the “System” tab on the “Configure” screen (see Section 5.1).

5.7 HASH

The “Hash” tab allows you to view and customize the following settings for all hash actions. When you are finished, click the **Commit Changes** button to save the changes.

- **Buffer Size:** Sets the the buffer size used by the Ditto Forensic FieldStation during a hash action. The minimum size is 512K (kilobytes). The default size of 1M (megabyte) works best for most uses. The maximum size is limited by the target file system.
- **Exit when a bad sector is encountered:** Aborts the hash disk action if the Ditto Forensic FieldStation encounters a bad sector on the target disk.

5.8 NAMING

The “Naming” tab allows you to customize how the Ditto Forensic FieldStation names directories and files during imaging actions. When you are finished, click the **Commit Changes** button to save the changes.

As shown in Figure 21, the file directory or file name used in imaging actions can be a name that contains up to four user-selectable fields. As you customize these fields, the “Directory Name Template”, “Final Directory Name”, “File Name Template”, and “Final File Name” fields will update. The template fields show the order of variables will appear in the name, whereas the final name fields display the directory or file name using the actual information from the “Investigation Info” panel on the “Home” screen and the source disk.

5.8.1 Variables

To modify the any of the user-customizable variables, navigate to the “Investigation Info” panel on the “Home” screen (see Section 4.2).

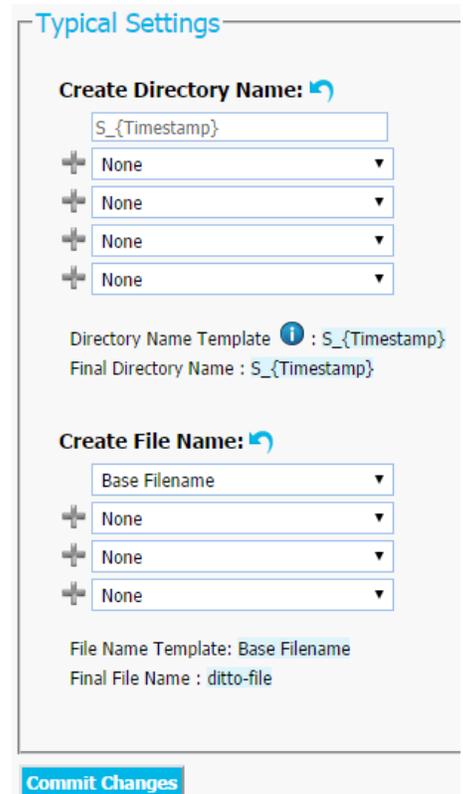


Figure 21. The “Naming” tab on the “Configure” screen.



- **S_{Timestamp}/Timestamp:** Displays the timestamp. “S_{Timestamp}” is the first variable used in all directory names and may not be changed, although the “Timestamp” variable is user-selectable for file names.
- **Base Filename:** Displays the base file name. This option is the default first variable for file names, but may be changed. User customizable.
- **Case Number:** Displays the case number. User customizable.
- **Description:** Displays the description field. User customizable.
- **Evidence Number:** Displays the evidence number. User customizable.
- **Investigator:** Displays the investigator. User customizable.
- **Source Drive Model Type:** Displays the model number of the source disk.
- **Source Drive Unique ID:** Displays the unique ID number of the source disk.

6 ADMIN SCREEN

The “Admin” screen allows the administrator to manage user accounts and assign permission levels for each user. Click on the **Admin tab** to access the “Admin” screen from the browser interface.

6.1 USER ACCOUNTS

The Ditto Forensic FieldStation contains two permanent accounts; “admin” and “panel”. The “admin” account is the Administrator account, and only the Full Name and password may be modified. The “panel” account is the Front Panel account, and modifies access permissions for functionality that can be accessed through the LCD screen and navigation buttons on the Ditto Forensic FieldStation.

6.2 PERMISSIONS

6.2.1 Permission Levels

Permission levels on the browser interface are displayed as “FULL”, “AUTH”, or as a hyphen, and as “Full Access”, “Must Authenticate”, and “None”, respectively, when editing or creating a user. “FULL” and “Full Access” indicate that the user has complete access to the features governed by that permission and is not required to enter a password. “AUTH” and “Must Authenticate” indicate that the user must authenticate his credentials with a password in order to change a setting or perform an action that that permission governs. A hyphen or “None” indicates that the user does not have access to the features governed by that permission.

The screenshot shows the 'Admin' interface with a navigation menu (Home, Configure, Admin, Logs, Utilities) and a 'User Accounts' table. The table lists two users: 'admin' (Administrator) and 'panel' (Front Panel). The 'admin' user has 'FULL' permissions across all categories, while the 'panel' user has '-' (no access) for all categories.

User Name	Full Name	Permissions													
		Admin	Config	NetSettings	Clone	Physical Image	Logical Image	Erase	Hash	Snapshot	NetView	Abort	Note	Logs	DiskView
admin	Administrator	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL
panel	Front Panel	-	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	FULL	-	-

Figure 22. The “Admin” screen.



6.2.2 Configurable Permissions

The following list of permissions specifies what each controls, and can be configured when adding or editing a user account. Some permissions for the Administrator and Front Panel accounts will be greyed out by default.

