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FISC CDH

Versatile Network Attached Storage Server

User's Guide

Version 4.20

Part Number: 5019.14016

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Electronic Emission Notice

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B 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 residential environment.

CE Notice

This device complies with the EMC directive of the European Community and meets or exceeds the following technical standard:

EN 55022 ~ "Limits and Methods of Measurement of Radio interference Characteristics of information Technology Equipment." This device complies with CISPR Class B standard.

EN 50082-1~ "EMC - Generic immunity standard -- Part 1: Residential, commercial and light industry"

EN 61000-4-2 ~ "EMC -- Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test"

EN 61000-4-3 ~ "EMC -- Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test"

EN 61000-4-4 ~ "EMC -- Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test"

Safety Information

To reduce the risk of fire or electric shock, install the unit in a temperature-controlled indoor area free of conductive contaminants. Do not place the unit near liquids or in an excessively humid environment.

Do not allow liquids or foreign objects to enter the unit.

All servicing of this equipment must be performed by qualified service personnel. Remove rings, watches and other jewelry before servicing the unit.

Before maintenance, repair or shipment, the unit must be completely switched off and unplugged and all connections must be removed.

TABLE OF CONTENT

Chapter 1 Introduction

1.1 CD Server and File Server Built In One

FISC CDH is a versatile NAS (Network Attached Storage) server performing both CD and file sharing with multiple data security designs. It is the only NAS server on the market able to host all sorts of data files and CD/DVD information.

Unrivaled Storage Power

Equipped with four independent UDMA-100 IDE channels, the FISC CDH enables extraordinarily high efficiency of data processing. Its four powerful EIDE channels allow the FISC CDH controller to host eight CD/DVD devices or ATA-100 hard drives, depending on your task requirements.

FISC CDH gives you the flexibility you need to share a large quantity of CD information. Empowered by super high speed CD caching and mirroring functions, you can benefit from the smooth and immediate CD sharing. FISC CDH supports almost all CD formats such as music CD, CDR, VCD and DVD.

Utilizing FISC CDH to store data files is a pleasant experience just like using a quality file server. FISC CDH provides you with full function file management such as file opening, duplicating, backup and RAID.

In addition, FISC CDH gives you hundreds of GB space with 1,000-volume storage capacity, while allowing the co-existence of CD/DVD information and data files.

Invulnerable Data Safety and Security

FISC CDH features a shutdown protection circuit that coordinates the ATX power system to protect your data. When receiving your shutdown command, FISC CDH automatically saves data, and then turns off power with all files safe and sound. In addition to the advanced power management function, FISC CDH is equipped with share and user level security control to prevent illegal access of data.

That is not all. FISC CDH uniquely provides you with system

operating information and issues warning messages about system status on LCD panel. To keep server from being over-heated, FISC CDH reminds you of the server temperature collected from a built-in thermal sensing circuit.

Universal Utilization

Fitting in a variety of network environments has always been the focus of the FISC CD family of products. The FISC CDH functions perfectly under most of the network environments such as Microsoft Windows, Novell NetWare, Apple Macintosh, UNIX and Web browsers.

Meanwhile, the FISC CDH features all convenience and utilization NAS server should contain. Imagine the server being ready in three minutes: you hook it up, plug in the power and input the IP address directly on the LCD control panel.

Chapter 2 Installing the FISC CDH

2.1 Connecting the FISC CDH

2.1.1 Connecting cables within a tower case

After you take a FISC CDH controller out of the box, please follow the steps below to connect all the cables.

1. Fix the power control board on the back of the tower case.
2. Connect the UTP cable to both the controller and the power control board (DBrd).
3. Connect the I^2C cable to both the controller and the power control board (DBrd).
4. Connect the power cable from the ATX power supply to the controller.
5. Connect the power LED cable of the tower case to Pin 1&2 of the controller's J17 connector.

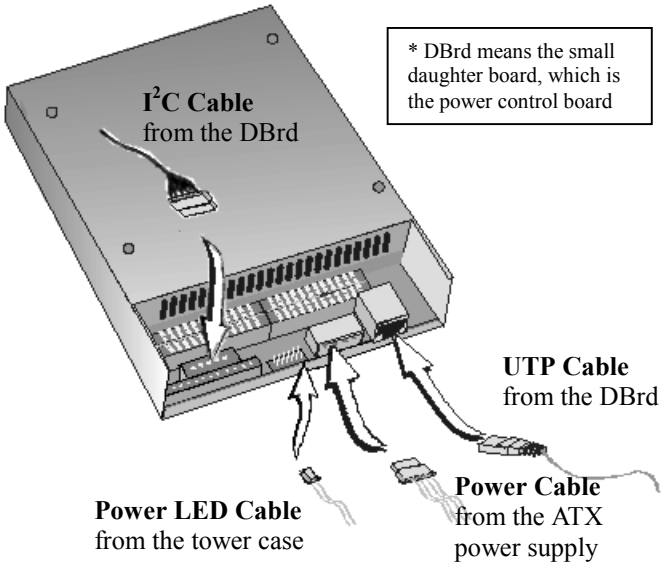


Figure 2-1 Connecting cables to the controller

6. Connect the supplied ATX power cable with the power control board (DBrd) and the ATX power supply.

7. Connect the power switch (trigger switch) cable of the tower case to the power control board.

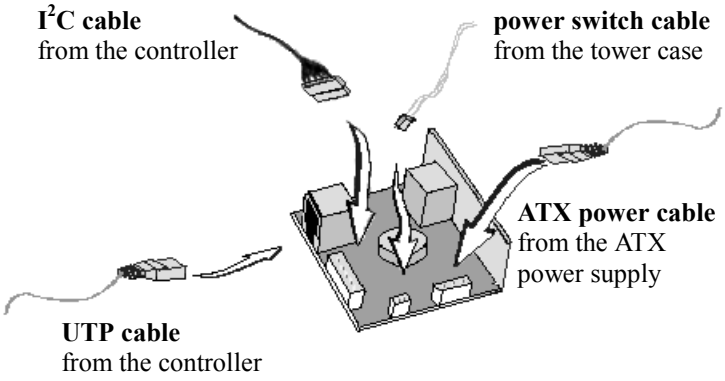


Figure 2-2 Connecting cables to the power control board (DBrd)

8. Connect IDE cables with the controller and the storage devices (hard drives, CD/DVD drives, ...).

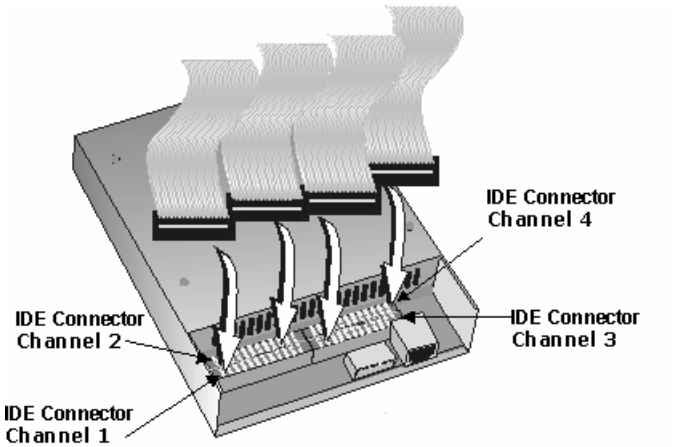
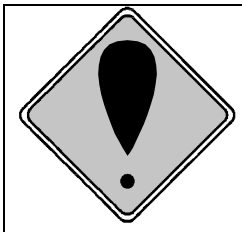


Figure 2-3 Connecting IDE cables to the controller



Caution:
On the daughter board (power control board) is a coin-cell style lithium battery of type **CR2302**. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

2.1.2 Connecting the cables onto the tower case

After you are done with the previous steps, or if you have a FISC CDH pre-installed in a tower case, only two more steps are required to finish the cabling.

1. Connect a UTP cable to an Ethernet or Fast Ethernet hub/switch.
2. Connect the power cord to a power outlet. Please check the voltages of your ATX power supply and the power outlet.

2.2 Installing The Rack-mount Models

2.2.1 Setup and inspection procedure

After you take a FISC CDH chassis out of the box, please verify the following items:

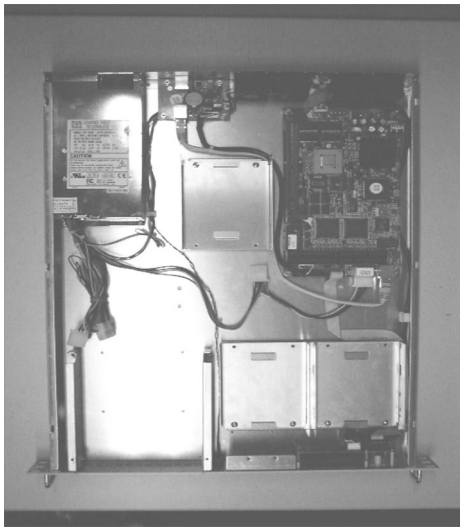
1. Loosen the screws in front and at the back of the chassis and remove the top cover of it. Store screws in a safe place.
2. Inspect the contents of the package to ensure that everything that should be with it:

    - FISC CDH chassis w/ power supply installed
    - FISC CDH Main Board (Installed)
    - FISC CDH Power Control Board (Installed)
    - 3 Hard Disk Drive Trays for **PRO** model / 4 Hard Disk Drive Trays for **SMART** model
    - Manual and Utilities CD

- Accessory Box (contains screws and cable accessory)
- 4 IDE cables with label sticker near both ends
- Power Cord

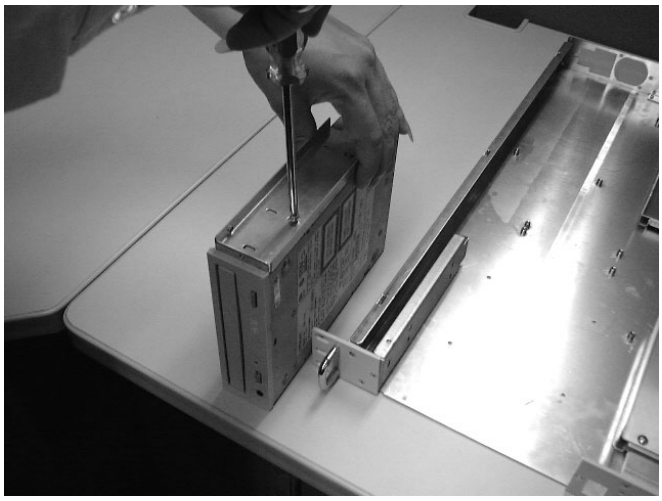
3. Make sure the power supply; the main board and the power board are tightly attached to the chassis.

4. Make sure that the power I/O switch is mounted securely to the front of the case and the wire going back to the power board is intact.

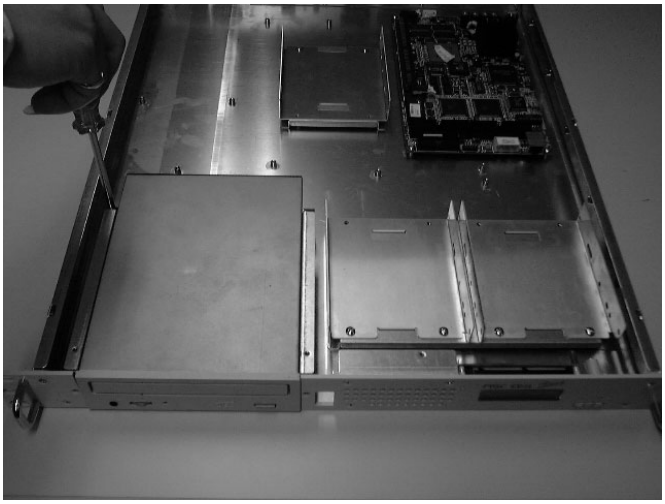


2.2.2 Connecting the CD-ROM/R/RW or DVD drive onto the chassis (FISC CDH PRO)

1. FISC CDH uses removable metal rails that are mounted to the drive, attach the rails to both side of the drive using two screws per rail as shown.



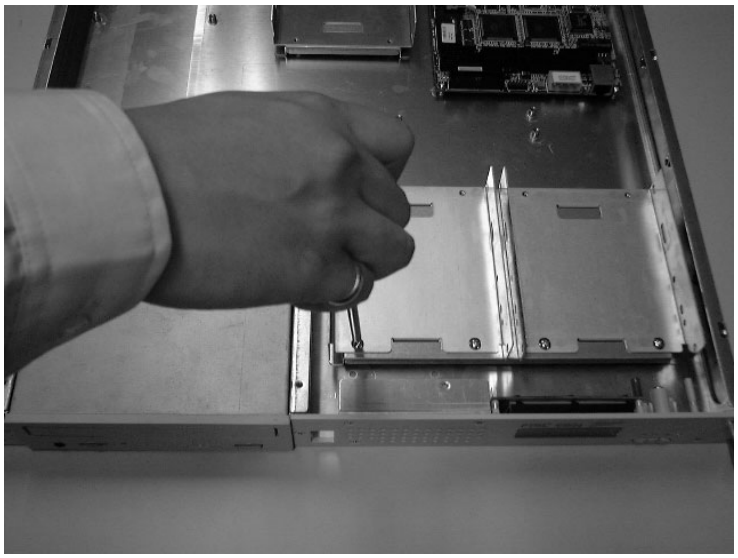
2. Then secure the drive onto the chassis as shown. Make sure the drive is not free to move around when you are done.

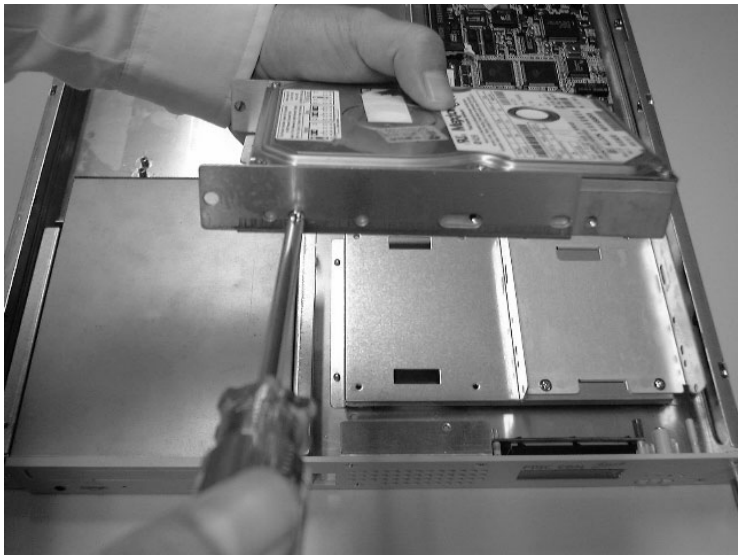


2.1.3 Connecting the hard drive onto the chassis

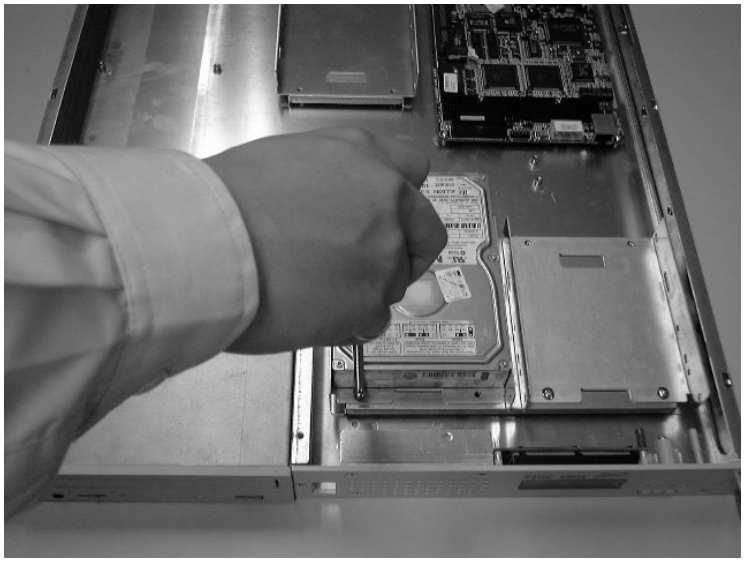
This procedure provides instructions for installing hard disk drives into the FISC CDH system.

1. FISC CDH uses removable metal box into which hard disk drives are mounted. You have to remove the metal box first, place the hard disk drive on the metal box, and then use four screws to mount the drive on the metal box.



