

# **Thecus M3800**

User's Manual

## **Copyright and Trademark Notice**

Thecus and other names of Thecus products are registered trademarks of Thecus Technology Corp. Microsoft, Windows, and the Windows logo are registered trademarks of Microsoft Corporation. Apple, iTunes and Apple OS X are registered trademarks of Apple Computers, Inc. All other trademarks and brand names are the property of their respective owners. Specifications are subject to change without notice.

Copyright © 2008 Thecus Technology Corporation. All rights reserved.

## **About This Manual**

All information in this manual has been carefully verified to ensure its correctness. In case of an error, please provide us with your feedback. Thecus Technology Corporation reserves the right to modify the contents of this manual without notice.

Product name: Thecus M3800

Manual Version: 1.1













Release Date: October 2008

## **Limited Warranty**

Thecus Technology Corporation guarantees all components of Thecus M3800 are thoroughly tested before they leave the factory and should function normally under general usage. In case of any system malfunctions, Thecus Technology Corporation and its local representatives and dealers are responsible for repair without cost to the customer if the product fails within the warranty period and under normal usage. Thecus Technology Corporation is not responsible for any damage or loss of data deemed to be caused by its products. It is highly recommended that users conduct necessary back-up practices.

## Safety Warnings

For your safety, please read and follow the following safety warnings:

-  Read this manual thoroughly before attempting to set up your M3800.
-  Your M3800 is a complicated electronic device. DO NOT attempt to repair it under any circumstances. In the case of malfunction, turn off the power immediately and have it repaired at a qualified service center. Contact your vendor for details.
-  DO NOT allow anything to rest on the power cord and DO NOT place the power cord in an area where it can be stepped on. Carefully place connecting cables to avoid stepping or tripping on them.
-  Your M3800 can operate normally under temperatures between 5°C and 40°C, with relative humidity of 0% – 80%. Using the M3800 under extreme environmental conditions could damage the unit.
-  Ensure that the M3800 is provided with the correct supply voltage (AC 100V ~ 240V, 50/60 Hz, 3A). Plugging the M3800 to an incorrect power source could damage the unit.
-  Do NOT expose the M3800 to dampness, dust, or corrosive liquids.
-  Do NOT place the M3800 on any uneven surfaces.
-  DO NOT place the M3800 in direct sunlight or expose it to other heat sources.
-  DO NOT use chemicals or aerosols to clean the M3800. Unplug the power cord and all connected cables before cleaning.
-  DO NOT place any objects on the M3800 or obstruct its ventilation slots to avoid overheating the unit.
-  Keep packaging out of the reach of children.
-  If disposing of the device, please follow your local regulations for the safe disposal of electronic products to protect the environment.

# Table of Contents

|  |           |
|--|-----------|
| Copyright and Trademark Notice .....                     | 2         |
| About This Manual .....                                  | 2         |
| Limited Warranty.....                                    | 2         |
| Safety Warnings .....                                    | 3         |
| Table of Contents .....                                  | 4         |
| <b>Chapter 1: Introduction.....</b>                      | <b>8</b>  |
| <b>Overview .....</b>                                    | <b>8</b>  |
| <b>Product Highlights.....</b>                           | <b>8</b>  |
| File Server.....   | 8         |
| FTP Server.....  | 8         |
| Backup Server .....                                      | 8         |
| Media Server .....                                       | 8         |
| iTunes® Server.....                                      | 9         |
| Photo Gallery .....                                      | 9         |
| Web Cam Server .....                                     | 9         |
| Printer Server .....                                     | 9         |
| Superior Power Management.....                           | 9         |
| <b>Package Contents .....</b>                            | <b>9</b>  |
| <b>Front Panel.....</b>                                  | <b>10</b> |
| <b>Rear Panel.....</b>                                   | <b>11</b> |
| <b>Chapter 2: Hardware Installation .....</b>            | <b>12</b> |
| <b>Overview .....</b>                                    | <b>12</b> |
| <b>Before You Begin.....</b>                             | <b>12</b> |
| <b>Hard Disk Installation .....</b>                      | <b>12</b> |
| <b>Cable Connections .....</b>                           | <b>13</b> |
| <b>Chapter 3: First Time Setup .....</b>                 | <b>14</b> |
| <b>Overview .....</b>                                    | <b>14</b> |
| <b>Thecus Setup Wizard .....</b>                         | <b>14</b> |
| <b>RAID Setup and Firmware Installation .....</b>        | <b>17</b> |
| Setting up the RAID.....                                 | 17        |
| <b>LCD Operation .....</b>                               | <b>18</b> |
| LCD Controls.....  | 18        |
| Display Mode .....                                       | 18        |
| USB Copy.....  | 18        |
| <b>Typical Setup Procedure.....</b>                      | <b>19</b> |
| Step 1: Network Setup.....                               | 19        |
| Step 2: RAID Creation.....                               | 19        |
| Step 3: Create Local Users or Setup Authentication ..... | 19        |
| Step 4: Create Folders and Set Up ACLs .....             | 19        |
| Step 5: Start Services .....                             | 20        |
| <b>Chapter 4: System Management .....</b>                | <b>21</b> |
| <b>Overview .....</b>                                    | <b>21</b> |
| <b>Web Administration Interface .....</b>                | <b>21</b> |
| Menu Bar .....   | 22        |
| <b>Language Selection .....</b>                          | <b>22</b> |
| <b>Status Menu .....</b>                                 | <b>23</b> |
| Product Information .....                                | 23        |
| System Status .....                                      | 23        |
| Printer Status.....                                      | 24        |
| Wake-Up On Lan (WOL) .....                               | 24        |
| <b>Storage Management .....</b>                          | <b>25</b> |
| SATA Information .....                                   | 25        |