- **Admin:** “None” allows access to modify the User Name and Full Name of the Administrator, Front Panel, and the user’s own account, and allows the user to change his or her own password, but blocks the user from viewing any account’s permission levels. “Modify Users” enables the user to be able to modify user accounts, passwords, and permissions (except for the “Admin” permission). “Full Access” additionally enables the ability to create and delete users and assign the “Admin” permission.
- **Config:** Governs all non-network configuration settings, including those found in the “System Settings” panel on the “Home” screen and on all tabs on the “Configure” screen.
- **NetSettings:** Controls access to the network settings on the “Configure” screen.
- **Clone:** Controls access to the “Clone Source Disk” and “Clone & Image Source Disk” actions.
- **Physical Image:** Controls access to the “Physical Image Source Disk” and “Clone & Image Source Disk” actions.
- **Logical Image:** Controls access to the “Logical Image Source Disk” action.
- **Erase:** Controls access to the “Erase Destination Disk” action.
- **Hash:** Controls access to the “Hash Disk” action.
- **Snapshot:** Controls access to the “Snapshot Disk” action.
- **Netview:** Controls access to the “Netview Scan” action.
- **Abort:** Controls access to the ability to abort actions in progress.
- **Note:** Controls access to the “Comment” buttons in the “Action” and “System Log” panels on the “Home” screen.
- **Logs:** Controls the ability to delete log files from the “Logs” screen.
- **DiskView:** Controls the ability to preview and download files from the suspect drive via the “Disks” panel on the “Home” screen.

6.3 ADDING A NEW USER

To add a new user, simply click “Add User”, enter the user’s information, and set the permission levels. When finished, click on the **Commit Add button**.

6.4 EDITING AN EXISTING USER

To update a user’s name, password, or permissions, click on the user account under the “User Name” column, update the information, and then click the **Commit Edits button**.

6.5 DELETING A USER

To delete a user, click on the user account under the “User Name” column and click on the **Delete User button**. Do *not* click this button unless you are absolutely certain you wish to delete the account.



7 LOGS SCREEN

The “Logs” screen provides information about the Ditto Forensic FieldStation’s actions. Click on the **Logs tab** to access the “Logs” screen from the browser interface.

Action logs show the timestamp, the type of action performed, the user who performed the action, and a link to the “Action Log” screen that provides more information about the performed action.

7.1 ACTION LOG

7.1.1 Settings

Displays the settings of the Ditto Forensic FieldStation that were active when the particular action was performed.

7.1.2 User Permissions

Displays the permissions of the user that were in place when the particular action was performed.

7.1.3 Extended Disk Info

This report displays the information of the disk used (which is noted in the title of this report) in the action, including the interface, model, serial number, capacity, the presence of HPAs (host protected areas) or DCOs (device configuration overlays), partition information, hdparm information, and S.M.A.R.T information. If multiple disks are used in the action, then multiple reports are created.

7.1.4 Logical Image Report

This report appears in action logs of “Logical Image Source Disk” actions and displays each directory and file that was imaged, along with their size and any error messages that were generated. Click on the Export button to save a copy of the log as an Excel spreadsheet.

ditto-0246

September 25, 2014 11:14:34am PDT

Home → Logs

Home Configure Admin **Logs** Utilities Administrator Log Out

Action Logs

Log Storage	Total Space	Used Space	Free Space	% used	File System
RAM Disk	8.0M	220.0K	7.8M	3%	tmpfs
<input type="checkbox"/> Timestamp (PDT)	Type	User	Link		
<input type="checkbox"/> Sep 24, 2014 16:00:11	Logical Image	admin	S_20140924160011		
<input type="checkbox"/> Sep 24, 2014 16:02:42	Logical Image	admin	S_20140924160242		
<input type="checkbox"/> Sep 24, 2014 16:03:35	Logical Image	admin	S_20140924160335		
<input type="checkbox"/> Sep 24, 2014 16:04:29	Logical Image	admin	S_20140924160428		
<input type="checkbox"/> System Log					

Delete Save

Figure 23. The “Logs” screen.



7.1.5 Netview Report

This report appears in action logs of “Netview Scan” actions and displays summaries of the discovered hosts, including the IP address, MAC address, and the manufacturer associated with the MAC address if that information can be determined. The “Hostname” will be blank if a DNS lookup could not associate the host’s IP address to a name.

8 UTILITIES SCREEN

The “Utilities” screen allows you to perform various miscellaneous functions, including the ability to upgrade firmware, import customized configurations, remotely reboot the Ditto Forensic FieldStation, modify date and time settings, and perform a factory reset. Click on the **Utilities tab** to access the “Utilities” screen from the browser interface.

8.1 SYSTEM MAINTENANCE

8.1.1 Firmware Upgrade

For information on how to upgrade the firmware, see Section 12.

8.1.2 Configuration

You can export and import configurations for the Ditto Forensic FieldStation. The file generated saves a copy of every customizable setting for the unit.

Export a Configuration

To save a configuration, click on the **Export Config button**. Name the file, and then click **OK** to open a Save As dialog box and save the file to your computer.

Import a Configuration

- a. Click on the bottom **Upload... button**, browse to the .xml configuration file you want to load, highlight it, and click **Open**.
- b. Click the **Import Config button**.
- c. The “Confirm Import” window will open. Place a check next to each setting you want to load, and then click **Continue**.
- d. The Ditto Forensic FieldStation will import the configuration settings. Click **OK** when it’s finished.