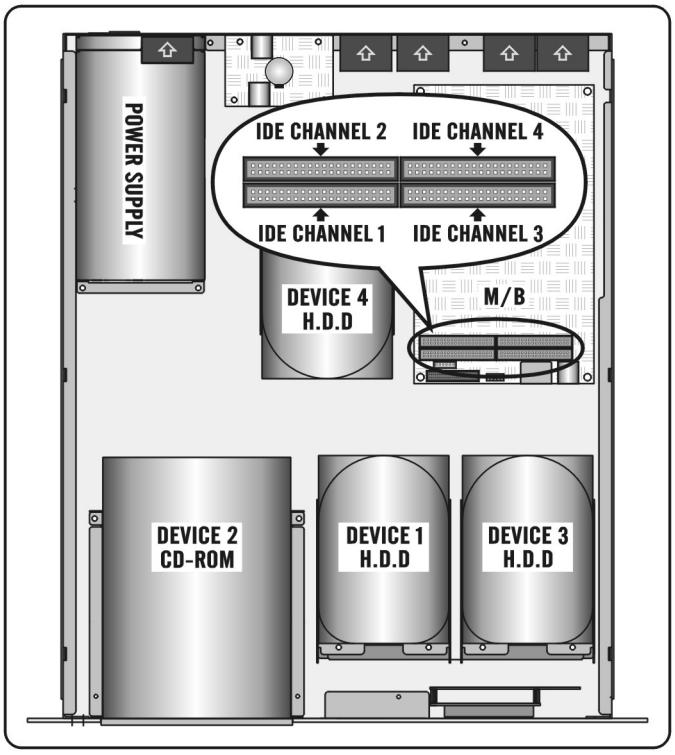


2. Finally, sliding the metal box on the chassis as shown. Use two screws to mount the metal box on the chassis to ensure that it fits properly.



2.2.3 Connecting the cables to the FISC CDH main board

1. Determine which end of the interface connector is PIN 1. Hard disks usually have PIN 1 of the connector next to the drive's power connector.
2. Connect the IDE cables as indicated on the label, which is located at the inner face of the top cover.



2.2.4 Post-assembly check procedure

1. Make sure the power switch on the power supply at the back of the chassis is ON.
2. Make sure all you drives and the FISC CDH main board have a power connector attached to them correctly.
3. Check the IDE cables going to all the drives to make sure that you have lined up the red edge to PIN 1 of each device. Usually PIN 1 of the connector is next to the drive's power connector.
5. Make sure that all the drives are properly physically secured in their exact position. Make sure there are no loose wires in the chassis that may interfere with the fans in the chassis.

2.3 Configuring FISC CDH

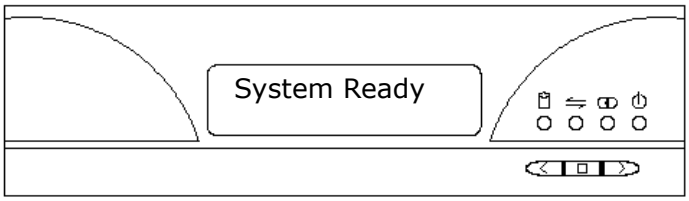
2.3.1 Setting the IP address by means of the LCD panel

The FISC CDH is equipped with a LCD panel for simple configuration and displaying system information.

The default IP address is 192.168.1.1. If you want to assign a different IP address manually, the LCD panel is an easy way of doing it. If you want to get an IP address automatically via DHCP, BOOTP or RARP protocols, please refer to page 17, Getting the IP address automatically.

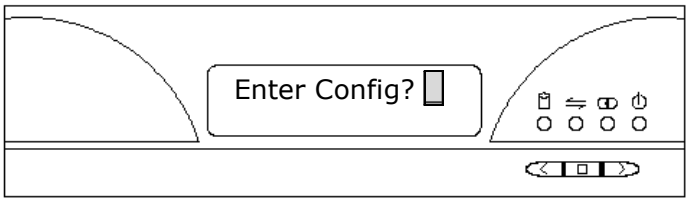
The following steps describe how to configure fundamental parameters through the LCD panel.

1. Turn on the power. The LCD panel will display "System Ready" after the POST (power-on self-test).

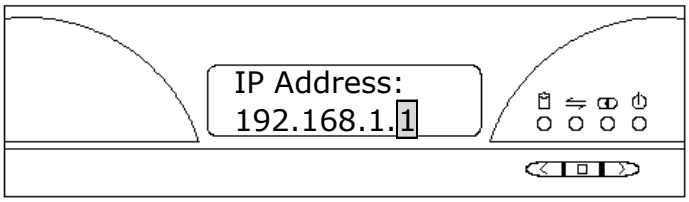


2. **Press the right button.** The LCD will display "Enter Config?" as shown below. **Press the middle button** to enter the config mode for setting IP address, subnet mask, gateway

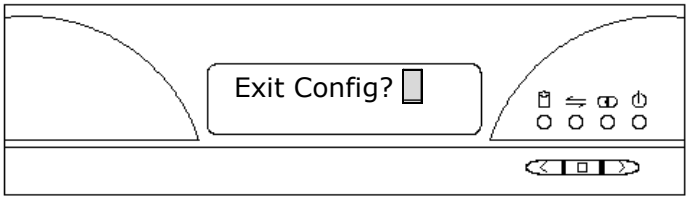
IP address, etc.



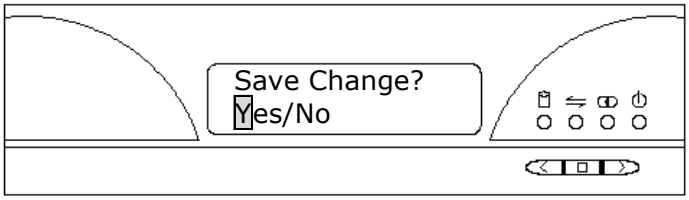
3. In the config mode, there is a cursor on the LCD screen. Press the left or right button to move the cursor. Press the middle button to change the digit.



4. Press the right button until "Exit Config?" appears on the LCD panel. Press the middle button to exit the config mode.



5. Move the cursor to Yes and press the middle button to save the changes.



2.3.2 Going to the Administration Page

After setting an IP address on the LCD panel, open a web browser and go to http://x.x.x.x/admin/ (x.x.x.x is the set IP address), which will open the **Administration Page** where you

can perform advance configuration. For more details, please read the following chapters, or invoke the on-line help window.

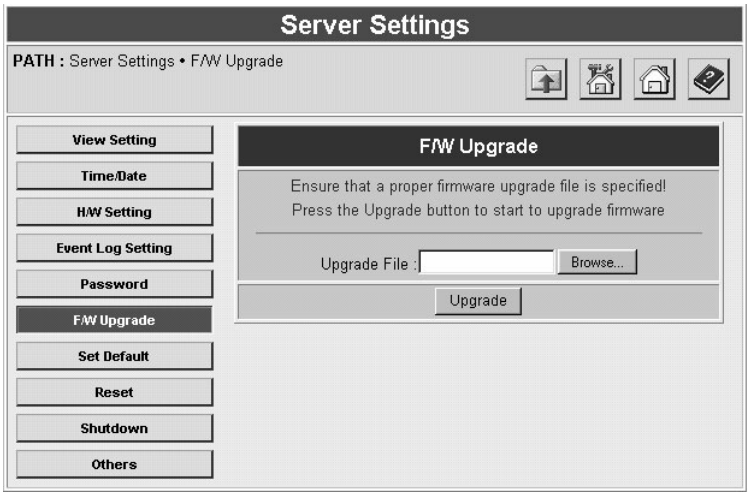
2.3.3 Invoking the on-line help window

The following chapters describe the basics of the FISC CDH configuration and usage. There is also a brief help information on the **User Page** and the **Administration Page**.

To open the on-line help window, please click the **Help** button on the tool-bar on either the **User Page** or the **Administration Page**.

2.4 Firmware Upgrade

The flash memory stores the operation system and all the functions of the FISC CDH. You can upgrade the FISC CDH by writing the firmware image to the flash memory. Please follow the next steps to upgrade the firmware:

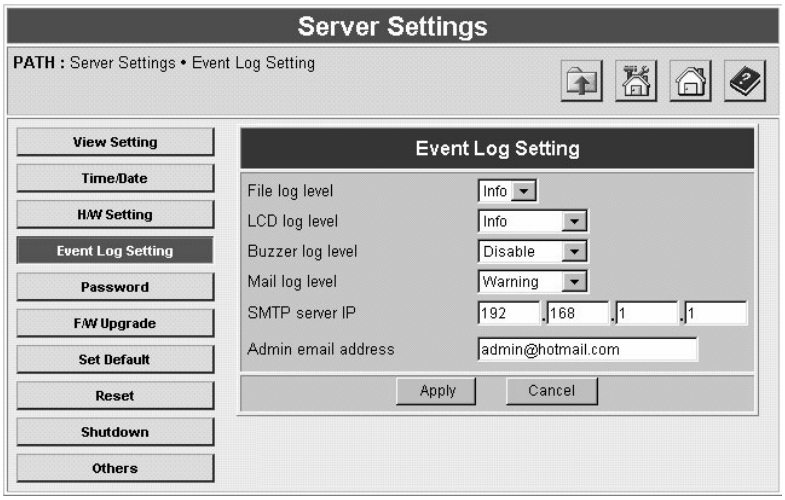


1. Go to the **Server Settings** on the **Administration Page**.
2. Click the **F/W Upgrade** button on the left.
3. Input the full path name of the firmware image (.BIN file) in the **Upgrade File** field or use the **Browse** button to find the location of the firmware image file.
4. Last, click the **Upgrade** button to begin to upgrade the firmware. It will reboot the FISC CDH after the upgrade is completed.

2.5 Event Notification

The FISC CDH can notify the user of system events via event logs, LCD panel, and buzzer in the FISC CDH controller and/or email.

To configure the settings related to the system event notification, please go to **Server Settings** on the **Administration Page**, and click the **Event Log Setting** button.



To configure which level of messages will display on the LCD panel, select among **Info**, **Warning**, **Error** and **Emergency** in the **LCD log level** pull-down menu. (**Info** means general system events such as "Start mirroring". **Warning** means some action fails such as "Remote mirror fails". **Error** means the FISC CDH is in dangerous state such as "Temperature is too high". **Emergency** means fatal errors such as "Firmware upgrade fails".)

To notify the users of system events via email, please select **Mail log level** as Info, Warning, Error or Emergency. Next, specify the IP address of the mail server in the **SMTP server IP** field. Then specify the user's email address in the **Admin email address** field.

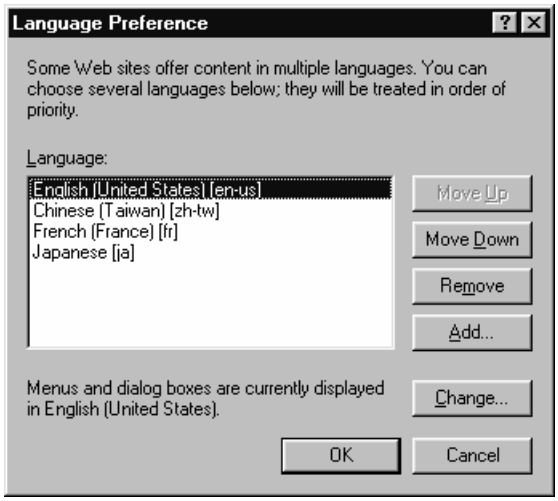
2.6 Multi-Language Support

The FISC CDH has built in multi-language support of the web pages in the firmware, including both the Administration Page and the User Page. You only have to change the settings of their Internet browsers to see different languages of web pages instantly. Also, to solve some localization issues, the FISC CDH allows you to select the code-page. Please read the following sections for details.

2.6.1 The administration page and the user page

Total 9 languages of the web pages are included – English, French, German, Italian, Spanish, Japanese, Korean, Simplified Chinese and Traditional Chinese. You can configure your web browser to specify the language of the web page.

Take Microsoft Internet Explorer 5 for example. Open IE 5 and go to the Administration Page. Click **Tools** from the file menu of IE 5 and choose **Internet Options**. From the pop-up dialog box, click the **Languages…** button close to the bottom. You will see:

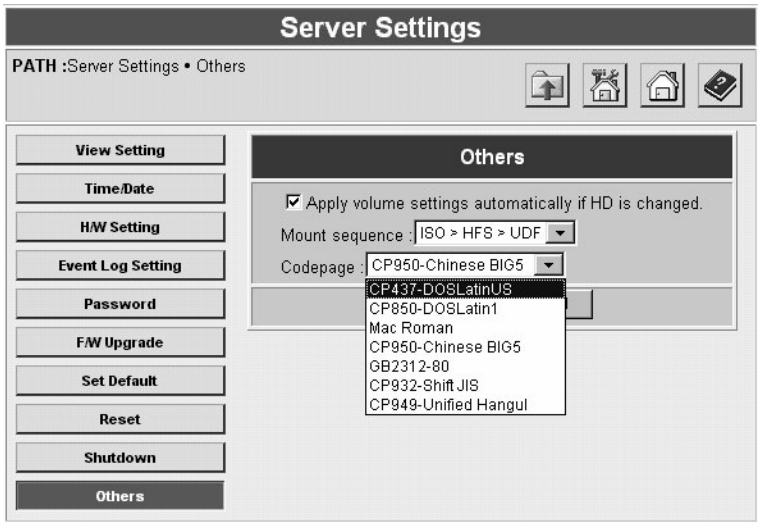


From the dialog box, click the **Add** button and choose a language that you want to use, like **French (France) [fr]**. Select this item and use the **Move Up** button to move it to the top position. Click the **OK** button to return to the browser. Click the **F5** key to refresh the window. You will see the Administration Page in French.

2.6.2 Code-page selection

To make the FISC CDH operate more smoothly under the OS platform other than English, it is suggested to adjust the code-page according to different OS platforms.

To change the code-page setting, go to the **Administration Page** and enter the **Server Settings** page. Click the **Others** button on the left.



On this page, please select a code-page and click the **Apply** button. Below is for your reference.

CP437-DOSLatinUS: for English OS
CP850-DOSLatin1: for OS of west European languages
Mac Roman: for Mac OS
CP950-Chinese BIG5: for Traditional Chinese OS
CP936-Chinese GB: for Simplified Chinese OS
CP932-Shift JIS: for Japanese OS
CP949-Unified Hangul: for Korean OS

Chapter 3 Configuring The CD/DVD Server Functions

After performing the basic installation described in the previous chapter, you can go on for further configuration if necessary. This chapter describes the basics and steps of how to configure and use FISC CDH as a CD/DVD server.

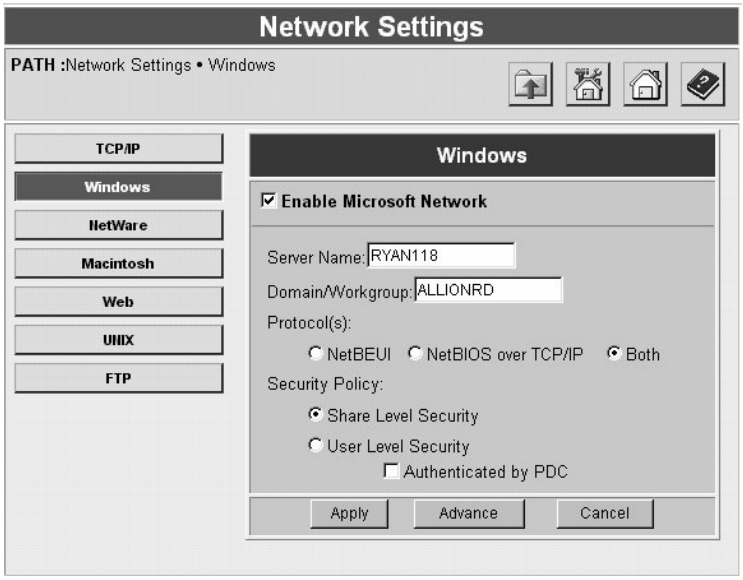
3.1 Configuring Network Settings

3.1.1 Enabling the network protocol support

FISC CDH works perfectly in a heterogeneous network environment. It supports user access from different operating systems. The following steps describe how to configure the network settings for Windows users. Steps for other network protocols are similar.

1. Please go to the **Administration Page** and click **Network Settings**. To the left side of the page are the buttons: **TCP/IP, Windows**, **NetWare**, **Macintosh**, **Web** and **UNIX**.

2. Click the **Windows** button. Make sure that the check-box besides **Enable Microsoft Network** is checked (default setting).



3. Enter the server and domain/workgroup names. These names specify what the users see from Network Neighborhood under Windows.

4. Under the **Protocol(s)** item, select **Both** if you are not sure which one to select.

5. Select a security policy between **Share Level Security** and **User Level Security**. The default setting is **Share Level Security**.