|   |           |
|---|-----------|
| eSATA Information .....                         | 25        |
| USB Disk Information.....                       | 26        |
| RAID Information .....                          | 26        |
| RAID Configuration .....                        | 27        |
| RAID Level .....                                | 27        |
| RAID Settings .....                             | 28        |
| Creating a RAID .....                           | 28        |
| Deleting a RAID .....                           | 28        |
| Folder Management .....                         | 29        |
| Adding Folders .....                            | 29        |
| Editing Folders .....                           | 30        |
| Deleting Folders .....                          | 30        |
| NFS Share .....                                 | 30        |
| Folder Access Control List (ACL) .....          | 31        |
| <b>Network Management .....</b>                 | <b>32</b> |
| WAN Configuration .....                         | 32        |
| LAN Configuration.....                          | 33        |
| DHCP Configuration .....                        | 33        |
| WLAN Configuration .....                        | 34        |
| DDNS Configuration .....                        | 35        |
| Typical DDNS Configuration Procedure.....       | 35        |
| Web Services Configuration.....                 | 36        |
| AFP (Apple Network Setup) .....                 | 36        |
| NFS Setup .....                                 | 37        |
| <b>User and Group Management .....</b>          | <b>38</b> |
| Local User Configuration .....                  | 38        |
| Adding Users .....                              | 38        |
| Modifying Users.....                            | 39        |
| Deleting Users .....                            | 39        |
| Local Groups Configuration .....                | 39        |
| Adding Groups .....                             | 39        |
| Modifying Groups .....                          | 40        |
| Deleting Groups .....                           | 40        |
| ADS/NT Configuration .....                      | 40        |
| <b>System Settings .....</b>                    | <b>42</b> |
| System Notifications .....                      | 42        |
| System Logs .....                               | 42        |
| Time and Date Settings .....                    | 43        |
| System Configuration Backup and Restore .....   | 44        |
| Module Management .....                         | 44        |
| Reset to Factory Default Settings .....         | 45        |
| Upgrading System Firmware .....                 | 45        |
| Change Administrator Password.....              | 46        |
| Reboot and Shutdown System.....                 | 46        |
| Scheduled Power On/Off.....                     | 47        |
| TV Setup .....                                  | 47        |
| Logout .....                                    | 47        |
| <b>Chapter 5: Additional Feature Setup.....</b> | <b>48</b> |
| <b>FTP Server.....</b>                          | <b>48</b> |
| <b>iTunes® Server.....</b>                      | <b>49</b> |
| <b>Media Server .....</b>                       | <b>49</b> |
| Adding Media Share Folders .....                | 50        |
| Connecting DMAs to the Media Server .....       | 50        |
| <b>Download Manager.....</b>                    | <b>51</b> |
| Adding an HTTP Task .....                       | 52        |
| Adding an FTP Task .....                        | 55        |
| Adding a BT Task.....                           | 59        |
| Deleting Tasks .....                            | 62        |

|   |           |
|---|-----------|
| Scheduling Downloads.....                               | 62        |
| <b>Web Cam Server.....</b>                              | <b>64</b> |
| Web Cam Preview.....                                    | 64        |
| Adding a Web Cam Schedule.....                          | 65        |
| <b>Printer Server.....</b>                              | <b>67</b> |
| Windows XP SP2.....                                     | 67        |
| Windows Vista.....                                      | 69        |
| <b>Chapter 6: Using the M3800 .....</b>                 | <b>72</b> |
| <b>Overview.....</b>                                    | <b>72</b> |
| <b>Login Page.....</b>                                  | <b>72</b> |
| <b>Web User Interface .....</b>                         | <b>72</b> |
| <b>Using WebDisk .....</b>                              | <b>73</b> |
| <b>Using Music Server.....</b>                          | <b>74</b> |
| Adding Music Files .....                                | 74        |
| Playing Music Files .....                               | 74        |
| <b>Using Photo Gallery.....</b>                         | <b>75</b> |
| Managing Albums and Photos .....                        | 75        |
| Creating Albums.....                                    | 75        |
| Password Protecting Albums.....                         | 75        |
| Uploading Pictures to Albums .....                      | 76        |
| Windows XP Publishing Wizard.....                       | 76        |
| EXIF Information .....                                  | 81        |
| Slide Shows.....  | 81        |
| <b>Mapping a Client PC to the M3800.....</b>            | <b>82</b> |
| Windows .....   | 82        |
| Apple OS X.....   | 82        |
| <b>File Backup.....</b>                                 | <b>84</b> |
| Thecus Backup Utility .....                             | 84        |
| Windows XP Data Backup .....                            | 85        |
| Apple OS X Backup Utilities .....                       | 85        |
| <b>Chapter 7: Tips and Tricks .....</b>                 | <b>86</b> |
| <b>USB and eSATA Storage Expansion.....</b>             | <b>86</b> |
| <b>Adding a Spare Disk .....</b>                        | <b>86</b> |
| <b>Remote Administration.....</b>                       | <b>86</b> |
| Part I - Setup a DynDNS Account.....                    | 87        |
| Part II - Enable DDNS on the Router .....               | 87        |
| Part III - Setting up Virtual Servers (HTTPS) .....     | 87        |
| <b>Firewall Software Configuration.....</b>             | <b>87</b> |
| <b>Replacing Damaged Hard Drives .....</b>              | <b>88</b> |
| Hard Drive Damage .....                                 | 88        |
| Replacing a Hard Drive.....                             | 88        |
| RAID Auto-Rebuild.....                                  | 88        |
| <b>File System Check .....</b>                          | <b>88</b> |
| <b>Chapter 8: Troubleshooting .....</b>                 | <b>91</b> |
| <b>Forgot My Network IP Address.....</b>                | <b>91</b> |
| <b>Resetting NAS IP Address and Admin Password.....</b> | <b>91</b> |
| <b>Can't Map a Network Drive in Windows XP.....</b>     | <b>91</b> |
| <b>Restoring Factory Defaults .....</b>                 | <b>91</b> |
| <b>Problems with Time and Date Settings.....</b>        | <b>91</b> |
| <b>Appendix A: Product Specifications .....</b>         | <b>93</b> |
| <b>Hardware Specifications.....</b>                     | <b>93</b> |
| <b>Software Specifications.....</b>                     | <b>93</b> |
| <b>Appendix B: Customer Support.....</b>                | <b>95</b> |
| <b>Appendix C: RAID Basics .....</b>                    | <b>96</b> |
| <b>Overview.....</b>                                    | <b>96</b> |
| <b>Benefits.....</b>                                    | <b>96</b> |