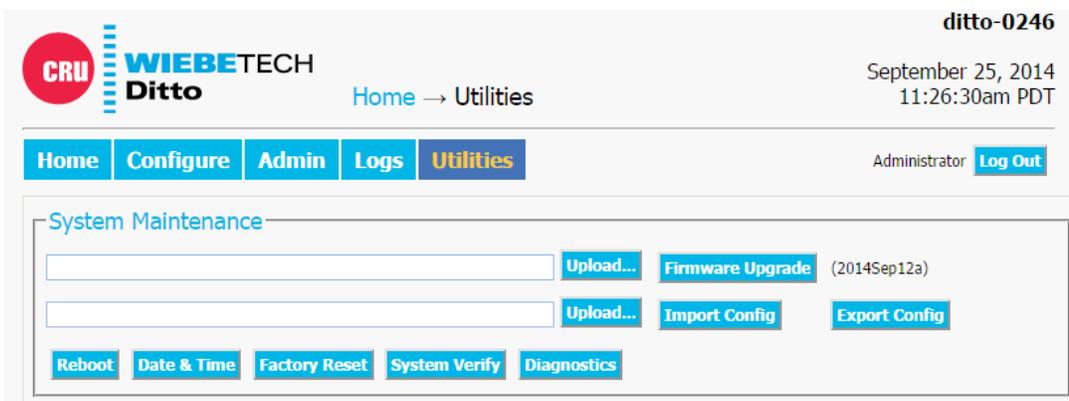


Figure 24. The “Utilities” screen.



8.1.3 Other Buttons

- **Reboot:** Opens a confirmation to reboot the Ditto Forensic FieldStation.
- **Date & Time:** Allows you to set the current date, time, and timezone. Click the **Synchronize button** to sync these settings with your browser's operating system.
- **Factory Reset:** Opens a confirmation dialog to return the Ditto Forensic FieldStation to factory settings. Check the **Purge Ditto SD card log files** box to remove all log files from the SD card in the unit. You can also use the Front Panel to perform a factory reset. See Section 9.5.
- **System Verify:** Verifies the Ditto Forensic FieldStation's operating system. If the verification fails, the details can be viewed by exporting the System Diagnostics.
- **Diagnostics:** Exports a diagnostics log file in HTML format. The diagnostics log contains information about the Ditto Forensic FieldStation's current configuration, including user accounts, kernel messages, logs, process information, disks, PHP errors, and system verify results.

8.2 UPGRADE LOG MESSAGES

This section displays the status log of firmware upgrades and is only visible if a firmware upgrade has been performed.

8.3 IMPORT LOG MESSAGES

This section displays the status log of configuration file exports and imports and is only visible if an export or import has been performed.

9 USING THE FRONT PANEL INTERFACE IN STANDALONE MODE

The Ditto Forensic FieldStation can work as a standalone device with no additional computer required, which can be useful when working with evidence disks in the field.

The Front Panel interface allows you to clone, physically image, simultaneously clone and image, erase, hash a disk, or perform a snapshot of a disk. You can also adjust settings, view information about attached disks, or check on the Ditto Forensic FieldStation's operational status. The administrator account can assign access permissions to the Front Panel's actions and settings using the browser interface.

Up and **Down** allow you to scroll through the available options on the Front Panel, while **Enter** selects the option and **Back** goes back to the previous screen.

The Ditto Forensic FieldStation menu consists of the following screens:

9.1 STATUS

The status screen is the default screen. It shows the progress of any current processes. When the Ditto Forensic Field Station is "Idle", the current firmware of the unit is also listed on this screen. An example of a status screen is shown in Figure 25.

9.2 SETTINGS

The "Settings" screen allows you to view and customize the following settings. These settings will be the default settings used in any actions performed.

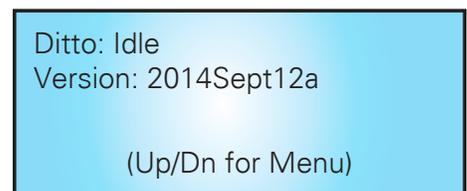


Figure 25. The "Status" screen on the Front Panel LCD.

NOTE

The non-network settings below cannot be modified if the Front Panel user account does not have full access to the "Config" permission, and the network settings cannot be modified if the Front Panel user account does not have access to the "NetSettings" permission. See Section 6 for information on how to customize the Front Panel user account.



- **Physical Image Type:** Sets the default physical image type for all actions that create a physical image. The image types available are E01 or DD.
- **Hash Type:** Sets the default hash algorithm that will be used for disk verification and the “Hash Disk” action. The available options are None, MD5, SHA-1, or MD5 + SHA-1.
- **Erase Mode:** Sets the default erase mode that will be used for all actions that require erasing disks. The available modes are Clear Partition Table, Quick Erase, Secure Erase Normal, Secure Erase Enhanced, DOD Clear, DOD Sanitize, NIST800-88 Clear, and NIST800-88 Purge.
- **Default Format:** This is the default file system that will be used to format destination disks when they are used in actions that the Ditto Forensic FieldStation performs. The available formats are HFS+, FAT32, NTFS, EXT2, EXT3, EXT4, and XFS.
- **HTML Logging:** Logs are always saved in .XML format. This option causes the Ditto Forensic FieldStation to save logs in HTML format as well. The available options are Off and On.
- **Verify Single:** Determines whether individual destination disk are hashed and compared to the hash value of the source disk’s hash value. The available options are Yes and No.
- **Verify Mirror:** Determines whether mirrored destination disks are hashed and compared to the hash value of the source disk’s hash value(s). You can choose to verify no disks, eSATA-A or eSATA-B individually, or to verify both disks.
- **Verify Clone & Image:** Determines whether cloned and imaged disks are hashed and compared to the hash value of the source disk’s hash value during a “Clone & Image Source Disk” action. You can choose to verify no disks, the clone, the image, or both.
- **Log Disk Info:** Determines whether S.M.A.R.T. and hdparm disk information is logged before running an action, after running an action, both, or not at all.
- **Source Network:** Enable or disable the source network Ethernet connection.
- **Destination Network:** Enable or disable the destination network Ethernet connection.
- **Source MAC Address:** Displays the source Ethernet port’s MAC address.
- **Source IP Assignment:** Displays the source Ethernet port’s IP assignment method. The available options are DHCP or Static. An IP address can be manually configuring in the browser interface (see Section 5.2.2).
- **Source Network Access:** Allows you to choose whether or not the Ditto Forensic FieldStation responds to any network traffic via the source Ethernet port.
- **Source IP Address:** Displays the IP address assigned to the source Ethernet port.
- **Dest. MAC Address:** Displays the destination Ethernet port’s MAC address.
- **Dest. Network Mode:** Displays the destination Ethernet port’s networking mode. The available options are Server, Client (DHCP), or Client (Static IP). “Server” allows you to use enable the Ditto Forensic FieldStation for use as a server. The network mode can be further configured in the browser interface (see Section 5.2.3).
- **Dest. IP Address:** Displays the IP address assigned to the destination Ethernet port.
- **Dest. Subnet Mask:** Displays the subnet mask address assigned to the destination Ethernet port.