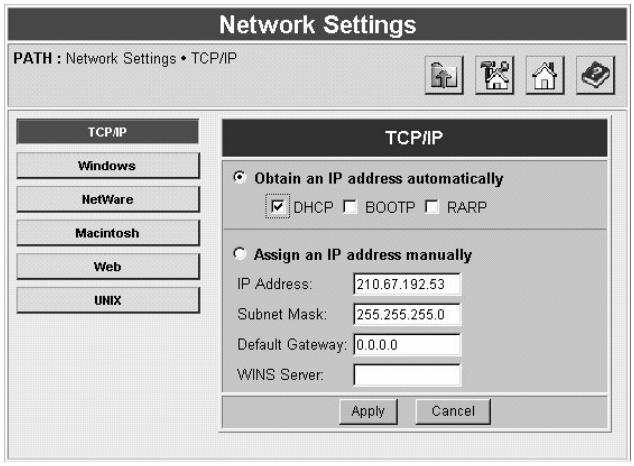
6. Click the **Apply** button.

3.1.2 Getting the IP address automatically

In addition to assigning an IP address manually, FISC CDH can use some standard protocols to get an IP address automatically. To enable this function, please go to the **Administration Page**, and select **Network Settings*TCP/IP**.

Select the item - "**Obtain an IP address automatically**" and choose which protocol(s) to use. Click the **Apply** button to confirm and apply the changes.

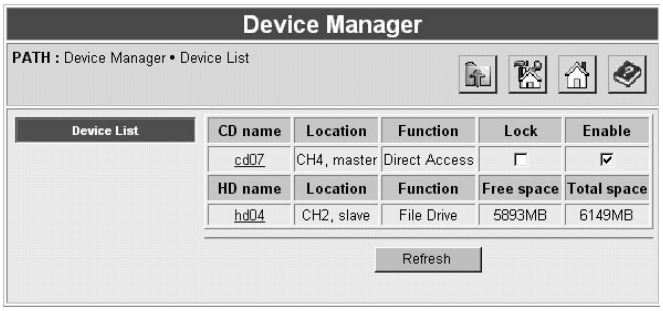
There must be an active DHCP server on the LAN if FISC CDH is using the DHCP protocol to get an IP address. It is the same for BOOTP and RARP.



3.2 Direct CD Accessing

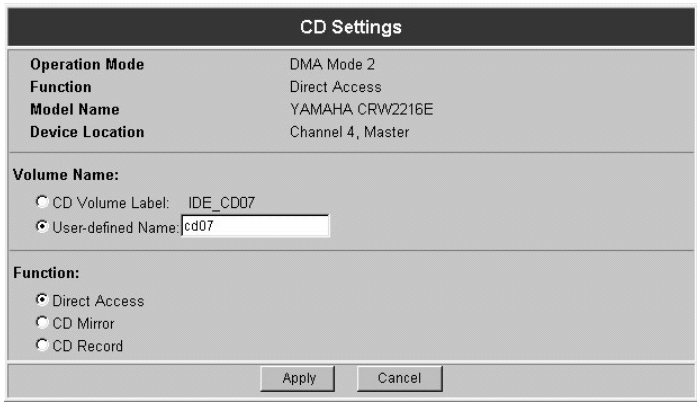
By default, the functions of all the CD/DVD devices are set as direct access. Users can access all the CD/DVD devices in the system folder /CDROM. If you want to promote a CD/DVD to the root directory instead of /CDROM, please follow the steps.

1. Please go to the **Administration Page** and click **Device Manager**. The first page of **Device Manager** is **Device List**. It lists all devices, including CD/DVD drives, hard disk drives, and tape drives.

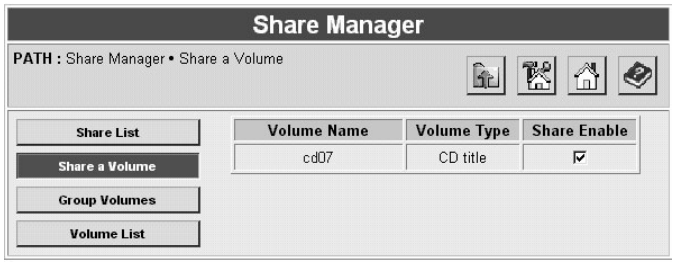


2. Click the device link in the **CD Name** column. It brings you to the **CD Settings** page.

3. The **Function** section specifies the role of the CD drive. Select **Direct Access**, which means you can access the disc in the CD device directly. **CD Mirror** means any disc inserted into the CD drive will be copied into a hard disk automatically and is not for user access; **CD Record**, which appears only if the CD drive is a CD-R or CD-RW device, means the device is used as an output device for burning CD-R or CD-RW discs out of the mirrored images in the FISC CDH.



4. Select **Share Manager** from the **Administration Page**. Click **Share a Volume**.



5. Click the **Share Enable** check-box of the CD/DVD. It takes effect immediately. Now the CD/DVD is shared under the root directory of the server and can be assigned access rights.

3.3 CD Image Sharing

If the FISC CDH is equipped with hard drives, it can duplicate CD/DVD discs into its hard drives in the form of CD/DVD images and share them as actual CD/DVD discs. To make a CD/DVD image, please follow the steps.

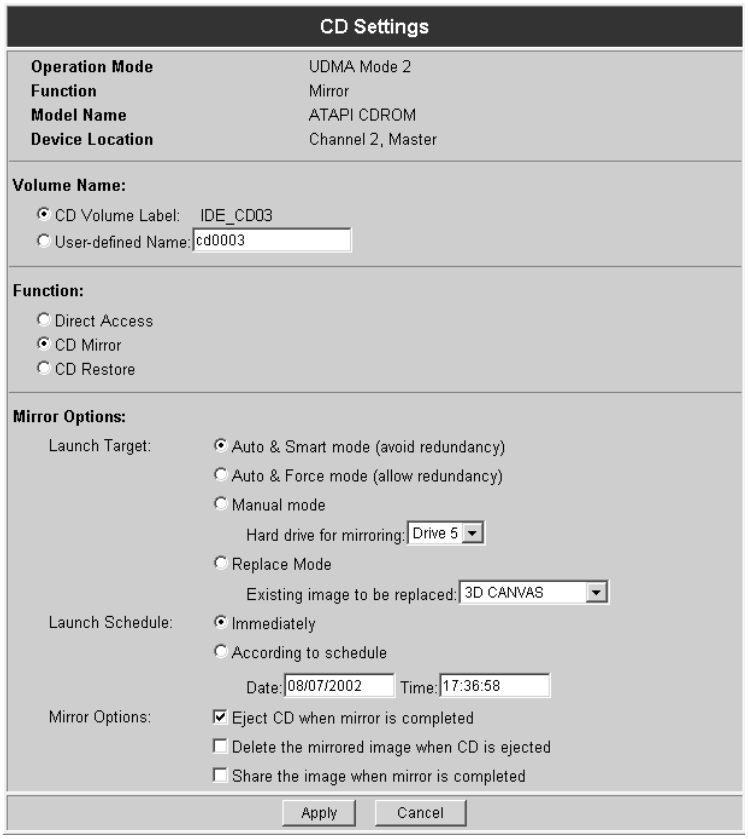
1. Configure a hard drive as a mirror device for storing mirrored images. Go to **Device Manager** of the **Administration Page**, and click a hard drive name.

2. On the **HD Settings** page, click the **HD Initialize** button to the left.

3. On the **HD Initialize** page, select **Mirror Device** and click the **OK** button.

4. To set a CD/DVD device as a mirroring source, go to **Device Manager** of the **Administration Page**, and click the CD/DVD device.

5. Select **CD Mirror** as the **Function** setting. **Mirror Options** will appear immediately next to the **Function** setting. Specify the options properly.



6. Specify Launch Target.
    i. **Auto & Smart:** checks if the CD/DVD image already exists when copying CD/DVD image. It will skip if an identical CD/DVD image already exists.
    ii. **Auto & Force:** do not check if there exists an identical CD image. It will copy the CD/DVD image anyway.
    iii. **Manual Mode:** lets the user to choose which disk volume to store the CD/DVD image.
    iv. **Replace Mode:** lets the user to choose the existing CD/DVD image to be overwritten by the next inserted CD/DVD disc.

7. Insert a CD/DVD disc into the CD/DVD device

you configured as the CD Mirror source to start a mirroring job.

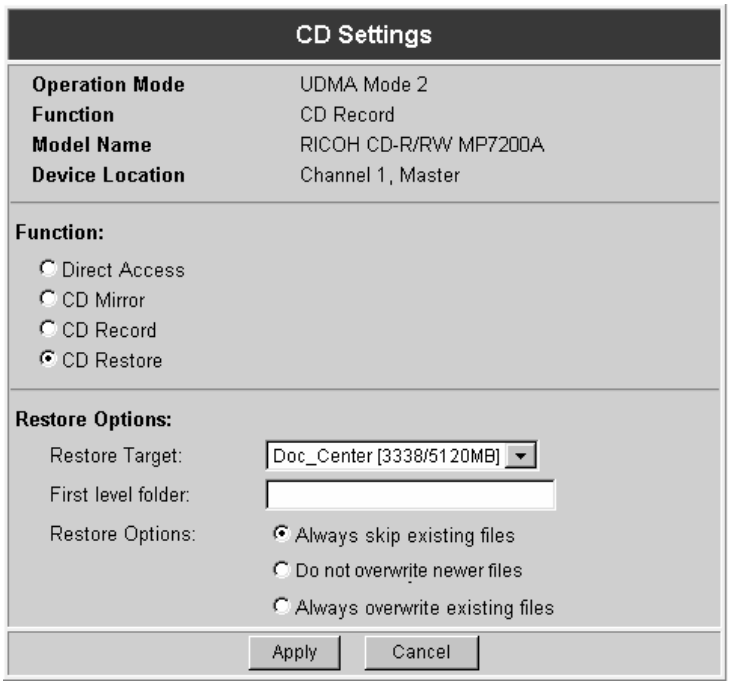
If the mirroring is successful, a CD volume will appear in **Share Manager*Share a Volume**. Click the **Share Enable** check-box of the mirrored CD/DVD image to share it to network users.

3.4 Copying CD into a File Volume

"CD Mirror" is used to copy a CD in the form of CD images. The CD images are stored in a "Mirror Device", which is always read-only. Whereas, the "CD Restore" function is used to copy a CD file by file to a file volume.

To make a CD device as a "CD Restore" device,

1. Go to the **Device Manager** of the **Administration Page**.
2. Click a CD name to enter the **CD Settings** page.
3. Click **CD Restore**.
4. If you want to copy the CD to a folder in the file volume, please specify the folder name in the **First Level Folder** field. Otherwise, you can leave it blank.
5. Specify whether to overwrite files in **Restore Options**. And click the **Apply** button.



3.5 Limiting User Access To CD Volumes

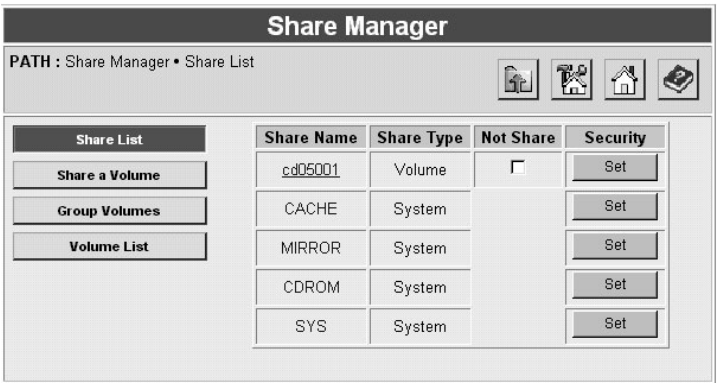
For security reasons, administrators can limit user access on FISC CDH. For Windows, Macintosh and web users, either share or user level security applies. For NetWare and NFS users, user level security is supported.

Share Level Security control for Windows users (SMB/CIFS protocol):

1. Go to **Network Settings*Windows** of the **Administration Page**. Make sure that the check-box of **Enable Microsoft Network** is checked.

2. Select **Share Level Security** under the **Security Policy** item. Click the **Apply** button.

3. Go to **Share Manager*Share List**. Click the **Set** button in the **Security** column of the share that you would like to limit user access.



4. On the **Share Password** page, set the share password. Click the **OK** button.

5. Now users have to enter the share password if they try to access the share via Network Neighborhood under Windows.

User Level Security control for Windows users (SMB/CIFS protocol):

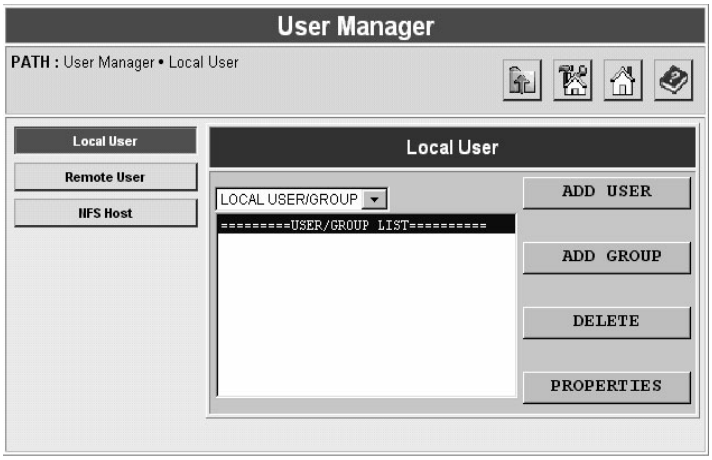
1. Go to **Network Settings*Windows** of the **Administration Page**. Check the check-box of **Enable Microsoft Network**.

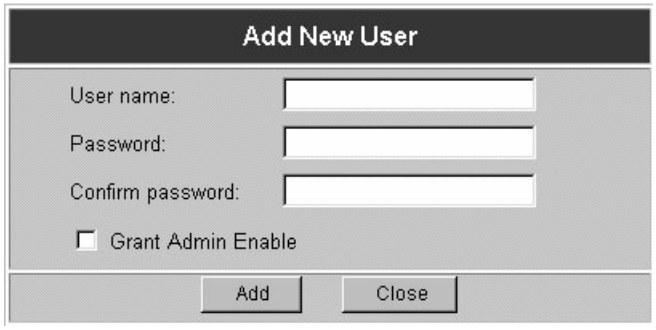
2. Select **User Level Security** under the **Security Policy** item. Click the **Apply** button.

3. FISC CDH can authenticate users by the user accounts stored in its local user database or the PDC server on LAN.

4. To add users to the local user database, go to **User**

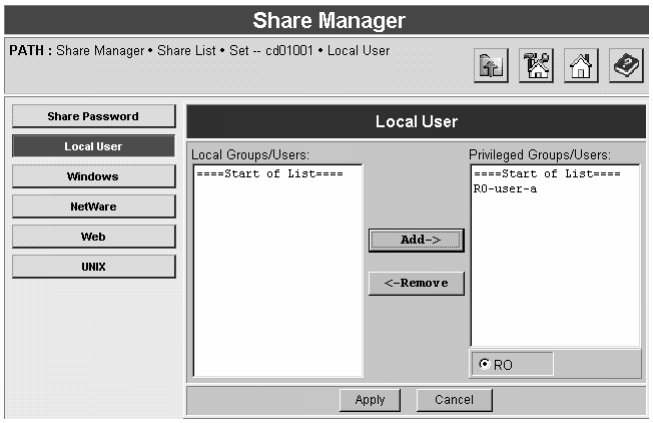
Manager*Local User. Click the **Add User** button. On the **Add New User** dialog window, enter user name/password and click the **Add** button.





5. Repeat the previous step if you want to add more user accounts to the local user database. Click the **Close** button when you are done.

6. Assign users to the permission list of a share. Go to **Share Manager*Share List**. Click the **Set** button in the **Security** column of the share that you would like to limit user access.



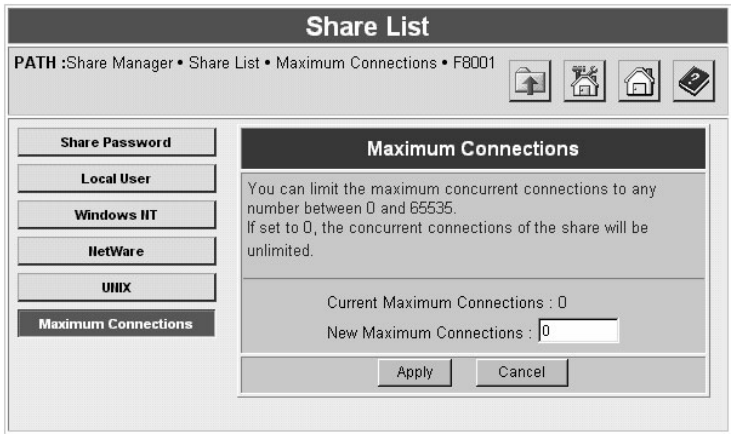
7. On the page, click the **Local User** button. (If you want to add PDC users, click Windows.)