|  |           |
|--|-----------|
| Improved Performance .....                       | 96        |
| Data Security .....                              | 96        |
| <b>RAID Levels .....</b>                         | <b>96</b> |
| RAID 0 .....                                     | 96        |
| RAID 1 .....                                     | 97        |
| RAID 5 .....                                     | 97        |
| JBOD .....                                       | 97        |
| <b>Stripe Size .....</b>                         | <b>97</b> |
| <b>Disk Usage .....</b>                          | <b>97</b> |
| <b>Appendix D: Active Directory Basics .....</b> | <b>98</b> |
| Overview .....                                   | 98        |
| What is Active Directory? .....                  | 98        |
| ADS Benefits.....                                | 98        |
| <b>Appendix E: Licensing Information.....</b>    | <b>99</b> |
| Overview .....                                   | 99        |
| Source Code Availability .....                   | 99        |
| CGIC License Terms.....                          | 100       |
| GNU General Public License.....                  | 100       |

# Chapter 1: Introduction

## **Overview**

Thank you for choosing the Thecus M3800 IP Storage Appliance. The Thecus M3800 is an easy-to-use storage server that allows a dedicated approach to storing and distributing data on a network. Data reliability is ensured with RAID features that provide data security and recovery—over 3 Terabytes of storage is available. Gigabit Ethernet ports enhance network efficiency, allowing the M3800 to take over file management functions, increase application and data sharing and provide faster data response. The M3800 lets you hot swap working hard drives, securing the continuity of data in the event of hardware failure. The M3800 allows data consolidation and sharing between Windows (SMB/CIFS), UNIX/Linux, and Apple OS X environments. The M3800's user-friendly GUI supports multiple languages.

## **Product Highlights**

### **File Server**

First and foremost, the M3800 allows you to store and share files over an IP network. With a Network Attached Storage (NAS) device, you can centralize your files and share them easily over your network. With the easy-to-use web-based interface, users on your network can access these files in a snap.

To learn about the Web User Interface, go to **Chapter 6: Using the M3800 > [Web User Interface](#)**.

### **FTP Server**

With the built-in FTP Server, friends, clients, and customers can upload and download files to your M3800 over the Internet with their favorite FTP programs. You can create user accounts so that only authorized users have access.

To set up the FTP Server, refer to **Chapter 5: Additional Feature Setup > [FTP Server](#)**.

### **Backup Server**

Don't leave precious data to chance. With advanced backup capabilities, you can easily upload mission critical files to the M3800, and even automate your backup tasks for true peace-of-mind.

To find out how to backup your files with the M3800, refer to **Chapter 6: Using the M3800 > [File Backup](#)**.

### **Media Server**

Mediabolic's Embedded Media Server resides on the M3800 and aggregates personal media so that it can be accessed by a variety of players, such as network TVs, IP set-top boxes, and digital media adapters. This software is DLNA Certified, which means that increased interoperability with other DLNA certified devices. The software also enables advanced digital rights management, an auto setup wizard, and auto-generating video thumbnails. Mediabolic's Embedded Media Server makes accessing, sharing, and enjoying your media files easy.

To set up the Media Server, refer to **Chapter 4: Additional Feature Setup > [Media Server](#)**.



## **iTunes® Server**

Digital music is one of the hottest trends, and with the built-in iTunes® server, you can share your digital music files with every iTunes-equipped PC on your network. The iTunes Server is also incredibly easy to set up!

To set up the iTunes Server, refer to **Chapter 4: Additional Feature Setup > iTunes Server**.

## **Photo Gallery**

The Photo Gallery is a great way for friends and family to share precious memories of vacations, birthdays, and more. Users can upload pictures, and even create their own picture albums right on the N1200.

To set up the Photo Gallery, refer to **Chapter 5: Using the M3800 > Using Photo Gallery**.

## **Web Cam Server**

With the M3800's Web Cam server, you can schedule the M3800 to capture images from a connected USB webcam at designated intervals.

To set up the Web Cam Server, refer to **Chapter 5: Additional Feature Setup > Web Cam Server**.

## **Printer Server**

With the M3800's Printer Server, you can easily share an IPP printer with other PCs connected to your network.

To set up the Printer Server, refer to **Chapter 5: Additional Feature Setup > Printer Server**.

## **Superior Power Management**

M3800 supports schedule power on/off. With this feature, administrator can set at what time to turn on or off the system. This feature is a big plus for people who want to conserve energy.

To schedule system on and off, refer to **Chapter 4: System Management > System Settings > Reboot and Shutdown System > Scheduled Power On/Off**.

## **Package Contents**

Your M3800 package should contain the following items:

- Thecus M3800 IP Storage Appliance
- QIG
- CD-Title
- Ethernet Cable
- Hard drive rails (located behind front panel)
- Remote Control
- AV cable x 2

Please check to see if your package is complete. If you find that some items are missing, contact your dealer.