9.3 DISK INFO

The “Disk Info” screen shows all available disks attached to either the source or destination ports. Ports are shown only if a disk is connected there. Press **Enter** (View) and then **Up** or **Down** to scroll through the following information about each connected disk:

- Model number
- Disk capacity
- File system

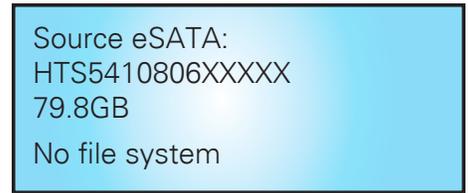


Figure 26. The “Disk Info” screen on the Front Panel LCD.

9.4 PERFORM ACTION

After you adjust settings to your specifications, you are ready to put the Ditto Forensic FieldStation to work. The “Perform Action” screen lets you start or abort any of the Ditto Forensic FieldStation’s actions using the current settings.

- On the “Perform Action” screen, use the **Up** and **Down** buttons to cycle through the available actions. Press **Enter** to select the one you want.
- Cycle through the available settings for the action. Press **Enter** if you wish to modify them.
- When you are finished modifying settings, scroll down to option that asks you to start the action (ex. “Start Physical Image?”). Press **Enter** to begin.

The status and remaining time will be displayed on the LCD screen as the Ditto Forensic FieldStation performs the action. To abort an action, press the **Back** button. The LCD screen will ask if you wish to abort the action. Press **Enter** to confirm, or **Back** to cancel the abort request.

9.5 FACTORY RESET

To reset the Ditto Forensic FieldStation’s settings back to their factory defaults, press and hold the **Up**, **Enter**, and **Down** navigation buttons while powering the unit on. The Ditto Forensic FieldStation will start up and then display the text, “Preparing Factory Reset” (see Figure 27).

You will then be prompted to confirm your choice to reset the Ditto. Press **Enter** to continue or **Back** to cancel.

You can also use the browser interface to perform a factory reset. See Section 8.1.3.



Figure 27. The “Preparing Factory Reset” screen on the Front Panel LCD.

10 STEALTH MODE

Stealth Mode turns off all LEDs and LCDs on the Ditto Forensic FieldStation. You can enable Stealth Mode by flipping the physical “Stealth Mode” switch on the Destination Outputs side of the Ditto Forensic FieldStation (see Section 1.2).

You can also enable it from the browser interface. Click on the **Configure tab**, and then under the “System” tab change the “Stealth Mode” drop-down box to “Enabled.” Then click **Commit Changes**.

NOTE If Stealth Mode is enabled from the browser interface, the physical switch cannot override it.



11 ADVANCED FEATURES AND FUNCTIONS

11.1 NETVIEW SCAN

This type of network probing is *very* noisy and may trigger any IT related Intrusion Detection Devices (IDSs) on the network. Please be sure to run this action in a very controlled and isolated environment.

- a. Select **Netview Scan** from the “Action to Perform” drop-down box.
- b. Configure the available options, which are detailed below in Section 11.1.1.
- c. When you are finished, press the **Start** button. You should see updates every few seconds that describe the current scan being executed, the number of hosts discovered, and the progress of the current scan. Please note that progress estimates are crude and are still being developed. A “Completed” message box will pop up when the action has finished. Click on the message to continue.

You can view the results of the Netview Scan action by scrolling down to the “System Log” panel on the “Home” screen. Find and click on the latest link, which will be denoted by a filename with a date/timestamp format: “S_yyyymmddhhmmss”. Alternatively, you can click on the **Logs button** from the top menu bar.

The “Netview Report” section contains summaries of the discovered hosts, including the IP address, MAC address, and the manufacturer associated with the MAC address if that information can be determined. The “Hostname” will be blank if a DNS lookup could not associate the host’s IP address to a name.

11.1.1 Netview Scan Configuration Options

The following options can be configured before running a Netview Scan:

Interface Selection

The “Interface” drop-down box allows you to tell the Ditto Forensic FieldStation which Ethernet connection to use during the Netview Scan. You can choose either the **Source** or **Destination** Ethernet ports.



The selected interface will be used when the scan is started. This may create a heavy network traffic load and depending on the “Timing” setting in the “Discovery Options” subsection, may 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.

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. Click the “Reset” icon to reset the IP Scan Range back to its default value.