8. Select users from the left-hand pane, and click the **Add->** button to add users to the permission list. To remove users, select users from the right-hand pane, and click the **<-Remove** button. When you are done with assigning users, click the **Apply** button.

9. Now only those users who are granted access rights are able to read or write the share via Network Neighborhood under Windows.

3.6 User License Control

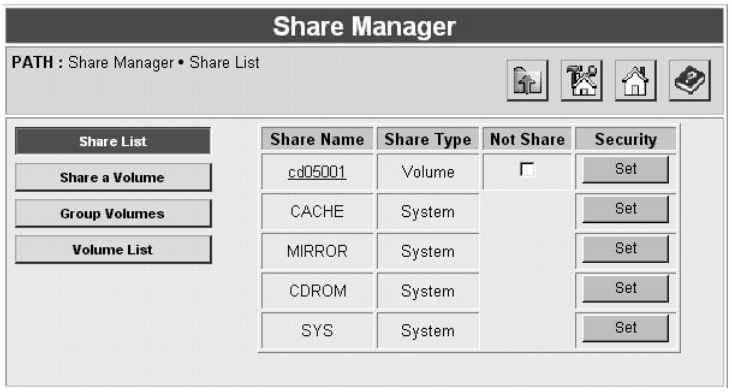
Administrators can control how many users are accessing a share at the same time by limiting the maximum concurrent network connections of that share. To limit the maximum connections, go to **Administration Page** and enter the **Share Manager** page. Click the **Set** button in the **Security** column against the share of which you want to control the access. Then you enter a page where you can configure the access control of the share. Click the **Maximum Connections** button on the left.

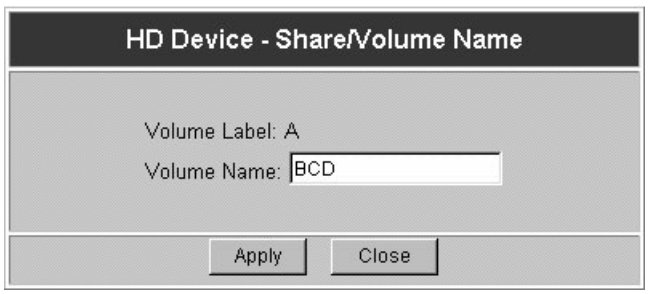


Enter a number for specifying how many concurrent connections are allowed to the share. Then click the **Apply** button. If you set the number to 0, the FISC CDH will set no limit on the maximum connections to that share.

3.7 Renaming the CD/DVD

To rename a CD disc or a CD image, please go to the **Share Manager** page and select **Share List**.





Click the hyperlink of the share in the **Share Name** column to go to a dialog window. Enter a new name and click the **Apply** button. Press the **Close** button to go to the upper menu.

3.8 Mirror Password

The bundled software, eConsole, is for remotely building and burning CD images into the storage server via the network. It also has some basic server management capability. For doing any modifications on FISC CDH via eConsole, one must provide a password for authentication.

From server management point-of-view, there are two levels of privileges, i.e., two kinds of passwords. A person knowing the **admin password** can do all actions, (for example, remote mirroring, deleting CD images and changing server IP addresses). With the **mirror password**, only remote mirroring/recording and (optional) image deletion are permitted.

To set the passwords mentioned above, please go to the **Administration Page**. Click into the **Server Settings** page. Click the **Password** button on the left to enter the page for modifying the administrator's password. Click the **Mirror Password** button on the left to enter the page for modifying the mirror password.

Chapter 4 Configuring The File Server Functions

FISC CDH functions as a file server and a CD server at the same time. Each hard drive can be configured to contain either CD/DVD images (which is read-only), or files (which can be read only or read/write). This chapter describes how to configure and use the file server functions.

4.1 Initializing a HD for File Sharing

This section describes how to prepare a HD for file sharing. Prior to that, if you have not enabled network protocol support, refer to section 3.1Configuring Network Settings on page 17.

1. Go to **Device Manager** on the **Administration Page**, and click a hard drive of your choice.

2. On the page, click the **HD Initialize** button.

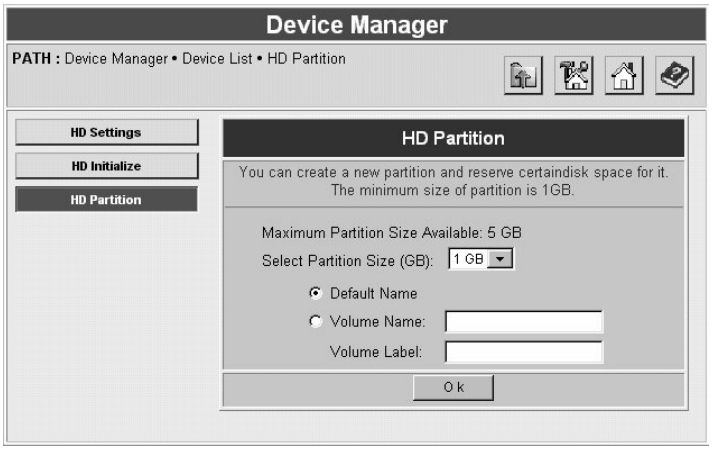
3. On the **HD Initialize** page, select **File Drive** and click the **OK** button to initialize the chosen hard drive.

4.2 Creating Partition(s) and Sharing File Volumes

To use the file sharing function of the FISC CDH, you must create at least one file partition on a file device (hard disk drive). A file partition is also referred as a file volume. A volume is a basic unit for sharing and security purpose. It means only volumes can be shared to network users. Network users view a volume as a folder or a directory in the root directory of the FISC CDH.

1. After a hard drive is initialized as a Files Device, the **HD Partition** button appears just below the **HD Initialize** button. Click the **HD Partition** button.

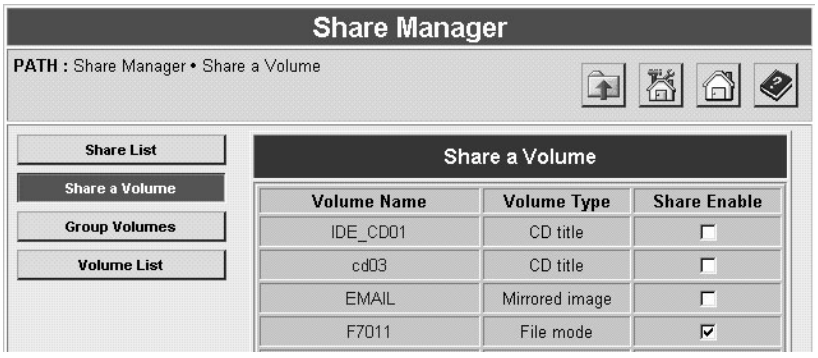
2. On the **HD Partition** page, select the size of the partition and assign a name for it (default name will be like F1001). Click the **OK** button.



3. Repeat step 2 if you want to create more partitions.

4. Now go to the **Share Manager** page of the **Administration Page**.

5. Click the **Share a Volume** button on the left. You can see that the **Share Enable** check-box of the just-created file volume is checked.



4.3 Limiting User Access To File Volumes

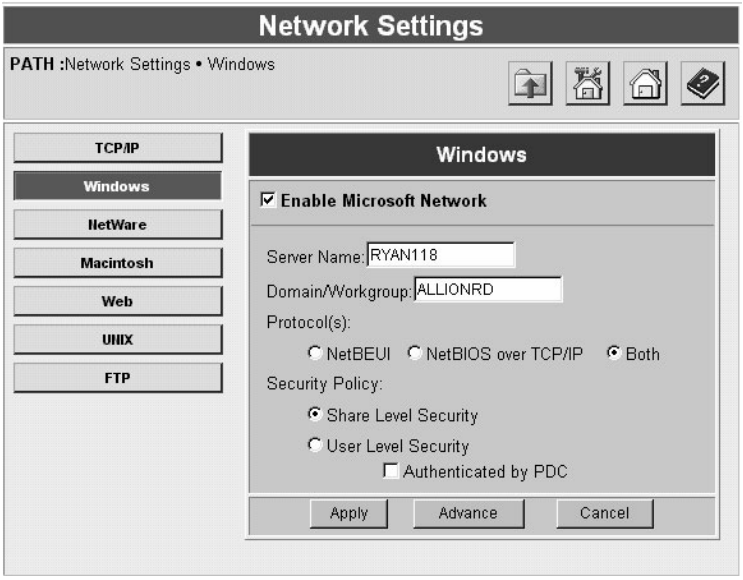
For security reasons, administrators can limit the user access for each CD/file volume. The security controls for different network protocols are different. For Windows, Macintosh and web clients, both share- and user-level security are supported. For NetWare and NFS users, only user-level security is supported. The security controls for different network protocols are independent.

Let us take Windows as an example. Steps for other protocols are similar.

Share Level Security control for Windows users (SMB/CIFS protocol):

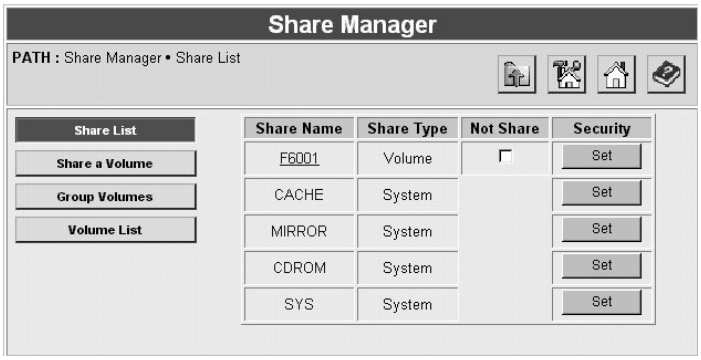
1. Go to the **Network Settings** page on the **Administration Page** and click the **Windows** button. Make sure that the check-box of **Enable Microsoft Network** is checked (default setting).

2. Select **Share Level Security** under the **Security Policy** item. Click the **Apply** button.

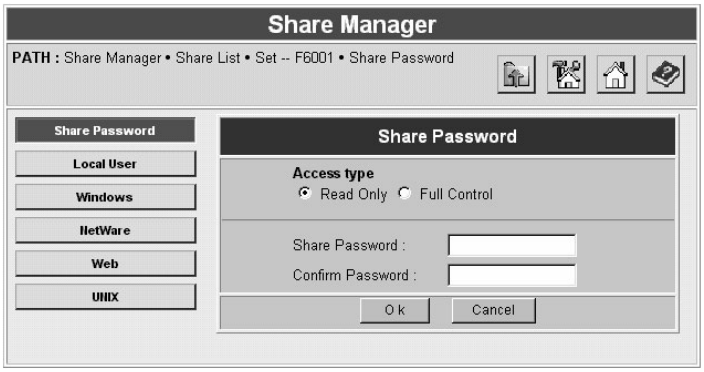


3. Go to the **Share Manager** page and click the **Share List** button on the left. Click the **Set**

button in the **Security** column next to the share of which you would like to limit the user access.



4. On the **Share Password** page, select either **Read Only** or **Full Control**, and set the Share Password. Click the **OK** button to confirm the changes.



5. Now users have to enter the share password if they want to access the share via Network Neighborhood under Windows.

User Level Security control for Windows users (SMB/CIFS protocol):

1. Go to the **Network Settings** page on the **Administration Page** and click the **Windows** button. Make sure that the check-box of **Enable Microsoft Network** is checked (default setting).

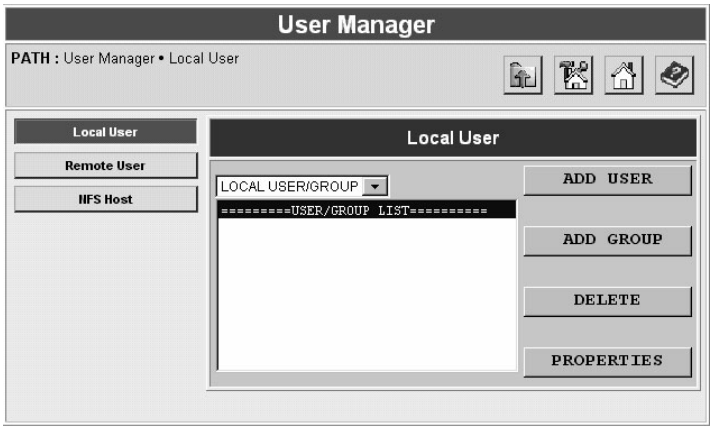
2. Select **User Level Security** under the **Security**

Policy item. Click the **Apply** button.

3. FISC CDH can authenticate users by the user accounts stored in its local user database or the PDC server on the LAN.

4. To add users to the local user database, go to the **User Manager** page and click the **Local User** button on the left. Then click the **Add User** button on that page.

5. On the **Add New User** dialog window, enter a user name and a password. Then click the **Add** button to add a user account.



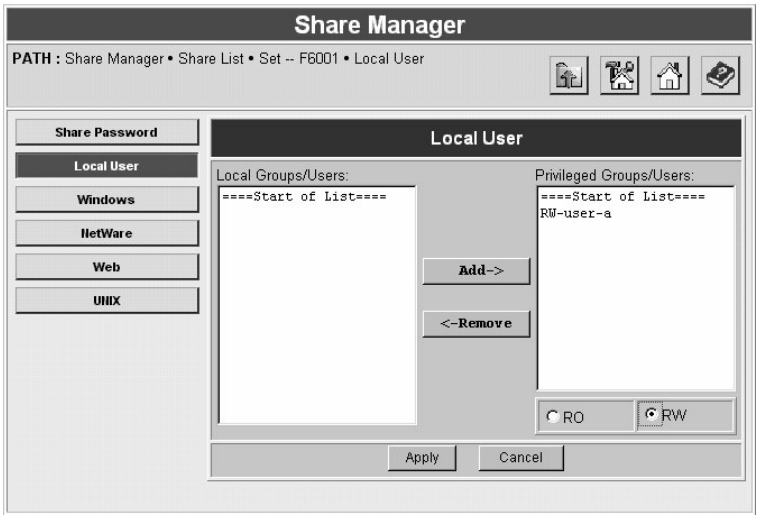
6. Repeat the previous step if you want to add more user accounts to the local user database. Click the **Close** button when you are done.

7. Assign users to the permission list of a share. Go to **Share Manager*Share List**. Click the **Set** button in the **Security** column of the share that you would like to limit user access.

8. On the page, click the **Local User** button. (If you want to add PDC users, click Windows.)

9. Select users from the left-hand pane, and click the **Add->** button to add users to the permission list. To remove users, select users from the right-

hand pane, and click the **<-Remove** button.

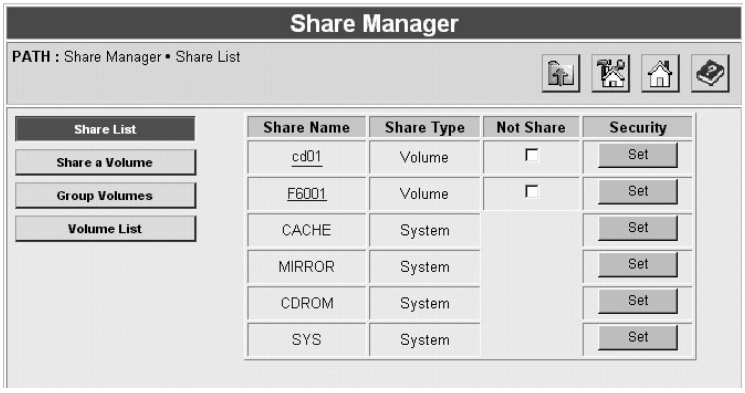


10. Assign a user's access right by selecting **RO** (Read only) or **RW** (Read/Write) below the **Privileged groups/users** pane. When done with assigning users, click the **Apply** button.

11. Now only those users who are granted access rights are able to read or write the share via Network Neighborhood under Windows.

4.4 Renaming Volume Label and Volume Name

To rename a CD disc or a CD image, please go to the **Share Manager** page and click the **Share List** button on the left.



Click the hyperlink of the share in the **Share Name** column to go to a dialog window. Enter a new name and click the **Apply** button. Press the **Close** button to go to the previous menu.