## Front Panel

The Thecus M3800's front panel has the device's controls, indicators, and hard disk trays:



| Front Panel       |  |
|-------------------|--|
| Item              | Description  |
| OSD LED           | <ul style="list-style-type: none"> <li>• <b>Solid blue:</b> system is OSD on</li> </ul>  |
| WAN LED           | <ul style="list-style-type: none"> <li>• <b>Solid green:</b> network link</li> <li>• <b>Blinking orange:</b> network activity</li> </ul>   |
| LAN LED           | <ul style="list-style-type: none"> <li>• <b>Solid green:</b> network link</li> <li>• <b>Blinking orange:</b> network activity</li> </ul>   |
| HDD 1 LED         | <ul style="list-style-type: none"> <li>• <b>Solid red:</b> HDD failure</li> <li>• <b>Blinking orange:</b> HDD activity</li> </ul>  |
| HDD 2 LED         | <ul style="list-style-type: none"> <li>• <b>Solid red:</b> HDD failure</li> <li>• <b>Blinking orange:</b> HDD activity</li> </ul>  |
| HDD 3 LED         | <ul style="list-style-type: none"> <li>• <b>Solid red:</b> HDD failure</li> <li>• <b>Blinking orange:</b> HDD activity</li> </ul>  |
| USB Port          | <ul style="list-style-type: none"> <li>• USB 2.0 port for compatible USB devices, such as digital cameras, USB disks, USB printers, and USB wireless dongles*</li> </ul> <p><b>Note:</b> For supported USB wireless dongles, please contact <a href="mailto:support@thecus.com">support@thecus.com</a></p> |
| Power Button      | <ul style="list-style-type: none"> <li>• Power on/off M3800</li> <li>• <b>Solid blue:</b> Device is powered on</li> </ul>  |
| LCD Display       | <ul style="list-style-type: none"> <li>• Displays current system status and messages (Update time: 60 seconds).</li> </ul>   |
| Down Button ▼     | <ul style="list-style-type: none"> <li>• Push to scroll DOWN when using the LCD display</li> </ul>   |
| Up Button ▲       | <ul style="list-style-type: none"> <li>• Push to scroll UP when using the LCD display</li> </ul>   |
| Enter Button ↵    | <ul style="list-style-type: none"> <li>• Push to confirm information entered into the LCD display</li> </ul>   |
| Escape Button ESC | <ul style="list-style-type: none"> <li>• Push to leave the current LCD menu</li> </ul>   |

## Rear Panel

The Thecus M3800's rear panel features ports and connectors.



| Back Panel      |  |
|-----------------|--|
| Item            | Description  |
| eSATA Port      | <ul style="list-style-type: none"> <li>eSATA port for high-speed storage expansion</li> </ul>  |
| USB Port        | <ul style="list-style-type: none"> <li>USB 2.0 port for compatible USB devices, such as digital cameras, USB disks, and USB printers</li> </ul>  |
| WAN Port        | <ul style="list-style-type: none"> <li>WAN port for connecting to an Ethernet network through a switch or router</li> </ul>  |
| LAN Port        | <ul style="list-style-type: none"> <li>LAN port that can be used for connection sharing</li> </ul>   |
| PCI Slot        | <ul style="list-style-type: none"> <li>Reserved for future Thecus proprietary expansion</li> </ul>   |
| System Fan      | <ul style="list-style-type: none"> <li>System fan that exhausts heat from the unit</li> </ul>  |
| Power Connector | <ul style="list-style-type: none"> <li>Connect the included power cords to these connectors</li> </ul>   |
| Reset Button    | <ul style="list-style-type: none"> <li>Resets the M3800</li> <li>immediately press and hold the Reset button on the back for 5 seconds. This will reset your network setting, password, and turn off Jumbo Frame Support.</li> </ul> |

## Chapter 2: Hardware Installation

### Overview

Your M3800 is designed for easy installation. To help you get started, the following chapter will help you quickly get your M3800 up and running. Please read it carefully to prevent damaging your unit during installation.

### Before You Begin

Before you begin, be sure to take the following precautions:

1. Read and understand the **Safety Warnings** outlined in the beginning of the manual.
2. If possible, wear an anti-static wrist strap during installation to prevent static discharge from damaging the sensitive electronic components on the M3800.
3. Be careful not to use magnetized screwdrivers around the M3800's electronic components.

### Hard Disk Installation

The M3800 supports three standard 3.5" Serial ATA (SATA) hard disks. To install a hard disk into the M3800, follow the steps below:

1. Remove the front panel of the M3800.
2. Unscrew the thumbscrews which are securing the hard drive rails.
3. Remove the hard drive rails and install them to your SATA hard disk(s).
4. Slide hard disks into the M3800 until they snap into place.
5. Replace the thumbscrews.
6. Replace the M3800 front cover.

#### NOTE

If your HDD was part of a RAID 1 or 5 array previously, it automatically rebuilds. If you replace all the drives with higher capacity drives, you need to go to Administrator login and format the drives.

## **Cable Connections**

To connect the M3800 to your network, follow the steps below:

1. Connect an Ethernet cable from your network to the WAN port on the back panel of the M3800.



2. Connect the provided power cord into the power socket on the back panel. Plug the other end of the cord into a surge protector socket.



3. Press the power button on the Front Panel to boot up the M3800.



## Chapter 3: First Time Setup

### Overview

Once the hardware is installed, physically connected to your network, and powered on, you can configure the M3800 so that it is accessible to your network users. Follow the steps below for initial software setup.

### Thecus Setup Wizard

The handy Thecus Setup Wizard makes configuring M3800 a snap. To configure the M3800 using the Setup Wizard, perform the following steps:

1. Insert the installation CD into your CD-ROM drive (the host PC must be connected to the network).
2. The Setup Wizard should launch automatically. If not, please browse your CD-ROM drive and double click on **Setup.exe**.



#### NOTE

For MAC OS X users, double click on Thecus Setup Wizard 1.1.99.dmg

3. The Setup Wizard will start and automatically detect all Thecus storage devices on your network. If none are found, please check your connection and refer to [Chapter 8: Troubleshooting](#) for assistance.

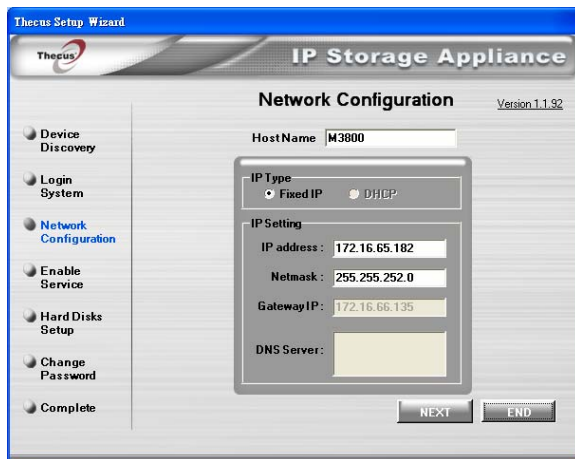


4. Select the M3800 that you like to configure. Press **Next** to continue.

5. Login with the administrator account and password. The default account and password are both "admin". Press **Next** to continue.