Examples:

1. Range: 10.10.10.0-255
 - Scans the addresses 10.10.10.0 through 10.10.10.255.
2. Range 2: 10.10.10-12.0-255
 - Scans addresses 10.10.10.0-255, 10.10.11.0-255, and 10.10.12.0-255.
3. List: 10.10.10.1
 - Will only scan IP address 10.10.10.1
4. List 2: 10.10.10.2,10.10.10.3



- 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
- Will scan hosts 10.10.10.1, 10.10.10.2 and hosts 10.10.10.50 through 10.10.10.100.

Discovery Options

There are three optional host (machine) discovery options and one “No Ping” port scan option available. By default, the “Ping Echo” option is enabled and will suffice for most use cases. Some machines may be configured to ignore pings and not respond, so there are two other specialized Ping options which may be useful. Click the “Reset” icon to reload the default settings.

- **Ping Echo:** Sends a standard ICMP echo request to each IP address.
- **Ping Timestamp:** Sends a request for a timestamped ICMP packet.
- **Ping Netmask:** Sends a request for the destination’s subnet mask using an ICMP packet.
- **No Ping:** Skips host discovery and forces a port scan, which is useful when the hosts appear to be down.
- **Timing:** Selects a timing interval for scanning a network. “3” is the default setting. Lower numbers are slower and will help you avoid triggering an intrusion detection alert, and higher numbers are faster but may be less accurate, and may cause intrusion detection alerts.

TCP Options

NetView can optionally scan the specified hosts for open TCP ports. By default, this feature is not enabled. Check the box next to “TCP Options” to enable this feature and expand more options. Click the “Reset” icon to reset all TCP Options back to their default values.

- **Ports:** By default, TCP ports for commonly used services as well as services to which the Ditto Forensic FieldStation may be able to connect are entered into this text box, including ports for NFS, iSCSI, and Samba. Only ports entered into this text box will be scanned. NetView IP port ranges may be specified as any combination of lists and ranges. Valid port numbers are

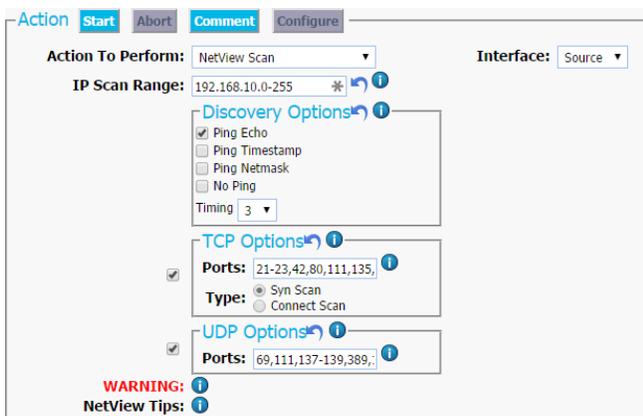


Figure 28. The “Action” section on the “Home” screen, showing the options available for the “Netview Scan” action.



between 1 and 65535 (inclusive). A list is in the form: 80,22,23. A range is in the form: 1-40. Both may be combined to form: 22,23,40-50,80,90-91.

- **Syn Scan:** Syn Scan is selected by default and is appropriate for most use cases. The Ditto Forensic FieldStation generates raw IP packets and monitors for responses. This type of scan is also known as “half-open scanning” since it does not open a full TCP connection.
- **Connect Scan:** The Ditto Forensic FieldStation uses a full system-level TCP connection in order to determine what ports are available on the host network. This scan should only be performed by advanced users.

NOTE

The more ports being scanned, the longer the scan will take.

UDP Options

NetView can optionally scan the specified hosts for open UDP ports. By default, this feature is not enabled. Check the box next to “UDP Options” to enable this feature. Click the “Reset” icon to reset the UDP option back to its default values.

Ports: By default, UDP ports for commonly used services as well as services to which the Ditto Forensic FieldStation may be able to connect are entered into this text box, including NFS, iSCSI, and Samba. Only ports entered into this text box will be scanned. NetView IP port ranges may be specified as any combination of lists and ranges. Valid port numbers are between 1 and 65535 (inclusive). A list is in the form: 80,22,23. A range is in the form: 1-40. Both may be combined to form: 22,23,40-50,80,90-91.

NOTE

UDP port scanning takes much longer than TCP port scanning due to the fact that open and filtered ports do not typically respond to queries. Therefore, any UDP port scanner will spend time retransmitting its query in case the query or response was lost. Furthermore, while closed ports do usually respond with ICMP port unreachable messages, hosts tend to limit the number of those messages sent per second, resulting in further delay.

Netview Tips

1. See [Nmap.org](#) for general information about network scanning.
2. Keep your IP address lists/ranges short. This will mean faster scans and less network traffic.
3. Keep your port lists/ranges short. This will also mean faster scans and less network traffic.
4. Start by deselecting the TCP and UDP scans. Just scanning for the presence of hosts is much quicker than running TCP and UDP scans on a network with an unknown number of machines. Once you have a list of discovered machines, then you can decide whether to TCP and/or UDP scan them all or scan only a subset at a time.
5. TCP scanning must be enabled in order to detect the target’s operating system.

11.2 TARGET MODE: REMOTELY ACCESS DISKS ATTACHED TO THE DITTO FORENSIC FIELDSTATION WITH THIRD PARTY SOFTWARE

Disks attached to Ditto Forensic FieldStation may be mounted on your computer as iSCSI devices for use with third party data acquisition tools. The machine this software is installed on does not have to be physically connected to the Ditto Forensic FieldStation, but rather the software may be run remotely from a separate location within the same network. To do so, you will need to put the Ditto Forensic FieldStation into Target Mode.