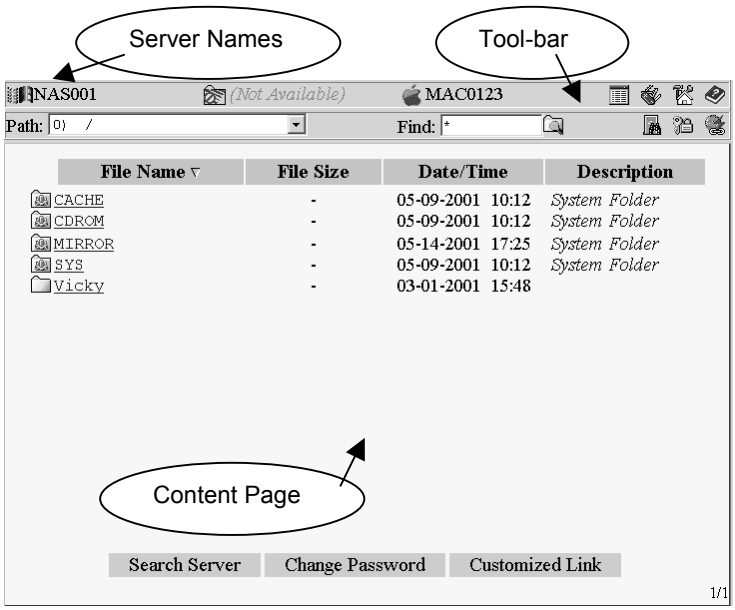
Chapter 5 Accessing From Different Clients

The FISC CDH integrates itself into your network once the setup and configuration are completed. You can access the FISC CDH by means of the browsing and mapping tools coming with your network operating system. The following sections describe how to access the FISC CDH from your desktop in various client environments. For technical support, please consult your network administrator or dealer.

5.1 Accessing Through Web Browsers

To access the FISC CDH through a web browser, simply type in the IP address of the server and press **Enter** to go to the user page as shown below.

5.1.1 FISC CDH User Page



This page shows the content of the server. You can click on any folder to display its content or on any file to download it.

Default Folders: there are four default folders – **SYS** provides access to system information files, **CACHE** to all cached CD images, **CDROM** to all CD devices and **MIRROR** to all mirrored images. The icons of default folders are different from

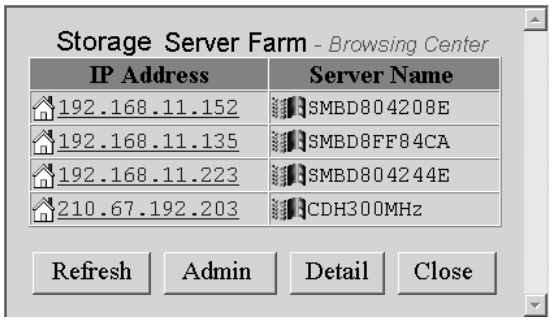
other folder icons.

Server Names: from left to right on the top column, it shows the server names under Windows, NetWare and MacOS, respectively.

Path: this list-box provides a listing of the hierarchy of the folder you are currently browsing and allows the user to quick jump to any one of the sub-directories by simply selecting a particular path name link in the list.

Find: to search for a specific item in the current folder, enter the name in the field and click the "Find" button. The find result appears in the content page.

Search Server: this function finds all FISC CDH servers on LAN in a pop-up window as shown below.

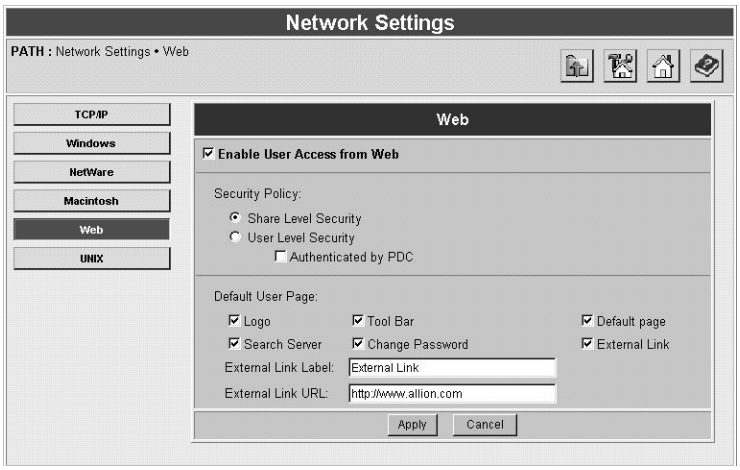


Change Password: to change a local user password for accessing the user page.

External Link: to go to the configurable web site.

5.1.2 Disabling the user access from web

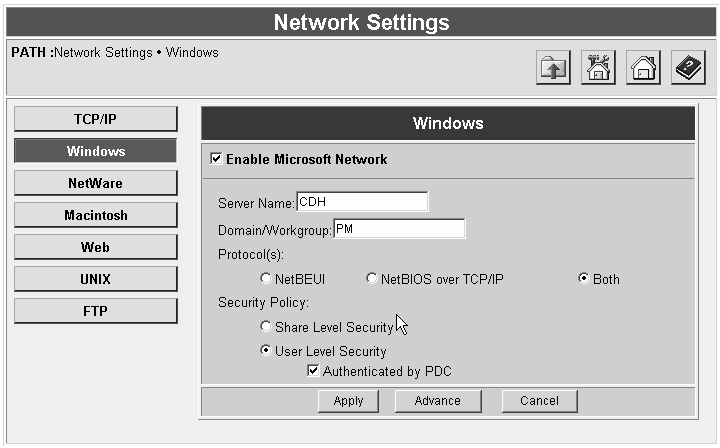
In case the administrator would like to prohibit users from accessing the FISC CDH via the web, he can disable this function. To do so, go to **Network Settings** on the **Administration Page** and click **Web**.



Next, un-check the **Enable User Access from Web** check-box and click the **Apply** button.

5.2 Using the FISC CDH Under Windows 95/98

From the user side, FISC CDH servers act like any computer or server on LAN. To use FISC CDH in Windows 95/98, first make sure that Windows Network support of FISC CDH is enabled. To do so, go to **Network Settings** on the Administration page and click **Windows**. Make sure that the **Enable Microsoft Network** check-box is checked. Click the **Apply** button if you make any changes.

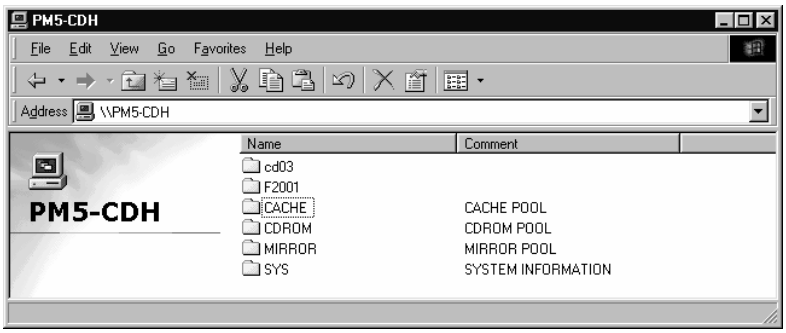


5.2.1 Reading and writing from/to the FISC CDH

First, make sure that the TCP/IP protocol is installed under Windows.

Next, start Windows Explorer or **Network Neighborhood**. The FISC CDH appears as a computer icon in its workgroup.

Double click the icon representing the FISC CDH. You will find all the shared folders in the FISC CDH. You can access any folders (if you have the access rights). It will prompt for user name and password if required.



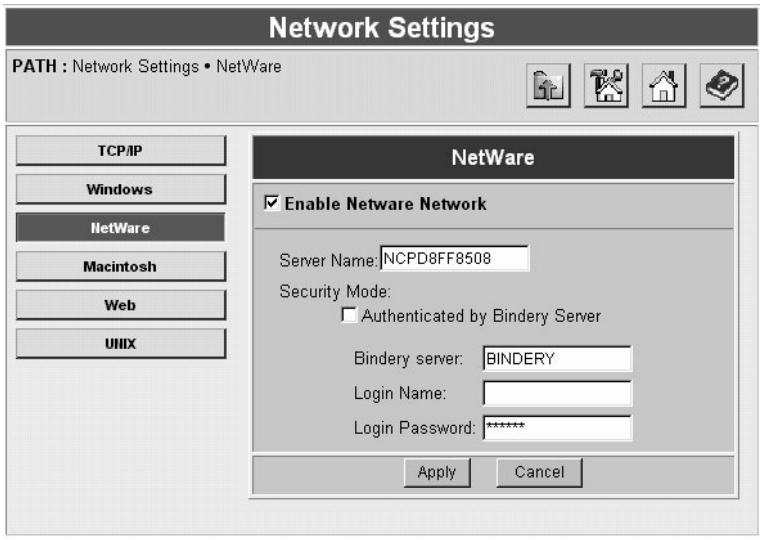
For example, you can write to F2001 if it is a file volume of which you have full-control access right (please see p.32 Limiting User Access To File Volumes for information about assigning access rights).

5.3 Using the FISC CDH Under Windows NT/2000

The way to use the FISC CDH under Windows NT 4.0/2000 is similar as in a Windows 95/98 environment. Double click **Network Neighborhood** on Desktop. Find and double click the FISC CDH server. All shared folders of the server will appear.

5.4 Using the FISC CDH Under NetWare clients

First of all, enable the NetWare support of the FISC CDH by checking the **Enable NetWare Network** check-box and subsequently click **Apply**. You can also change the FISC CDH's server name used under the NetWare network environment.



Only user level security is available under NetWare. You must have a user account to log on to the FISC CDH and thus be able to access its content. User accounts are stored either in the local user database or in a bindery server. Also, note that you must assign user access rights for each share.

If you want to add a local user account, go to the **User Manager** page on the **Administration Page** and click the **Local User** button on the left. If you want to authenticate by a bindery server, check the **Authenticated By Bindery Server** check-box on the above page, enter the name of the bindery server, username and password for logging on to that bindery server.

After the FISC CDH is configured, install the appropriate protocols and clients for your platform. The network components to be installed are somewhat different on different operation systems. For example, you should installed "IPX/SPX Compatible Protocol" and "Client for NetWare Networks" in Windows 98 to access NetWare servers. Please refer to NetWare documentation for detailed information.

Please note that, in the NetWare network environment, there must be at least one NetWare server other than the FISC CDH on the LAN.

5.4.1.1 Network Neighborhood under Windows

Open **Entire Network** in **Network Neighborhood**. Find and double click the FISC CDH server. It will prompt for a user name and a password. Enter the user name and password in either the local user database or the bindery server for authentication.

Once authenticated, all shared folders of the server will appear. You can now enter those folders of which you have access rights.

5.4.1.2 DOS command line

To access the FISC CDH under DOS with NetWare, you have to map the FISC CDH to a drive letter first:

```
Syntax:

Map <logical drive letter:>=<FISC CDH's NetWare
server name>\<Share Name>:
```

Example 1:

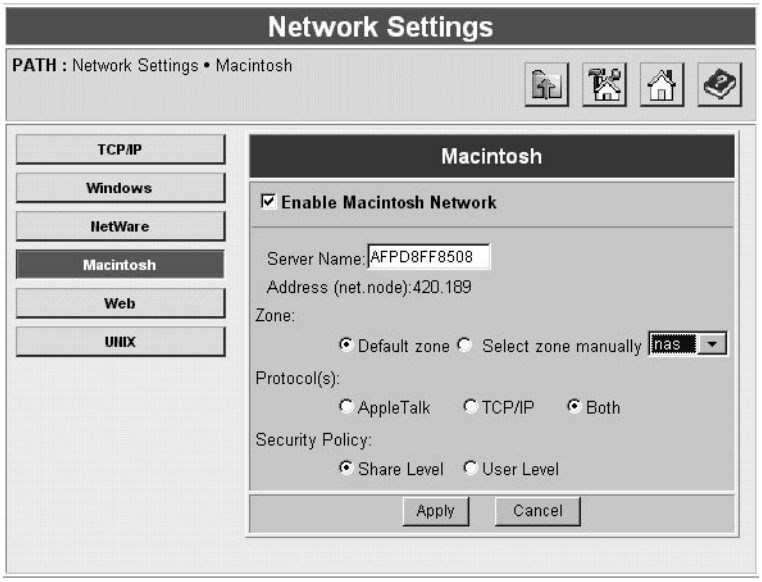
To map the share "MIRROR" of a FISC CDH with server name "NCPD8FF8508" as next available drive letter, type:

```
map n NCPD8FF8508/MIRROR:
```

The FISC CDH will prompt you to enter your user name and password. Enter the user name and password in either the local user database or the bindery server. Then the share “MIRROR” will be mapped to a drive letter of a local machine.

5.5 Using The FISC CDH Under MacOS

To use the FISC CDH under MacOS, first enable the Macintosh protocol support of the FISC CDH. Go to **Network Settings** on the **Administration Page** and click the **Macintosh** button on the left. Check the **Enable Macintosh Network** check-box and click the **Apply** button.

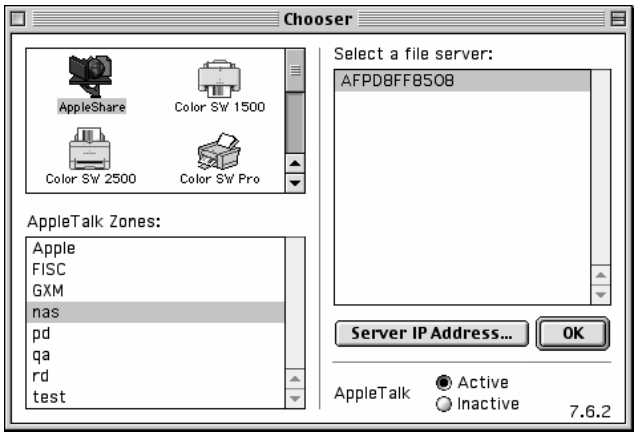


There are two ways under MacOS to access a network server – Chooser and Network Browser. Please check the above page about the server name and the zone of the FISC CDH under Macintosh Network.

5.5.1 Accessing through Chooser

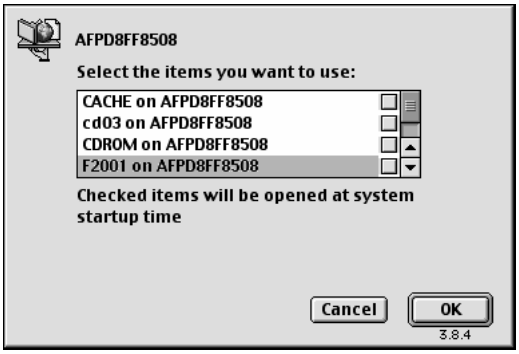
The following example describes how to access the FISC CDH via Chooser of MacOS 8.6.

1. Run **Chooser** and click **AppleShare**.



2. Select a zone out of the **AppleTalk Zones:** pane. Select a server and click **OK**.

3. Click **Connect**. A dialog box as below will pop up.

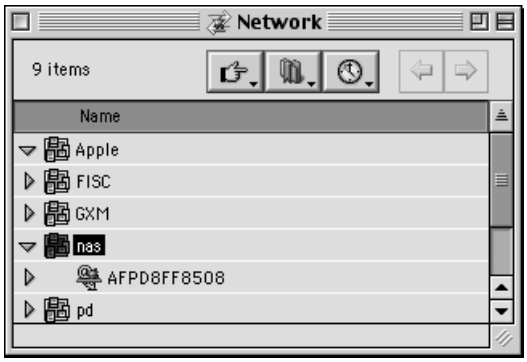


4. Select a share item and click **OK**. A network folder will appear on Desktop. Then you can read or write to the folder depending on your access right.

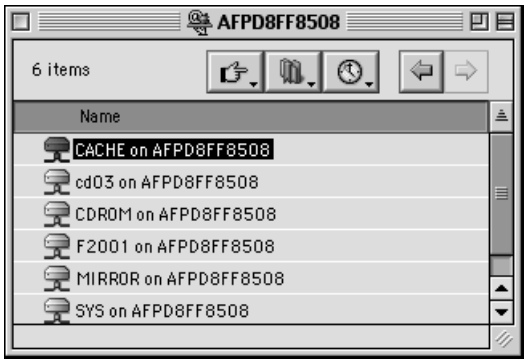
5.5.2 Accessing through Network Browser

The following example describes how to access the FISC CDH via the Network Browser of MacOS 8.6.

1. Run **Network Browser**. It will display all zones.



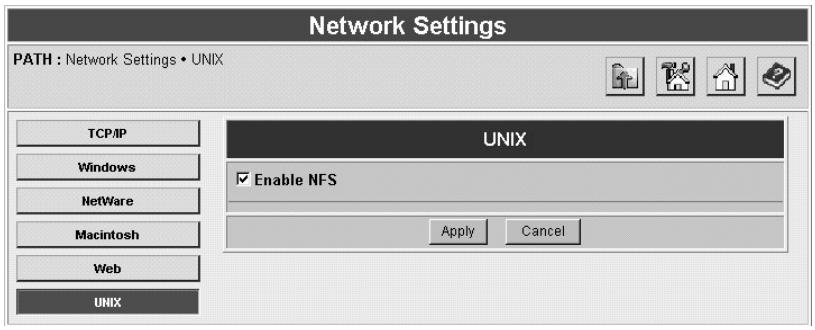
2. Click the zone where the FISC CDH is located. Double click the server. A window will pop up to display the content of the server.