6. Name your M3800 and configure the network IP address. If your switch or router is configured as a DHCP Server, configuring the M3800 to automatically obtain an IP address is recommended. You may also use a static IP address and enter the DNS Server address manually. Press **Next** to continue.



7. Enable the desired services. Press **Next** to continue.





8. Select the RAID level you wish to use. Press **Next** to continue.



9. Change the default administrator password.



10. Access the M3800 Web Administrator Interface by pressing the **Start Browser** button. You can also configure another M3800 at this point by clicking the **Setup Other Device** button. Press **Exit** to exit the wizard.



**NOTE**

The Thecus Setup Wizard is designed for installation on systems running Windows XP/2000 or Mac OSX or later. Users with other operating systems will need to install the Thecus Setup Wizard on a host machine with one of these operating systems before using the unit.



## RAID Setup and Firmware Installation

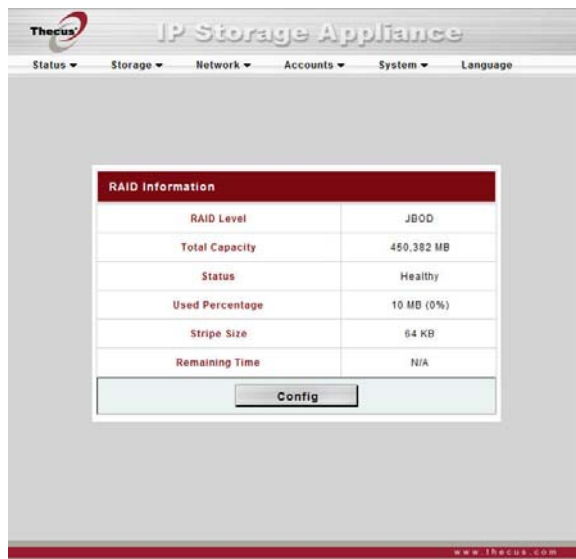
Once the setup wizard has completed, you should now be inside the Web Admin Interface. From here, it is time to initialize your RAID system and install the firmware for the M3800.

### NOTE

The next steps are for first time setup only. If you have previously setup your M3800, you can skip this section of the setup process.

## Setting up the RAID

1. From the Web Admin Interface, navigate to **Storage > RAID**. The **RAID Information** screen appears.



Click **Config**.

2. Select your desired RAID level, and check the checkboxes of the disks you wish to use in your array.



3. Select a stripe size – the default is **64K**.
4. Click **Create** to create your selected RAID volume.

## LCD Operation

The M3800 is equipped with an LCD on the front for easy status display and setup. There are four buttons on the front panel to control the LCD functions.

### LCD Controls

Use the **Down** (▼), **Up** (▲), **Enter** (↵) and **Escape** (ESC) keys to select various configuration settings and menu options for M3800 configuration.

The following table illustrates the keys on the front control panel:

| LCD Controls |             |   |
|--------------|-------------|---|
| Icon         | Function    | Description   |
| ▼            | Down Button | Select the previous configuration settings option.  |
| ▲            | Up Button   | Select the next configuration settings option.  |
| ↵            | Enter       | Enter to display USB copy operation.  |
| ESC          | Escape      | Escape to give up USB copy.<br>Press and hold for 3 seconds to turn off the LCD's backlight.<br>Press any button to switch the backlight back on. |

### Display Mode

During normal operation, the LCD will be in **Display Mode**.

| Display Mode |   |
|--------------|---|
| Item         | Description                               |
| Host Name    | Current host name of the system.          |
| WAN          | Current WAN IP setting.                   |
| LAN          | Current LAN IP setting.                   |
| RAID         | Current RAID status.                      |
| System Fan   | Current system fan status.                |
| Temperature  | Current system temperature.               |
| Date/Time    | Current system date and time              |
| Up Time      | The system power on time since last start |

The M3800 will rotate these messages every three seconds on the LCD display.

#### NOTE

If the RAID array is in a degraded state, the LCD display will be stopped in display mode and show which disk is degraded in the array:  
RAID: Degraded [Disk #]

### USB Copy

The USB Copy function enables you to copy files stored on USB devices such as USB disks and digital cameras to the M3800 with a press of a button. To use USB copy, follow the steps below:

1. Plug your USB device into an available USB port on the Front Panel.
2. In **Display Mode**, press the **Enter** (↵).
3. The LCD will display "**USB Copy?**"
4. Press **Enter** (↵) and the M3800 will start copying USB disks connected to the front USB port. The LCD will display the USB copy progress and results.

## ***Typical Setup Procedure***

From the Web Administration Interface, you can begin to setup your M3800 for use on your network. Setting up the M3800 typically follows the five steps outlined below.

For more on how to use the Web Administration Interface, see **Chapter 4: System Management > [Web Administration Interface](#)**.

### **Step 1: Network Setup**

From the Web Administration Interface, you can configure the network settings of the M3800 for your network. You can access the **Network** menu from the menu bar.

For details on how to configure your network settings, refer to **Chapter 4: System Management > [Network Management](#)**.

### **Step 2: RAID Creation**

Next, administrators can configure their preferred RAID setting and build their RAID volume. You can access RAID settings from the menu bar of the Web Administration Interface by navigating to **Storage > RAID**.

For more information on configuring RAID, see **Chapter 4: System Management > [RAID Configuration](#)**.

Don't know which RAID level to use? Find out more about the different RAID levels from **[Appendix C: RAID Basics](#)**.

### **Step 3: Create Local Users or Setup Authentication**

Once the RAID is ready, you can begin to create local users for the M3800, or choose to setup authentication protocols such as Active Directory (AD).

For more on managing users, go to **Chapter 4: System Management > [User and Group Management](#)**.