- a. On the “Home” Screen, navigate down to the bottom of the “Disks” panel and select the **Target Mode** button.
- b. Check the boxes in the iSCSI column next to the disk(s) that you wish to mount on your computer as iSCSI device(s).
- c. Check **Enable iSCSI and SMB authentication** if you wish to require authentication in order for iSCSI initiator software to connect to the selected disk(s). Then input your desired credentials.
- d. Press the **OK** button.

You can now mount the disk(s) you selected in the steps above to your computer. Use the Ditto Forensic FieldStation’s IP address in your iSCSI initiator software in order to attach to it. Initiators can vary, but typically you’ll add the IP address to the “Discovery” section of your initiator.

11.3 USING ISCSI DEVICES

11.3.1 Remotely Access an iSCSI Device

To connect to an iSCSI device that exists on your network, follow these directions.

- a. Ensure that the Ethernet port through which the Ditto Forensic FieldStation is connected to your network is properly configured for use with your network (see Section 5.2). Unless you have manually configured the Ditto Forensic FieldStation’s network settings before, you most likely do not have to change anything. If you are directly connecting the iSCSI device to the Ditto Forensic FieldStation, then see Section 11.3.2.
- b. On the “Home” Screen, navigate down to the bottom of the “Disks” panel.
- c. Click the **Source Network** button if you want to attach the iSCSI device to the Ditto Forensic FieldStation as a write-blocked source device, or click the **Destination Network** button if you want to attach the iSCSI device as a read/write-enabled destination.
- d. Click on the **iSCSI** tab if it is not already selected.
- e. Type the iSCSI device’s IP address into the “Target Host” text field.
- f. Type in the port number of the target iSCSI volume into the “Port” text field if the number is different than the default value of ‘3260’. If you don’t know the port number, leave it as the default value.
- g. Click the **Discover** button. The Ditto Forensic FieldStation will detect any IQNs (iSCSI Qualified Names) attached to the IP address.
- h. Select the IQN you wish to attach to the Ditto Forensic FieldStation from the drop-down box.
- i. If authentication is required to connect to the IQN, click the **Advanced...** button and input the appropriate credentials, including the user name, password, and domain. Otherwise, continue to Step J.
- j. Click the **Add** button. The IQN will now appear in the list below.
- k. Repeat steps **E** through **J** to add more IQNs. When you are finished, click **Close**.

The iSCSI disk(s) have now been added to the list of Disks, allowing you to perform actions on them like you would any other disk.



Figure 29. The “Target Mode” window is used to allow computers and third party software to remotely connect via iSCSI to disks connected to Ditto.



11.3.2 Directly Connect an iSCSI Device to the Ditto Forensic FieldStation

If you do not wish to connect an iSCSI device to your network (for example, it may be a suspect device with unknown properties), you can directly connect the device to the Ditto Forensic FieldStation and isolate it from the rest of your network. There are two methods for doing so. Once you have connected the device, continue down to the third subsection, “Adding an iSCSI Disk to the ‘Disks’ Panel”.

Connect via the Source Ethernet Port

Follow these instructions if the iSCSI device you are attaching to the Ditto Forensic FieldStation is a suspect device. You’ll need to connect the iSCSI device to the source Ethernet port and manually configure the IP address of both the Ditto Forensic FieldStation and the iSCSI device.

Manually set the Ditto Forensic FieldStation’s IP address.

- Click on the **Configure** tab at the top of the page, and then select the **Network** tab.
- In the “Source Network” section, select **Static IP** from the drop-down box underneath the MAC address.
- Type in the desired IP address and subnet mask into the appropriate fields. Do not fill in the Gateway, Primary DNS Server, or Secondary DNS Server unless directed to do so by your network administrator.
- Click **Commit Changes**.

Manually set the iSCSI device’s IP address, subnet mask, and gateway. The first three octets of the IP address must be identical to the first three octets of the Ditto Forensic FieldStation’s IP address. The fourth octet must be different, and must be any other number between 1 and 255. The subnet mask must be identical to the Ditto Forensic FieldStation’s subnet mask. The gateway must also be set as the Ditto Forensic FieldStation’s IP address.

Based on the IP address configuration of a Ditto Forensic FieldStation that’s displayed in Figure 30, a valid configuration for an iSCSI device would be as follows:

IP address: 10.10.10.100
Subnet mask: 255.255.255.0
Gateway: 10.10.10.1

After these settings are configured for the Ditto Forensic FieldStation and the iSCSI device, ensure that the iSCSI device is connected to the source Ethernet Port. Then continue to the “Adding an iSCSI Volume to the ‘Disks’ Panel” subsection below.

Connect via the Destination Ethernet Port

Follow these instructions if you will be transferring evidence or other data to the iSCSI device. First, ensure that the destination Ethernet port is configured to act as a server.

- Click on the **Configure** tab at the top of the page, and then select the **Network** tab.
- In the “Destination Network” section, select **Server** from the drop-down box underneath the MAC address. Do not customize the default server configuration unless directed to do so by your network administrator.

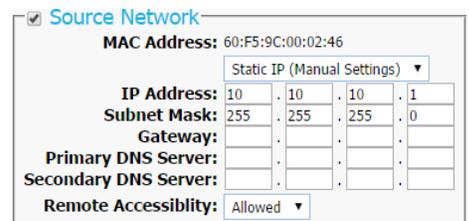


Figure 30. The “Source Network” section on the “Configure” screen’s “Network” tab.



- c. Click **Commit Changes**.

Now connect the iSCSI Device to the destination Ethernet port. The iSCSI device will be assigned a new IP address if the iSCSI device is configured to obtain a new IP address from DHCP, which will be the case for most devices. If no IP address is assigned, you will need to configure the iSCSI device to use DHCP. If that is not possible, contact your network administrator.