3. Double click any share item that you want to access.

5.6 Using The FISC CDH Under NFS Clients

To use the FISC CDH under NFS clients, first enable the NFS protocol support on the FISC CDH **Administration Page**. Please go to the **Network Settings** page and click the **UNIX** button on the left. Check the **Enable NFS** check-box and click the **Apply** button.



5.6.1 How to use the FISC CDH under NFS clients

The FISC CDH can export all NFS-mountable CD and file volumes to any NFS client. Below is a sample procedure of exporting a volume to a NFS client.

1. Add a routing entry in the UNIX client host table:

In order to avoid the inconvenience of typing the IP address of the CD server when mounting the CD, you can add one line in "/etc/hosts" file as follows:

```
Syntax:
<FISC CDH IP Address> <FISC CDH Server Name>

Example:
192.132.253.123 FISC
```

2. Add the mount point at the UNIX client, usually named ***mnt*** under the root directory:

```
cd /
mkdir mnt
```

3. Mount the FISC CDH on a UNIX client mount point

A UNIX client can mount any exported volume(s) of the FISC CDH using the "mount" command. Please refer the following example for mounting "CD1" of the FISC CDH (server name FISC, IP address 192.132.253.123) on the `/mnt` directory of the client:

```
# mount -o ro FISC:/cd1 /mnt
```
(if the routing entry has been configured) or,

```
# mount -o ro 192.132.253.123:/cd1 /mnt
```
(if the routing entry has not been configured)

4. To find out which are the exported volumes from FISC

In order to find out what volumes are exported for mounting through NFS, you can issue the following command on a UNIX client:

```
# showmount -e FISC
```

Here is a snapshot from the FISC CDH of which the IP address is 164.164.67.2 and with 7 NFS mounted volumes.

```
# showmount -e 164.164.67.2

Export list for 164.164.67.2:
/SYS (everyone)
/CACHE (everyone)
/MIRROR (everyone)
/CDROM (everyone)
/cd01 (everyone)
/cd6 (everyone)
/cd7 (everyone)
```

5. The command to show the FISC CDH server's mount information

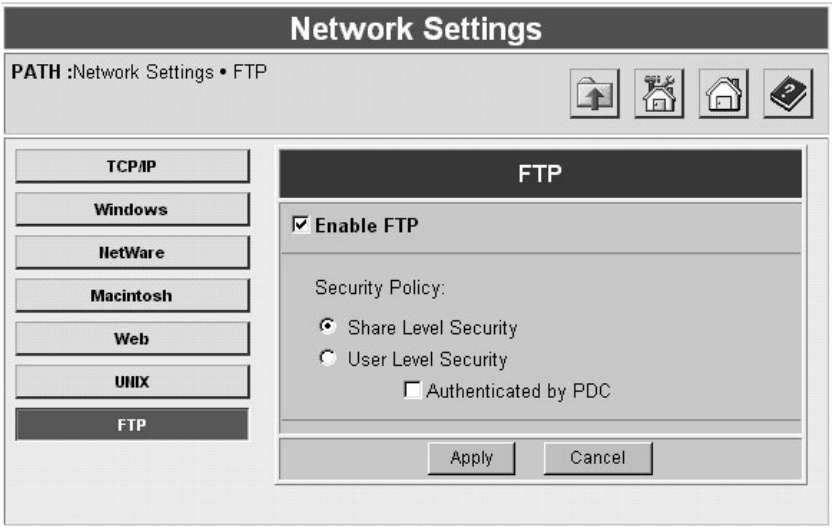
```
# showmount -a FISC
```

6. The command to remove a mounted volume

```
# umount /mnt
```

5.7 Accessing The FISC CDH Using FTP

The FISC CDH supports the FTP protocol after firmware version 2.0. It can use either share level security or user level security for user authentication. The behaviors are somewhat different. To configure the security policy of FTP, go to the **Network Settings** page under the **Administration Page** and enter the **FTP** page where you can choose the security policy.



5.7.1 FTP access with share level security

First, set the share password of a share.
Second, use a FTP client to log on to the FISC CDH server. Use the share name as the user name, and the share password as the password. After logon, you can only see the content of the share, but not other shares.

For example, assume that the FISC CDH server has an IP address of 192.168.1.2, the share name is **abc** and the share password is **123**. We use the FTP command under DOS prompt.

```
C:>ftp 192.168.1.2
Connected to 192.168.1.2
220 FISCCDH FTP server ready.
User (192.168.1.2:none)): abc
331 Password required for abc.
Password: 123
230 User abc logged in.
ftp>ls
200 PORT command successful.
150 Opening ASCII mode data connection for
file list.

123folder
456folder
226 Transfer complete.
ftp: 15 bytes received in 0.00Seconds
15000Kbytes/sec.
```

```
ftp>_
```

5.7.2 FTP access with user level security

First, configure the user access rights of a share by assigning users to it. You can assign local users and/or remote users retrieved from the Primary Domain Controller (PDC).

Second, use a FTP client to log on to the FISC CDH server. Input the user name you just assigned and its user password. After logon, you are in the root directory /. You can see all shares, but you can only enter those of which you have access rights.

For example, assume that the FISC CDH server has an IP address of 192.168.1.2, and the user **gary** was given access right to the share **abc**. His user password is 123. We use the FTP command under DOS prompt.

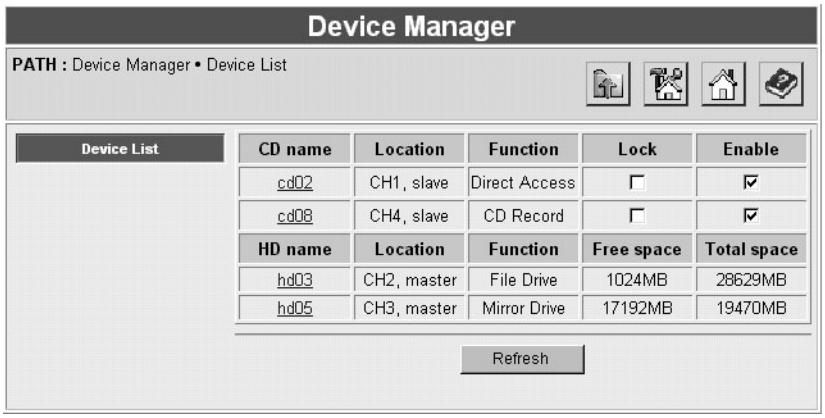
```
C:>ftp 192.168.1.2
Connected to 192.168.1.2
220 FISCCDH FTP server ready.
User (192.168.1.2:none)): gary
331 Password required for gary.
Password: 123
230 User 123 logged in.
ftp>pwd
257 "/" is current directory.
ftp>ls
200 PORT command successful.
150 Opening ASCII mode data connection for
file list.

abc
CACHE
CDROM
MIRROR
SYS
226 Transfer complete.
ftp: 114 bytes received in 0.0065 Seconds
1.90Kbytes/sec.
ftp>_
```

Chapter 6 Recording CDs

With a supported CD-R/RW device attached, the FISC CDH can record mirrored images into CD-R/RW discs.

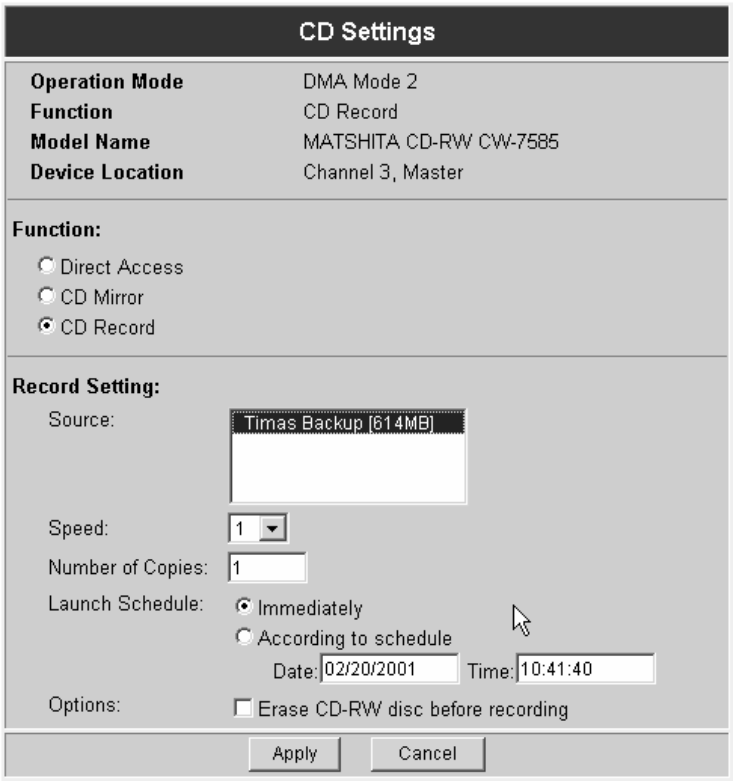
6.1 Recording Mirrored Image Onto CD-R/RW Disc

If connected with a supported CD-R/RW device, the FISC CDH can record (burn) a mirrored image onto a CD-R or CD-RW disc. By default, a CD-R/RW device functions as a "CD Record" device, such as the cd08 device shown below.



To use cd08 to record a CD-R/RW disc, please follow the next steps.

1. Click the hyperlink cd08 to enter the **CD Settings** page. Please select **CD Record** as the **Function** setting.



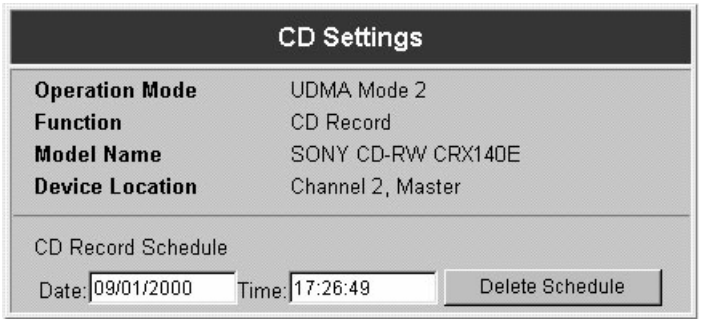
2. In the **Record Setting** section, select one or more mirrored images in the **Source** sub-window. Multiple selection are permitted.

3. Select **Speed**. If the selected speed is higher than the capability of the CD-R/RW device, the FISC CDH will change the speed automatically.

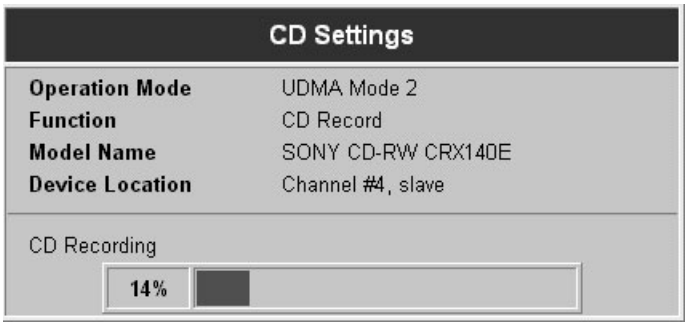
4. Specify **Number of Copies** if you want burn the image onto several CD-R discs. Then choose one of the **Launch Schedule** items.

5. **Options:** "Erase CD-RW disc before recording" – if this check-box is checked, the inserted CD-RW disc will be quickly before actually going on the recording process.

6. Click now the **Apply** button. If you set a **Launch Schedule** later than the current time, the screen will show the schedule. You can click the **Delete Schedule** button to cancel the scheduled launch.



7. If the **Launch Schedule** is **Immediately** or the schedule is over due, the screen will show the CD recording progress.



After the CD recording process is finished, the FISC CDH returns to the normal **CD Settings** page.

Chapter 7 RAID Configuration

RAID (Redundant Array of Independent Disks) is a group of hard disks that act as one, providing fault tolerance and/or increasing performance. Although hot-swap function is not available, FISC CDH supports RAID 0, RAID 1 and RAID 5.

7.1.1.1 RAID 0

RAID level 0 is disk striping only, which interleaves data across multiple disks for better performance. It does not provide safeguards against failure.

7.1.1.2 RAID 1

RAID level 1 uses two hard drives. It keeps identical copies of data on the two hard drives. If one hard drive fails, the RAID can still operate without data loss. It offers the highest reliability, but doubles storage cost. Two hard drives can only have the capacity of one.

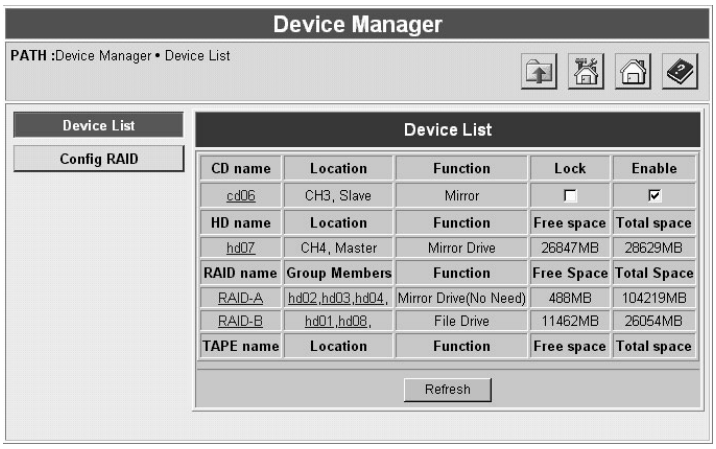
7.1.1.3 RAID 5

RAID level 5 uses three or more hard drives. Data, together with the parity bits, are striped across the hard drives. It is a tradeoff between fault tolerance and storage cost. RAID 5 can operate normally with one hard drive corrupted, but only have the capacity of (N-1) hard drives, where N is the number of hard drives being grouped.

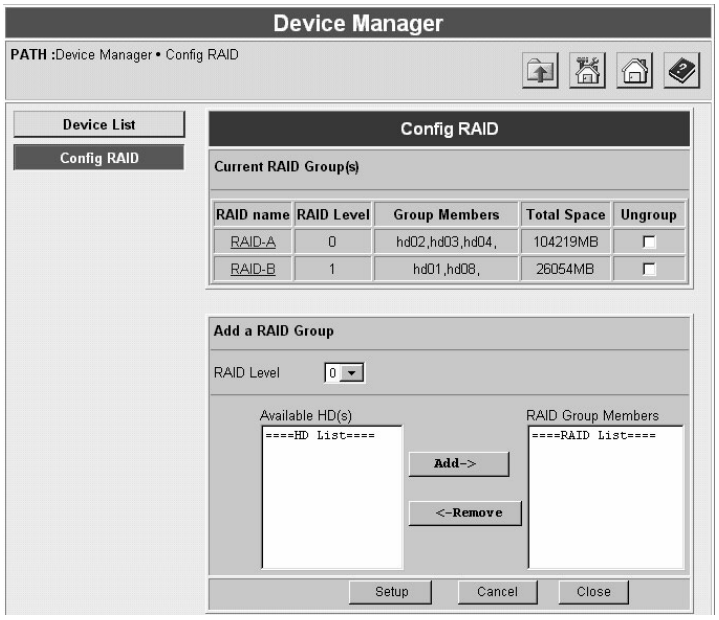
7.2 Adding a RAID Group And Ungrouping It

The first thing to do is to assign several hard drives as a RAID group. After being grouped, RAID acts like a normal hard drive. You can initial it as either a mirror device or a file device. A file device must be partitioned so that it can store data.

Below is an example of two RAID groups. The first RAID group contains 3 hard drives; the second contains 2 hard drives.



To add or delete RAID groups, please go to the **Administration Page** and enter **Device Manager**. Click the **Config RAID** button to the left. You should see the page below. This page lists all RAID groups and their configuration.

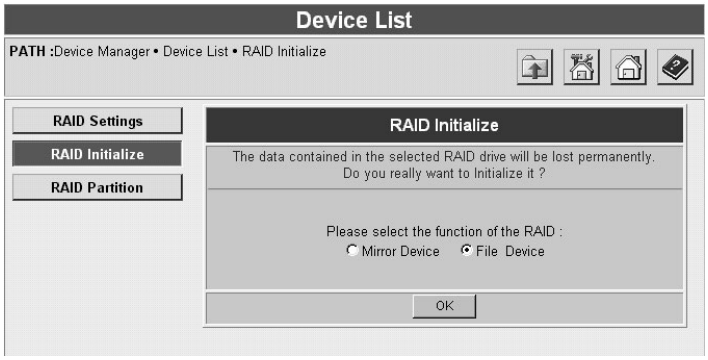


To add a RAID group, first choose its RAID level. Next, choose its RAID group members in the left sub-window – **Available HD(s)** and click the **Add->** button. Only those hard drives with "no init" status (not initialized yet) will appear in the **Available HD(s)** sub-window. Last click the **Setup** button to create a RAID group.