For more information on configuring Active Directory, see **Chapter 4: System Management > [User and Group Management > ADS/NT Configuration](#)**.

For information about the benefits of Active Directory, see **[Appendix D: Active Directory Basics](#)**.

### **Step 4: Create Folders and Set Up ACLs**

Once users are introduced into your network, you can begin to create various folders on the M3800 and control user access to each using Folder Access Control Lists.

More information on managing folders, see **Chapter 4: System Management > [Folder Management](#)**.

To find out about configuring Folder Access Control Lists, see **Chapter 4: System Management > [Folder Management > Folder Access Control List \(ACL\)](#)**.

## **Step 5: Start Services**

Finally, you can start to setup the different services of the M3800 for the users on your network. You can find out more about each of these services by clicking below:

[Windows Networking \(SMB/CIFS\)](#)

[iTunes® Server](#)

[Apple File Protocol \(AFP\)](#)

[Media Server](#)

[Network File System \(NFS\)](#)

[Web Cam Server](#)

[File Transfer Protocol \(FTP\)](#)

[Printer Server](#)

## Chapter 4: System Management

### Overview

The M3800 provides an easily accessible **Web Administration Interface**. With it, you can configure and monitor the M3800 anywhere on the network.

### Web Administration Interface

Make sure your network is connected to the Internet. To access the M3800 **Web Administration Interface**:

1. Type the M3800's IP address into your browser. (Default IP address is `http://192.168.1.100`)



#### NOTE

Your computer's network IP address must be on the same subnet as the M3800. If the M3800 has default IP address of 192.168.1.100, your managing PC IP address must be 192.168.1.x, where x is a number between 1 and 254, but not 100.

2. Login to the system using the administrator user name and password. The factory defaults are:

User Name: admin

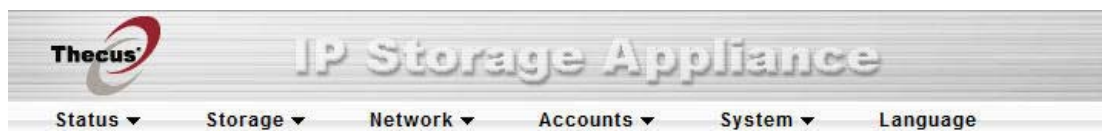
Password: admin

If you changed your password in the setup wizard, use the new password.

Once you are logged in as an administrator, you will see the **Web Administration Interface**. From here, you can configure and monitor virtually every aspect of the M3800 from anywhere on the network.

## Menu Bar

The **Menu Bar** is where you will find all of the information screens and system settings of the M3800. The various settings are placed in the following groups on the menu bar:



| Menu Bar |   |
|----------|---|
| Item     | Description   |
| Status   | Current system status of the M3800.   |
| Storage  | Information and settings for storage devices installed into the M3800.                      |
| Network  | Information and settings for network connections, as well as various services of the M3800. |
| Accounts | Allows configuration of users and groups.   |
| System   | Various M3800 system settings and information.  |
| Language | Choose your preferred language here.  |

Moving your cursor over any of these items will display the dropdown menu selections for each group.

In the following sections, you will find detailed explanations of each function, and how to configure your M3800.

## Language Selection

The M3800 supports multiple languages, including:

- English
- French
- German
- Italian
- Traditional Chinese
- Simplified Chinese
- Japanese
- Korean
- Spanish



On the menu bar, click **Language** and the **Change Language** screen appears. This screen allows you to select preferred language for the M3800. Press **Apply** to confirm your selection.

## Status Menu

The **Status** Menu on the menu bar allows you to see various aspects of the M3800. From here, you can discover the status of the M3800, and even find out other details like firmware version and up time.

## Product Information

Once you login, you will first see the basic **Product Information** screen providing **Manufacturer**, **Product No.**, **Firmware Version**, and **Up Time** information.

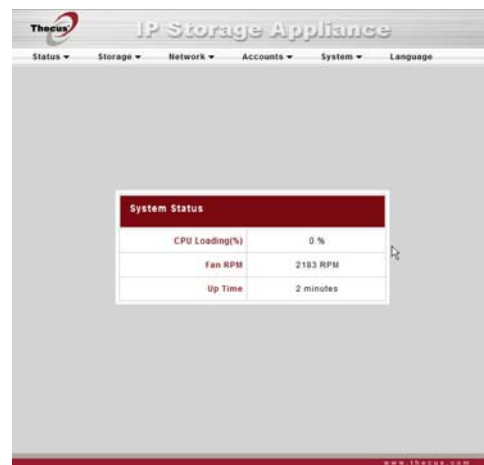


| Product Information |   |
|---------------------|---|
| Item                | Description                                   |
| Manufacturer        | Displays the name of the system manufacturer. |
| Product No.         | Shows the model number of the system.         |
| Firmware version    | Shows the current firmware version.           |
| APP version         | Shows the current application pack version.   |
| Up time             | Displays the total run time of the system.    |

To access this screen again, navigate to **Status > About**.

## System Status

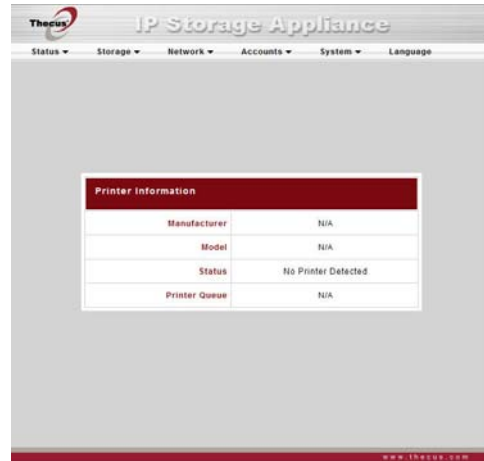
From the **Status** menu, choose the **System** item, and the **System Status** screen appears. These screens provide basic system status information.



| System Status   |   |
|-----------------|---|
| Item            | Description                                   |
| CPU Loading (%) | Displays current CPU workload of the M3800.   |
| Fan RPM         | Displays the current speed of the system fan. |
| Up Time         | Shows how long the system has been running.   |

## Printer Status

From the **Status** menu, choose the **Printer** item, and the **Printer Information** screen appears. This screen provides the following information about the USB printer connected to the USB port.



| Printer Status |  |
|----------------|--|
| Item           | Description  |
| Manufacturer   | Displays the name of the USB printer manufacturer. |
| Model          | Displays the model of the USB printer.             |
| Status         | Displays the status of the USB printer.            |
| Printer Queue  | Click to remove all documents from printer queue   |

If a corrupt print job is sent to a printer, printing may suddenly fail. If your print jobs seem to be locked up, pressing the **Remove All Documents** button to clear the print queue may resolve the issue.