Once the iSCSI device is assigned an IP address, continue to the “Adding an iSCSI Volume to the ‘Disks’ Panel” subsection below.

Adding an iSCSI Disk to the “Disks” Panel

On the “Home” Screen, navigate down to the bottom of the “Disks” panel.

- a. Click the **Source Network** button if you want to attach the iSCSI device to the Ditto Forensic FieldStation as a write-blocked source device, or click the **Destination Network** button if you want to attach the iSCSI device as a read/write-enabled destination.
- b. Click on the **iSCSI tab** if it is not already selected.
- c. Type the iSCSI device’s IP address into the “Target Host” text field.
- d. Type in the port number of the target iSCSI volume into the “Port” text field if the number is different than the default value of ‘3260’. If you don’t know the port number, leave it as the default value.
- e. Click the **Discover button**. The Ditto Forensic FieldStation will detect any IQNs (iSCSI Qualified Names) attached to the IP address.
- f. Select the IQN you wish to attach to the Ditto Forensic FieldStation from the drop-down box.
- g. If authentication is required to connect to the IQN, click the **Advanced... button** and input the appropriate credentials, including the user name, password, and domain. Otherwise, continue to the next step.
- h. Click the **Add button**. The IQN will now appear in the list below.
- i. Repeat steps C through H to add more IQNs. When you are finished, click **Close**.

The iSCSI disk(s) have now been added to the list of Disks, allowing you to use the Ditto Forensic Fieldstation to perform actions on them like you would any other disk.

11.3.3 Properly Remove an iSCSI Device

This process prevents timeout issues where the Ditto Forensic FieldStation will attempt to connect to iSCSI volumes that no longer are connected to it. On the “Home” Screen, navigate down to the bottom of the “Disks” panel.

- a. Click the **Source Network** button if your iSCSI device is connected via the source Ethernet Port, or click the **Destination Network** button if your iSCSI device is connected via the destination Ethernet Port.
- b. Click on the **iSCSI tab** if it is not already selected.

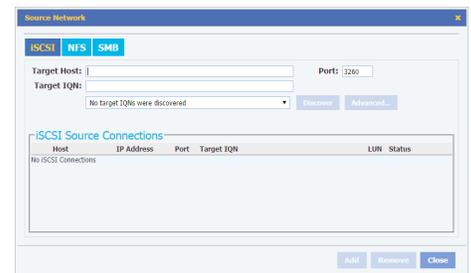


Figure 31. The “Source Network” window’s iSCSI tab allows you to connect iSCSI devices to the Ditto via the source Ethernet port. The “Destination Network” tab looks similar and does the same via the destination Ethernet port.



- c. Under the “iSCSI Source Connections” or the “iSCSI Destination Connections” section, check the boxes next to the IQN(s) you want to remove and click the **Remove button**.
- d. Physically disconnect the iSCSI device from the Ditto Forensic FieldStation.

11.4 USING NFS AND SMB (SAMBA) SHARES

11.4.1 Connect to NFS and SMB Shares

- a. On the “Home” Screen, navigate down to the bottom of the “Disks” panel.
- b. Click the **Source Network button** if the Ditto Forensic FieldStation is connected to your network via the source Ethernet Port, or click the **Destination Network button** if it is connected via the destination Ethernet Port.
- c. Click on the **NFS tab** or the **SMB tab**, depending on which type of share you are connecting to.
- d. Type the server name into the Server text field.
- e. If you are connecting to an SMB share, select the appropriate protocol from the “Protocol” drop-down box. If you don’t know the correct protocol, leave it as the default value of ‘SMBv1’.
- f. Click the **Show Shares button**. The Ditto Forensic FieldStation will detect any shares attached to the server.
- g. Select the share you wish to attach to the Ditto Forensic FieldStation from the drop-down box.
- h. If you are connecting to an SMB share and authentication is required, click the **Advanced... button** and input the appropriate credentials, including the user name, password, and domain. If the SMB share does not require authentication or you are connecting to an NFS share, continue to the next step.
- i. Click the **Add button**. The share will now appear in the list below.
- j. Repeat steps C through I to add more shares. When you are finished, click **Close**.

The share(s) have now been added to the list of Disks, allowing you to perform actions on them like you would any other disk.

11.4.2 Remove an NFS or SMB (Samba) Share

- a. On the “Home” Screen, navigate down to the bottom of the “Disks” panel.
- b. Click the **Source Network button** if the Ditto Forensic FieldStation is connected to your network via the source Ethernet Port, or click the **Destination Network button** if it is connected via the destination Ethernet Port.
- c. Click on the **NFS tab** or **SMB tab**, depending on the which type of share you are removing.
- d. Under the “iSCSI Source Connections” or the “iSCSI Destination Connections” section, check the boxes next to the share(s) you want to remove and then click the **Remove button**.



12 UPGRADING FIRMWARE

Firmware upgrades are made available on CRU's website at www.cru-inc.com/support/software-downloads/ditto-firmware-updates/. There are three methods to upgrade your Ditto Forensic FieldStation's firmware.

METHOD 1: COPY AND PASTE A LINK

- a. Ensure that the Ditto Forensic FieldStation is connected to a network with Internet access.
- b. Go to the firmware updates webpage and scroll down to the "Ditto Firmware Links" section. Copy the URL of the firmware you wish to use to upgrade.
- c. Log into your Ditto Forensic FieldStation's browser interface and navigate to the "Utilities" screen.
- d. Paste the link into the top text field and click the **Firmware Upgrade button**.
- e. When it asks you to confirm the retrieval of the upgrade file, click **Continue**.
- f. The Ditto Forensic FieldStation will download the file to itself. Once downloaded, it will ask you to confirm the upgrade. Click **Continue**. After the upgrade is finished, click **OK**.
- g. The LCD panel of the Ditto Forensic FieldStation will ask you to reboot. Press the Enter button on the face of the unit to reboot, or click on the **Reboot button** on the "Utilities" screen.