To ungroup a RAID, click the **Ungroup** check-box of the RAID to be dismissed. It will prompt for confirmation. NOTE that all data in the RAID group will vanish when the RAID is ungrouped. Its RAID group members will become separate hard drives with “no init” status and appear in the device list after being ungrouped.

7.3 Initializing RAID

Once created, a RAID group must be initialized as either a file device or a mirror device for operation. To initialize a RAID group, go to the **Administration Page** and enter **Device Manager**. Click the hyperlink of the RAID name that designates the RAID group, like RAID-A or RAID-B. Then click the **RAID Initialize** button on the left.



On this page, click either **Mirror Device** or **File Device**. Click the **OK** button to initialize the RAID. If you choose to initialize the RAID group as a File Device, you should create partitions next by clicking the **RAID Partition** button on the left.

7.4 What If Hard Drives Fail

7.4.1 RAID level 0

RAID level 0 only combines several hard drives as a single device (offers larger capacity) and provides no fault tolerance. A RAID group configured as RAID 0 cannot function any more if any of its hard drives fails. When any one of the hard drives of RAID 0 group is failed, the RAID group will be marked “Faulty”. In this case, it is recommend that all the content in the

RAID group should be backup immediately to prevent further data lost. Then replace the failed hard drive.

7.4.2 RAID level 1 & 5

RAID level 1 can still operate if one of the two hard drives fails. If that happens, the RAID group is marked “Degraded” and does not provide data protection any more. To restore a “Degraded” RAID back to the normal status, you have to replace the failed hard drive with a good one and enter the **Recover** page to choose this hard drive for recovering. For how to recover a RAID, please read the next section.

RAID level 5 contains 3 to 8 hard drives. If one hard drive fails, the RAID group is marked “Degraded” and needs to be recovered. If two or more hard drives fail, the RAID group fail. For RAID recovering, please read the following section.

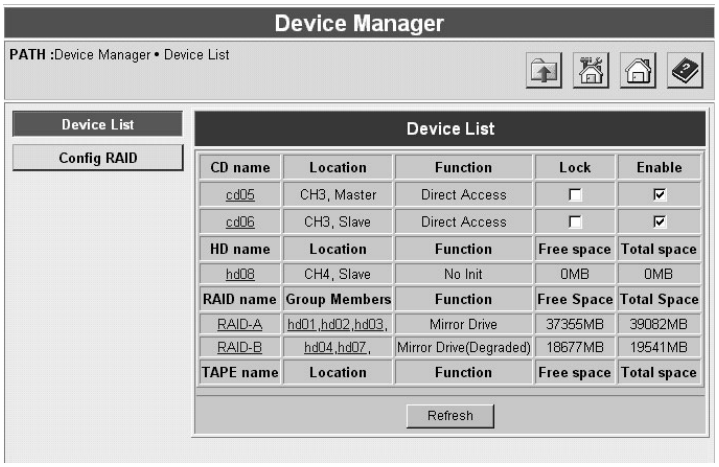
7.4.3 RAID Recovering

If a hard drive of RAID 1 or RAID 5 group is corrupted, the RAID group can still function well but provides no fault tolerance.

To recover a RAID group, please follow the steps as below:

1. Shut down the FISC CDH, replace the failed hard drive with a new one, and then power on the FISC CDH.

2. Go to the **Administration Page** and enter **Device Manager**. Click the hyperlink of the RAID name that is “Degraded”.



3. On the page, click the **Recover** button on the left.

4. On the **Recover** page, choose a hard drive in the **HD List** and click the **Recover** button. The server will start recovering data of the RAID into the selected hard drive.

If two or more hard drives of RAID 1 or RAID 5 group is corrupted, the RAID group will be marked “Faulty”. It is recommend that all the content in the RAID group should be backup immediately to prevent further data lost. Then, replace the failed hard drive.

7.5 Things You Should Know

Only “no init” hard drives can be configured as a RAID group. “no init” means “not initialized”. If you want to group an initialized hard drive, you have to go to the **HD Initialized** page of the hard drive to set its function back to “no init”.

Chapter 8 Tape Backup

The FISC CDH supports ATAPI tape drives for data backup and restore.

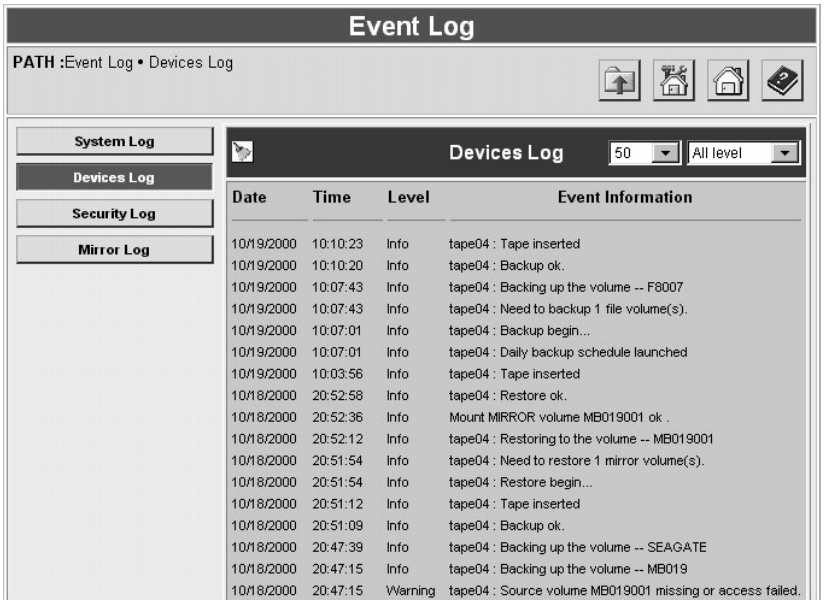
The basic unit for backup and restore is a volume. When you select a volume for backup, all folders and files in it will be backed up. There are two kinds of volumes in the FISC CDH – mirror volumes and file volumes. Each tape can store one kind of volumes, but not both.

Note that the FISC CDH only supports full backup. Whenever it backs up data to a tape, any old data in that tape will be overwritten and lost. Incremental backup has not been implemented yet.

8.1 Getting Task Status

To see whether the FISC CDH has any backup or restore tasks, go to the **Backup** page of the **Administration Page**. You will see the **View Status** page. **Device Name** means the name of the tape drive. **Tape Label** means the label of the tape inserted in the tape drive. All backup or restore tasks are shown below.

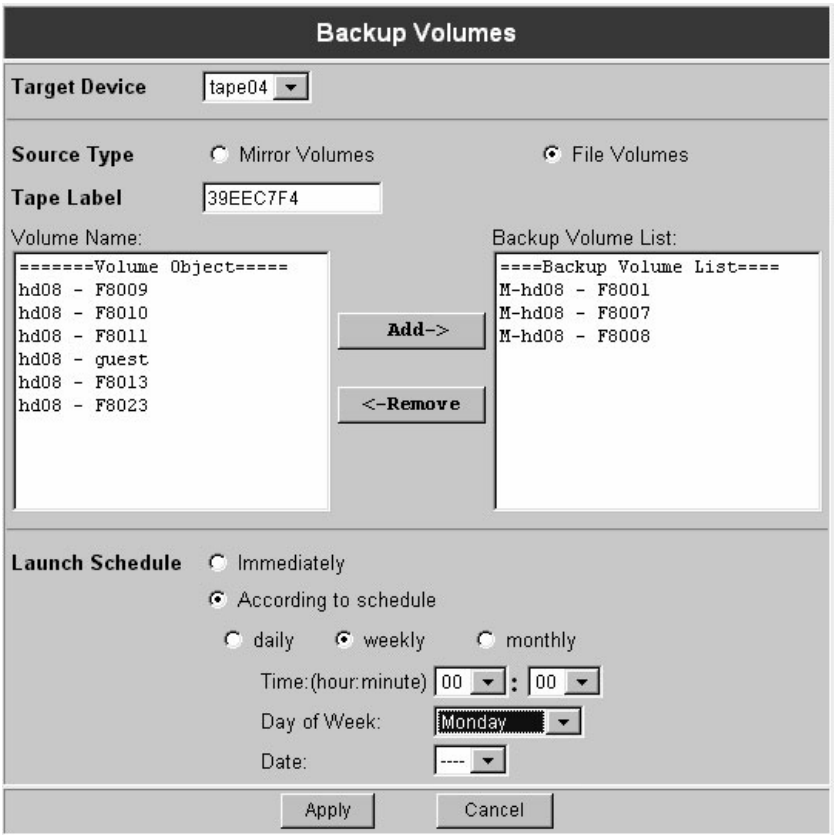
The FISC CDH also keeps the event logs relating to backup or restore tasks. To see the log, go to **Administration Page** and enter the **Event Log** page. Backup events are kept in the **Device Log**. Here is an example.



8.2 Backup Volumes

To back up data to a tape, click the **Backup Volumes** button on the left of the **Backup** page.

1. Select a tape drive as the backup device in the **Target Device** list-box.
2. Choose to back up mirror volumes or file volumes in the **Source Type** field.
3. Assign the tape label for later identification.
4. Choose the volumes to be backed up in the left sub-window. Click the **Add->** button. They will appear in the right sub-window and be removed from the left sub-window.
5. Set the backup schedule in the **Launch Schedule** section.
6. Click the **Apply** button.

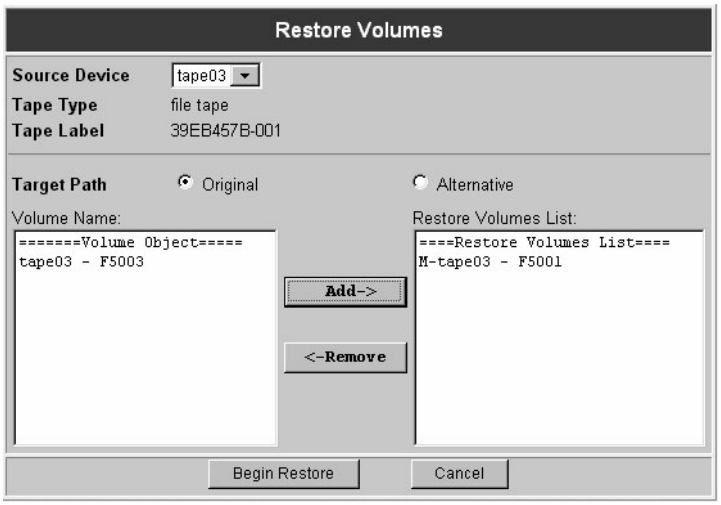


8.3 Restore Volumes

To restore the data on the tape to the FISC CDH, click the **Restore Volumes** button on the left of the **Backup** page.

8.3.1 Restore file volumes

If the tape contains files volumes, the page will be like the picture below. The default setting is to restore the volumes to their original locations. Choose the volumes to be restored in the left sub-window and click the **Add->** button. Last, click the **Begin Restore** button.



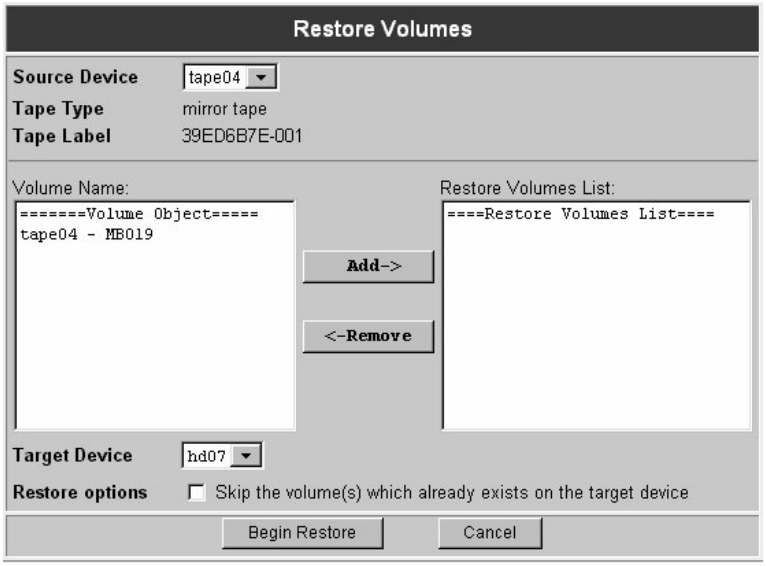
To restore the volume to a location other than the original one, click the **Alternative** button. You will see a page as below. On this page, choose the volume to be restored in the **Source Volume** field. Choose the volume to restore to in the **Target Volume** field. Last, click the **Begin Restore** button.

Behavior:

All files in the source volume will be copied to the target volume. Files with the same name will be overwritten.

8.3.2 Restore mirror volumes

If the tape stores mirror volumes, the page will be like the picture below.



First, choose the volumes to be restored in the left sub-window. Click the **Add->** button. They will appear in the right sub-window.

Next, select a hard drive the data being restored to in the **Target Drive** list-box.

Last, click the **Begin Restore** button.

Chapter 9 Archive

The FISC CDH supports both Tape Backup and Data Archiving. It is important to understand the difference between them.

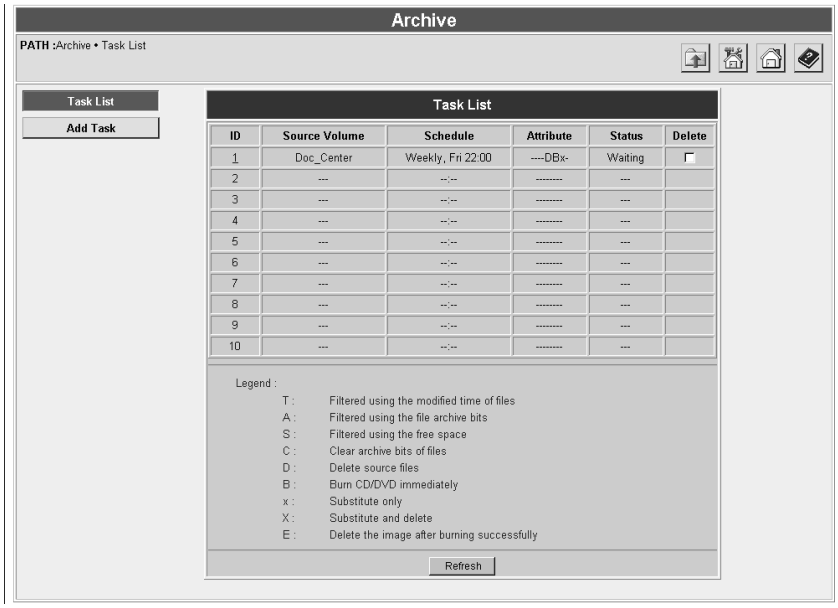
A backup keeps a snapshot of the hard disk or network volume. If the working copy of an important file is lost, then in the worst case, one can go back to the backup version (usually stored in tape) and retrieve the file. Note that the frequency of the backup will determine how useful the backup copy is. For example, backing up on a daily basis is a good approach if you are frequently changing the content of the hard disk or network volume.

An archive stored files or volumes that are no longer need on a short-term basis. By putting them in an archive (store in the local hard drive or CD-R/DVD disc), more free space can be released on the hard disk or network volume for other application that is frequently accessed. One can always track and find the files or volumes from the archive if the need arises.

9.1 Task List

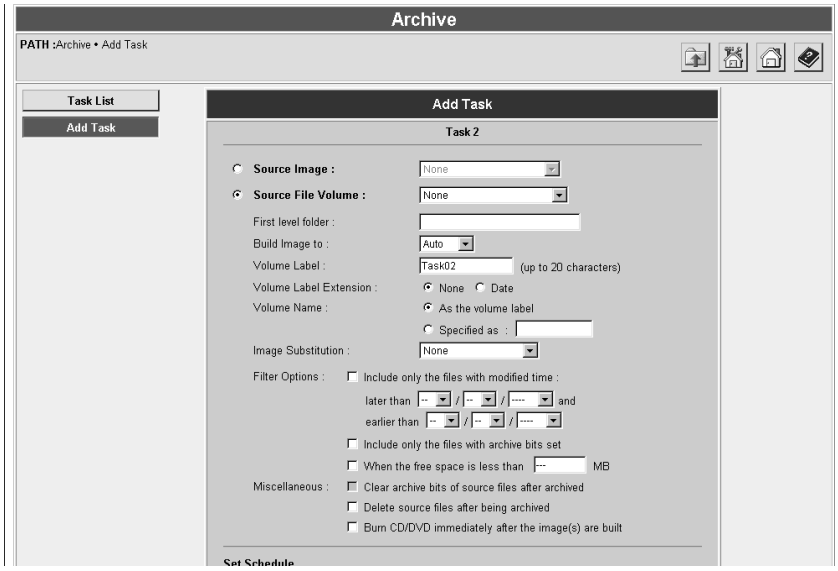
The FISC CDH can archive the data stored in either the mirror Volume or File Volume. In the **Task List** page of the **Administration Page**, information of all the on-going or scheduled data archiving tasks is displayed here.