For information on how to set up the Printer Server, refer to **Chapter 5: Additional Feature Setup > Printer Server**.

## Wake-Up On Lan (WOL)

The M3800 has the ability to be awoken from sleep mode via WAN or LAN.

From the **Status** menu, choose the **WOL** item, and the **Wake-up On Lan Configuration** screen appears. From here, you can **Enable** or **Disable Wake-up On WAN** and **Wake-up On LAN**.



| Wake-up On Lan Configuration |   |
|------------------------------|---|
| Item                         | Description                                     |
| WAN                          | <b>Enable</b> or <b>Disable</b> Wake-up On WAN. |
| LAN                          | <b>Enable</b> or <b>Disable</b> Wake-up On LAN. |
| Apply                        | Click <b>Apply</b> to save changes.             |

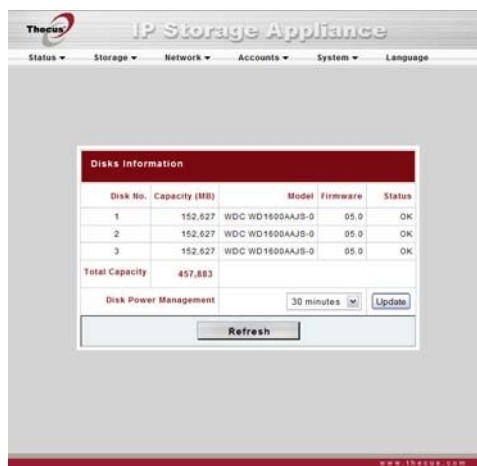


## Storage Management

The **Storage Menu** displays the status of storage devices installed in the M3800, and includes storage configuration options such as RAID and disk settings, folder configuration settings.

### SATA Information

From the **Storage** menu, choose the **SATA** item and the **Disks Information** screen appears. From here, you can see various items about installed SATA hard disks. Blank lines indicate that a SATA hard disk is not currently installed in that particular disk slot. If there is a problem with a disk, a **Failed** message will be displayed in the **Status** column.



| Disks Information     |  |
|-----------------------|--|
| Item                  | Description  |
| Disk No.              | Indicates disk location.   |
| Capacity              | Shows the SATA hard disk capacity.   |
| Model                 | Displays the SATA hard disk model name.  |
| Firmware              | Shows the SATA hard disk firmware version.   |
| Status                | Indicates the status of the disk. Can read <b>OK</b> , <b>Warning</b> , or <b>Failed</b> . |
| Total Capacity        | Shows the total SATA hard disk capacity.   |
| Disk Power Management | The administrator can set the disk to power down after a period of inactivity.             |

### NOTE

When the Status shows Warning, it usually means there are bad sectors on the hard disk. It is shown only as a precaution and you should consider changing the drives.

### eSATA Information

From the **Storage** menu, choose the **eSATA** item and the **eSATA Information** screen appears. From here, you can see various items about the eSATA hard disk connected to the M3800, including capacity, used percentage, and model and firmware version. You can even format the connected eSATA hard disk from this menu.



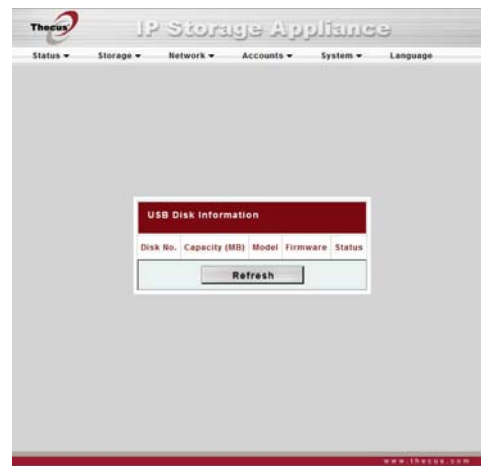
| eSATA Information |   |
|-------------------|---|
| Item              | Description   |
| Model             | Displays the eSATA hard disk model name.  |
| Capacity          | Shows the eSATA hard disk capacity in megabytes (MB).                                     |
| Used Percentage   | Shows the capacity remaining on the eSATA hard disk in percentage (%) and megabytes (MB). |
| Firmware          | Shows the eSATA hard disk firmware version.   |
| Format            | Press <b>Format</b> to format your eSATA hard disk.                                       |
| Eject             | Press <b>Eject</b> to unmount the eSATA hard disk.  |

## WARNING

Formatting will destroy all data on your eSATA hard disk. This data is not recoverable.

## USB Disk Information

From the **Storage** menu, choose the **USB** item and the **USB Information** screen appears. From here, you can see various items about USB disks connected to the M3800.



| USB Information |   |
|-----------------|---|
| Item            | Description   |
| Disk No.        | Number assigned to each USB disk.   |
| Capacity (MB)   | Shows the capacities of each USB disk in megabytes (MB).  |
| Model           | Displays the model names of each USB disk.  |
| Firmware        | Shows the firmware version of each USB disk.  |
| Status          | Shows the status of each USB disk. An <b>Eject</b> button appears beside each USB disk. Press this button before removing the USB disk. |
| Refresh         | Press <b>Refresh</b> to rescan the status of the USB disks.   |

## RAID Information

From the **Storage** menu, choose the **RAID** item and the **RAID Information** screen appears.