METHOD 2: DOWNLOAD TO YOUR COMPUTER

- a. Go to the firmware updates webpage and scroll down to the "Ditto Firmware Links" section.
- b. Click on the firmware you wish to use to upgrade to download the file. Save the file in a convenient location.
- c. Log into your Ditto Forensic FieldStation's browser interface, navigate to the "Utilities" screen, and click on the top **Upload... button**.
- d. Locate the firmware file you just downloaded, select it, and click **Open**.
- e. Click on the **Firmware Upgrade button**.
- f. The Ditto Forensic FieldStation will upload the file to itself. Once uploaded, it will ask you to confirm the upgrade. Click **Continue**. After the upgrade is finished, click **OK**.
- g. The LCD panel of the Ditto Forensic FieldStation will ask you to reboot. Press the **Enter button** on the face of the unit to reboot, or click on the **Reboot button** on the "Utilities" screen.

METHOD 3: UPLOAD VIA A USB THUMB DRIVE

- a. Go to the firmware updates webpage and scroll down to the "Ditto Firmware Links" section.
- b. Click on the firmware you wish to use to upgrade to download the file. Save the file to a USB thumb drive.
- c. Insert the thumb drive into the source side USB port of the Ditto Forensic FieldStation.
- d. The Ditto Forensic FieldStation will immediately scan the thumb drive and display a list on the LCD screen of all firmware files found on the drive. Use the navigation buttons on the face of the unit to move the blinking cursor to the firmware that you wish to use to upgrade, and then press **Enter**.
- e. The Ditto Forensic FieldStation's firmware will be upgraded. The LCD panel of the Ditto Forensic FieldStation will ask you to reboot. Press **Enter** to reboot. Um rempe verovit esequae cus quiam ratur, cor sitium dedit, simuscia nulpa nimus dolento earum eumquia ndaeperepta con consequiassi occum reraepe di

13 TECHNICAL SPECIFICATIONS

Product Name	Ditto Forensic FieldStation
Data Interface Types & Speeds	<ul style="list-style-type: none"> eSATA: up to 3 Gbps 1000BASE-T Ethernet: up to 1 Gbps PATA/IDE: up to 133 MB/s USB 2.0: up to 480 Mbps
Supported Disk Types	2.5" and 3.5" rotational or solid state hard disks
SD Card Slot Support	SD, SDHC (MMC, mini-SD, and microSD are compatible with adapters)
Data Connectors	<ul style="list-style-type: none"> Three (3) eSATA ports Two (2) 1000BASE-T Ethernet connectors One (1) PATA/IDE connector One (1) USB 2.0 connector One (1) SD Card slot One (1) Ditto Expansion Module connector
Write-Blocked Data Inputs	eSATA, PATA/IDE, USB 2.0. Source-side Ethernet port. Other input types supported with Ditto Expansion Modules or drive adapters.
Data Outputs	Two (2) eSATA operable as single, dual, or mirrored. Both 1000BASE-T Ethernet ports.
Supported File Systems	ext2, ext3, ext4, FAT32, HFS+, NTFS, XFS
User Interface	<ul style="list-style-type: none"> Four-line LCD controlled with four soft-touch menu navigation buttons Browser-based Ditto interface allows for direct operation, remote operation, and administration
LED Indicators	Power in 5V/12V, USB, Source Network, IDE, eSATA, Expansion, HPA/DCO, Destination Network, eSATA A, eSATA B
Stealth Mode	Turns off all lights (LEDs/LCD)
Browser Compatibility	Internet Explorer, Firefox, Safari, Chrome, Opera
Physical Image Types	DD, E01
Logical Image Types	L01, LIST, TAR, ZIP
Image/Clone Output Modes	Single disk image, single disk clone, image and clone, image to mirrored disks, clone to mirrored disks, logical image to single disk, logical image to mirrored disks
Hash Modes	None, MD5, SHA-1, MD5 + SHA-1, enabled during imaging and cloning operations. Hashing while using both MD5 + SHA-1 significantly reduces performance.
Erase Modes	Clear Partition Table, Quick Erase, Custom Erase, Secure Erase Normal, Secure Erase Enhanced, DoD Clear, DoD Sanitize, NIST800-88 Clear, NIST800-88 Purge
External material	All-aluminum construction
Operating Humidity	5% to 95%, non-condensing
Power Switch	2 position: On / Off
Power Inputs	40W 12V 3.33A DC barrel connector (center pin positive), 15-pin standard SATA power
Compliance	<ul style="list-style-type: none"> EMI Standard: FCC Part 15 Class A CE EMC Standard: EN55022, EN55024 C-Tick

Shipping Weight	5 lbs (2.3 kg)
Product Dimensions	4.92in x 6.77in x 1.72in (125mm x 172mm x 43.7mm)
Technical Support	Your investment in CRU products is backed up by our free technical support for the lifetime of the product. Contact us through our website, www.cru-inc.com/support or call us at 1-800-260-9800 or +1-360-816-1800.

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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.

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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 in which the user will be required to correct the interference at their 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 disk 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.



Protecting Your Digital Assets™



For more information, visit the CRU web site.

www.cru-inc.com