Source Volume – indicate the source volume name where the data need to be archived is located.
Schedule – the starting time of the archiving task.
Attribute – T = Filtered by file modified time
A = Filtered by file archive bit
S = Filtered by free space left
C = Clear archive bit of file(s)
D = Delete source file(s)
B = Burn CD/DVD immediately
x = Substitute only
X = Substitute and delete
E = Delete the image after burning successfully
Status – indicate what is the status of the archiving task in progress.
Delete – delete the corresponding archiving task.



9.2 Adding archive task

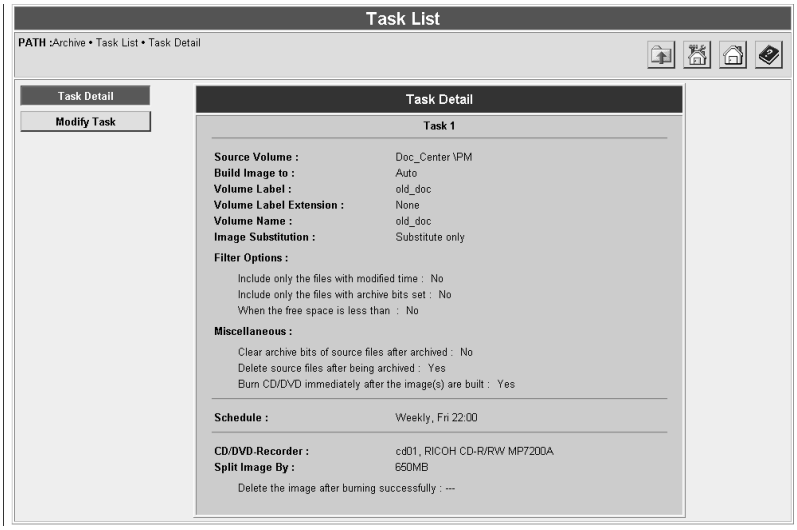
To add an archive task, go to the **Administration Page** and enter **Archive** page. Click the **Add Task** button. The following page will be shown. This page contains all the parameters that need to be configured for FISC CDH to perform the archiving task in a proper way.



First, select the volume need to be archived either from the **Mirror Volume** or the **File Volume**. Note that volume selected from **File Volume** will be initially built into a mirrored image prior to being recorded onto a CD/DVD. Self-explanatory **Filter Options** are available to specify what kind of data and when the data is going to be archived.
Check the **Burn CD/DVD immediately after image(s) built** option in the **Miscellaneous** field to record the archived image onto a CD/DVD disc. Specify the schedule to perform the data archiving task and choose the target CD/DVD recorder. You can split a large file into either 650MB or 4.7GB depend on the type of the media use for archive using the **Split Image By** option. Click **Apply** when finished.

9.3 Modify / Delete data archiving task

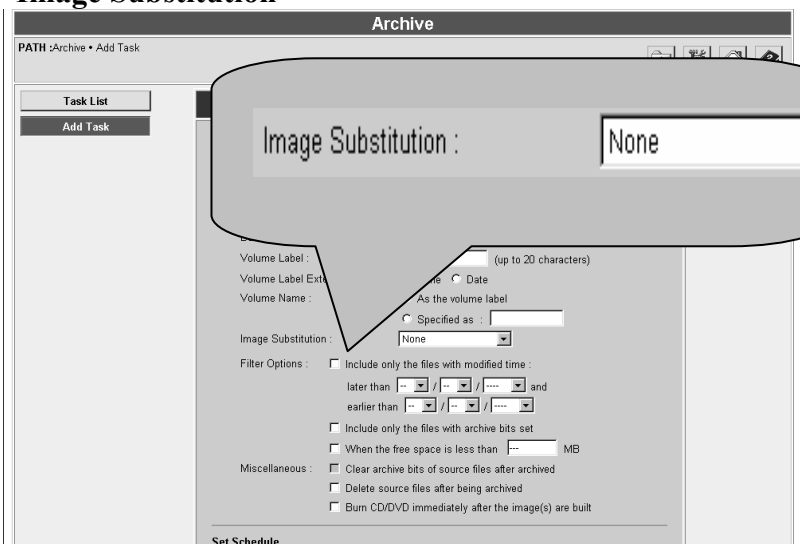
To modify an archive's task, click the **ID** number of the corresponding archiving task in the first column. The detail task information such as the filter option and miscellaneous selection will be shown.



Click the **Modify Task** button and make changes. Click **Apply** when finished.

Data archiving task can be deleted by click on the checkbox at the last column on the **Task List** page.

9.4 Image Substitution



There are three options you can choose from Image Substitution – **None**, **Substitute only** and **Substitute and delete**. Note that Image Substitution can only operate under two conditions:

1. **Volume Label Extension** must be set to **None**
2. Archive task must be set to **According to schedule**

Assuming the source file volume name is ABC and three consecutive archive has been done. The following images file would be created when **Image Substitution** is set to:

None -	ABC	
	ABC001	
	ABC002	← most updated image
Substitute only -	ABC	← most updated image
	ABC001	
	ABC002	
Substitute and delete -	ABC	← most updated image

9.5 Example of using data archiving

Here is the scenario:

ACME is a graphic design house carry out business for more then 5 years. Its clients spread from local small business firm to Government agency. In order to maintain the Intellectual property right for all the design they have created during the past year, ACME keeps all their designs in their main file server for reference. Due to the nature of the graphic design that it tends to be very big in term of file size, the demand of additional storage space of the file server are tremendous. This situation has been improved significantly by purchasing a FISC CDH server in the network although demand of extra storage space is still exist. However, MIS manager in ACME found that half of the data store in the FISC CDH server are mostly being read only by looking at the log provided by the combo server. Despite the fact that ACME do perform type backup for all the data store in the server, retrieve a specific historical file can be a nightmare.

Therefore, Data **Archive** would be the best solution for situation like this.

9.5.1 Archive data from File Volume

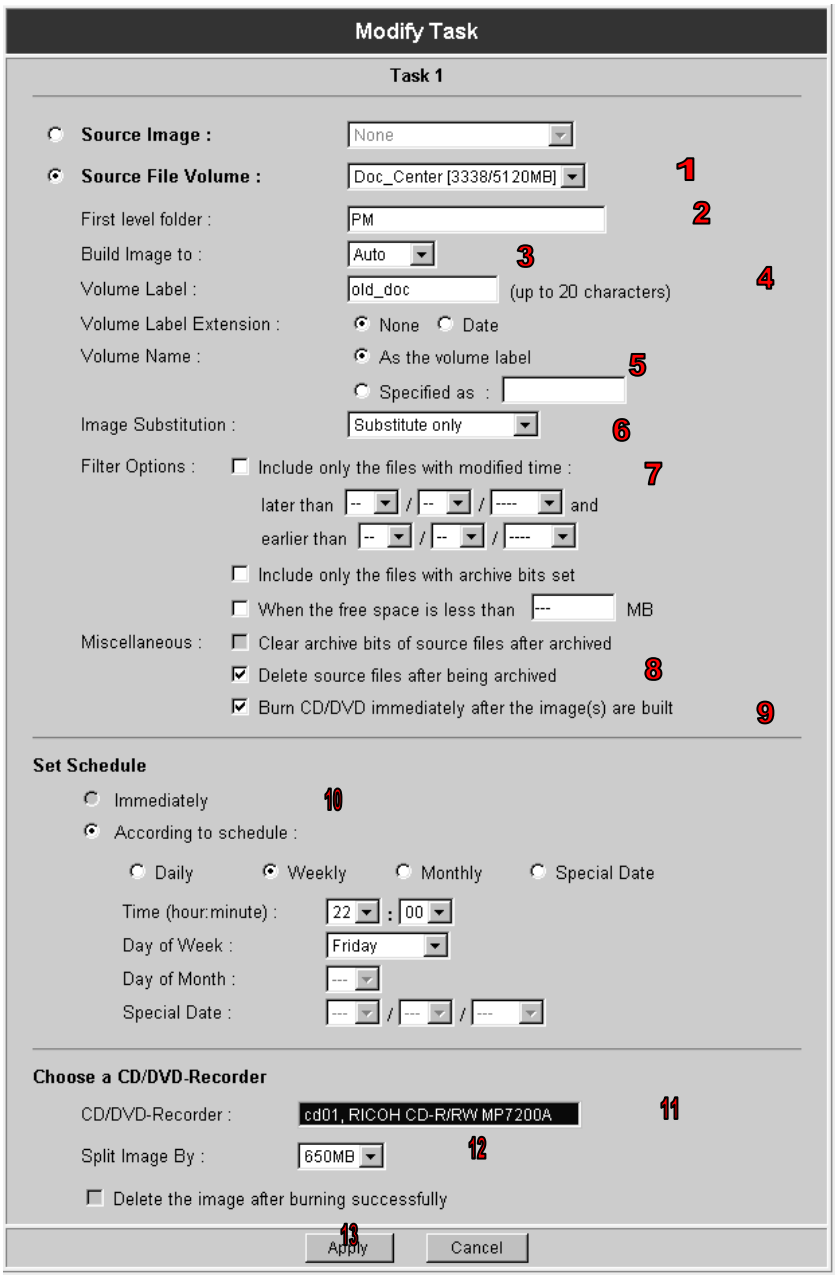
MIS manager from ACME have come out a data archive scheme as follow:

- Archive all the files in the **first level folder** name **PM** in the **source file volume** name **Doc_Center** which is later than December 31st , 2001
- Volume Label is **old_doc**
- Set **Image Substitution** to **Substitute only**
- Perform archive every Friday at 10:00pm
- Split the large image into 650MB and burn it onto a CD-R
- Delete source file after image of the file volume has been built
- Burn CD/DVD immediately after images are built

Following is the configure procedure:

1. Select the source file volume contain the design files need to be archived. Note that volume selected from **File Volume** will be initially built into a mirrored image.
2. Enter the First level folder name - **PM**
3. User can let the system to determine which image drive in the system the image should be built. Default is **Auto**.
4. Type in the volume label – **old_doc**
5. Assign a volume name of the archive image as the volume label.
6. Set the Image Substitution to **Substitute only**
7. Set the **Filter Options** so that only the file later than December 31st , 2002 will be archived.
8. Check the **Delete source files after archived** options in **Miscellaneous**.
9. Check the **Burn CD/DVD immediately after the image(s) are built** option in **Miscellaneous**.
10. When you set the Image Substitution to **Substitute only**, archive task will be set to **According to schedule** automatically. Click **Weekly** and set the archive task to start every Friday at 10:00pm.
11. Select a CD-R device from the system. Note that, if available, multiple CD/DVD recorder can be selected from the list to perform split image archive task.

12. Configure to split the large image into 650MB in order to burn onto a CD-R.
13. When finish, click **Apply**.



Appendix A Glossary

CD Image: a copy of a CD/DVD disc on a hard disk

CD Mirror: to copy a CD image into a hard disk

CD Record: to burn (record) a CD-R/RW disc from a mirrored image

CD Volume: either a CD/DVD disc existing in a CD/DVD device or a CD/DVD image on a hard disk

File Volume: a file partition on a hard disk drive

Files Device: a hard disk configured for file reading and writing

I^2C Cable: a cable designed for carrying I^2C signals. (I^2C is a serial signal standard.)

Local User Database: user accounts kept in FISC CDH locally

Mirror Device: a hard disk drive configured for storing CD/DVD images (for reading purpose or recording)

Share: a representation of a CD volume or a file volume when it is shared to network users

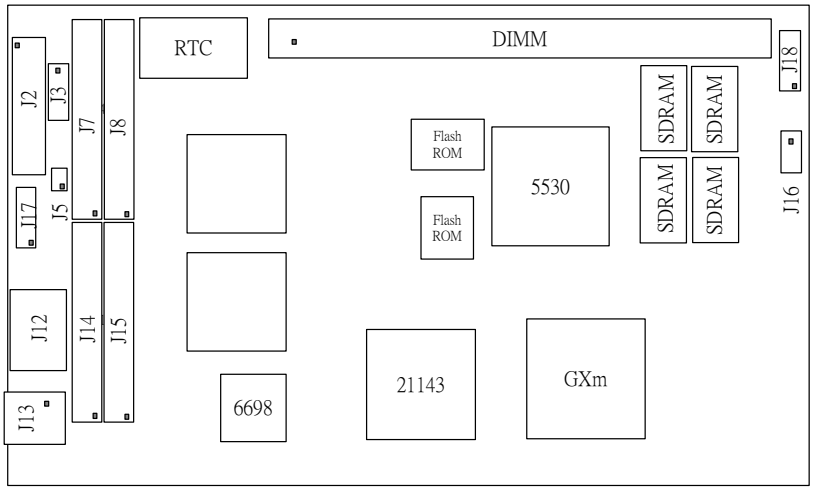
Share/Volume Name: name of a shared volume or a grouping share known to network users.

UTP Cable: Unshielded Twisted Cable, used to transmit signals in (Fast) Ethernet network environment

Volume Label: label name of a CD/DVD disc or file partition

Appendix B Hardware Specifications

B.1 Main Board Jumpers And Connectors

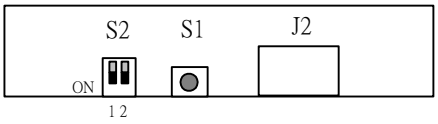


J2, J5 – for engineering purposes
J3 – I^2C connector
J7,J8,J14,J15 - IDE connectors
J12 - power connector
J13 - TP (RJ-45) connector
J17, J18 – LED connectors

For the power LED of the tower case to work, the power LED cable has to be connected to Pin 1 and Pin 2 of the J17 connector. Pin 2 is the power source.

J17	Function
Pin 1	Power LED
Pin 2	VCC

B.2 Power Control Board (Daughter Board) Switches



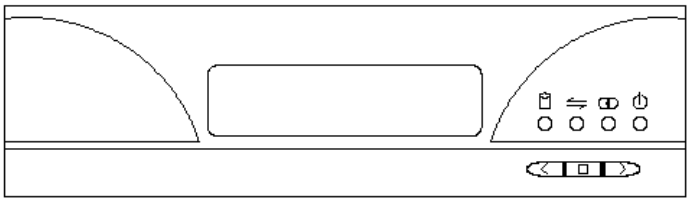
DIP switch	Recovery mode	MFG mode
S2 - 1	Down	Up
S2 - 2	Up	Down

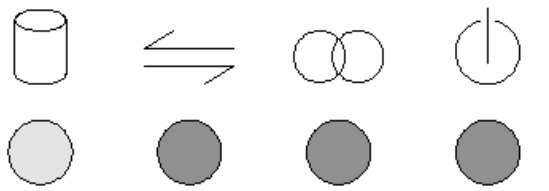
Button	Pushed	OFF
S1	Reset system	Normal *

The DIP switches **S2-1** and **S2-2** are mainly for manufacturing and engineering purposes.

Press the **S1** button to reset the server immediately.

B.3 LED Indicators





IDE Activity	LAN Activity	10/100Mb Link	Power/ Fault
Red	Green	Yellow / Green	Green / Yellow

Power / Fault LED

The power LED indicator (green) informs that the server power status is ON. The power LED will flash when booting up the FISC CDH. After the FISC CDH has mounted all the devices, the power LED will keep the ON status.

The fault LED (yellow) indicates any system fault.

10/100 Mbps Link Speed LED

Indicates the network speed is 100Mbps (green) or 10Mbps (yellow)

LAN Activity LED

Indicates any network activity

IDE Activity LED

Indicates any IDE channel(s) activity

B.4 LED Codes

Status	Power/Fault LED	10/100 Mb Link LED	LAN Activity LED
POWER ON	green	off	off
POWER ON SELF TEST (POST)	flash green	off	off
POST ERROR			
Memory Error	orange	green	green
Flash Memory Checksum Error	orange	orange	green
RTC Error	orange	off	green
Network Error	orange	off	off
IDE Error	orange	green	off
LOAD DEFAULT	green	flash green	flash green
FIRMWARE UPGRADE	flash green	normal	flash green
READY	green	normal	normal