This screen lists the RAID volume currently residing on the M3800. From this screen, you can get information about the status of your RAID volume, as well as the status, used percentage, and stripe size.

To configure your RAID settings, press the **Config** button to go to the **RAID Configuration** screen.



| RAID Information |  |
|------------------|--|
| Item             | Description  |
| RAID Level       | Shows the current RAID configuration.  |
| Total Capacity   | Total capacity of the current RAID.  |
| Status           | Indicates status of the RAID. Can read either <b>Healthy</b> , <b>Degraded</b> , or <b>Damaged</b> . |
| Used Percentage  | Indicates total percentage used of the RAID volume.  |
| Stripe Size      | Indicates the current stripe size being used.  |
| Remaining Time   | Indicates the time remaining until the RAID volume is built.   |
| Config           | Press this to configure RAID volumes.  |

## RAID Configuration

On the **RAID List** screen, press the **RAID Config** button to go to the **RAID Configuration** screen. In addition to RAID disk information and status, this screen lets you make RAID configuration settings.

For more information on RAID, see [Appendix C: RAID Basics](#).



## RAID Level

You can set the storage volume as **JBOD**, **RAID 0**, **RAID 1**, or **RAID 5**. RAID configuration is usually required only when you first set up the device. A brief description of each RAID setting follows:

| RAID Levels |   |
|-------------|---|
| Level       | Description   |
| JBOD        | The storage volume is a single HDD with no RAID support. JBOD requires a minimum of 1 disk.   |
| RAID 0      | Provides data striping but no redundancy. Improves performance but not data safety. RAID 0 requires a minimum of 2 disks.   |
| RAID 1      | Offers disk mirroring. Provides twice the read rate of single disks, but same write rate. RAID 1 requires a minimum of 2 disks.   |
| RAID 5      | Data striping and stripe error correction information provided. Excellent performance and good fault tolerance. RAID 5 requires a minimum of 3 disks. RAID 5 can sustain one failed disk. |

### WARNING

If the administrator improperly removes a hard disk that should not be removed when RAID status is Degraded, all data will be lost.

## RAID Settings

Using **RAID Settings**, you can select stripe size, choose which disks are RAID disks or the Spare Disk, as well as enter a name for each disk.

| RAID Settings |   |
|---------------|---|
| Item          | Description   |
| Disk No.      | Number assigned to the installed hard disks.  |
| Capacity (MB) | Capacity of the installed hard disks.   |
| Model         | Model number of the installed hard disks.   |
| RAID          | Check the boxes of the hard drives you wish to add to the storage volume.   |
| Spare         | If this is checked, current hard disk is designated as a spare for a RAID volume.   |
| Stripe Size   | This sets the stripe size to maximize performance of sequential files in a storage volume. Keep the 64K setting unless you require a special file storage layout in the storage volume. A larger stripe size is better for large files. |
| Create RAID   | Press this button to configure a file system and create the RAID storage volume.  |
| Remove RAID   | Click to remove the RAID volume. All user data, iSCSI, and Target USB data will be removed.   |
| Cancel        | Press this button to exit without saving changes.   |

## Creating a RAID

To create a RAID volume, follow the steps below:

1. On the **RAID Configuration** screen, set the RAID storage space as **JBOD**, **RAID 0**, **RAID 1**, or **RAID 5**, — see [Appendix C: RAID Basics](#) for a detailed description of each.
2. Tick the checkboxes of the hard disks you wish to use to create a RAID.
3. Specify a stripe size — 64K is the default setting.
4. Press **Create** to build the RAID storage volume.

### NOTE

Building a RAID storage space may take time, depending on the size of hard drives and RAID mode.

### WARNING

Creating RAID destroys all data in the current RAID. The data is unrecoverable.

With a RAID 1 volume, you can also add a spare disk after the RAID is created. See [Chapter 7: Tips and Tricks > Adding a Spare Disk](#) for details.

## Deleting a RAID

To delete a RAID volume, follow the steps below:

1. On the RAID List screen, select the RAID volume by clicking on its radio button, and click **Config** to open the **RAID Configuration** screen.
2. On the **RAID Configuration** screen, click **Remove**.
3. The system automatically rebuilds and you can create a new RAID.

### WARNING

Removing RAID destroys all data in the current RAID. The data is unrecoverable.

## Folder Management

From the **Storage** menu, choose **Folder**, and the **Folder** screen appears. This screen allows you to create and configure folders on the M3800 volume.



| Folder      |   |
|-------------|---|
| Item        | Description   |
| Folder name | Displays the name of the folder.  |
| Description | Provides a description of the folder.   |
| NFS Share   | Press <b>NFS Share</b> to configure which hosts on the network are allowed to access this folder using NFS. |
| ACL         | Press <b>ACL</b> (Access Control List) to configure which users have access to this folder.                 |
| Edit        | Press <b>Edit</b> to enter the <b>Edit</b> screen and modify the folder's name and description.             |
| Del         | Press <b>Del</b> to delete the folder. A prompt appears asking to confirm the deletion.                     |
| Add         | Press <b>Add</b> to enter the <b>Add Folder</b> screen.   |

### Adding Folders

On the **Folder** screen, press the **Add** button and the **Add Folder** screen appears. This screen allows you to add a folder. After entering the information, press **Apply** to create new folder. Press **Back** to return to the **Folder** screen.



| Add Folder  |   |
|-------------|---|
| Item        | Description   |
| Folder Name | Enter the name of the folder.   |
| Description | Provide a description the folder.   |
| Browseable  | Enable or disable users from browsing the folder contents. If <b>Yes</b> is selected, then the share folder will be browseable.   |
| Public      | Admit or deny public access to this folder. If <b>Yes</b> is selected, then users do not need to have access permission to write to this folder. When accessing a public folder via FTP, the behavior is similar to anonymous FTP. Anonymous users can upload/download a file to the folder, but they cannot delete a file from the folder. |

|       |  |
|-------|--|
| Apply | Press <b>Apply</b> to create the folder.                 |
| Back  | Press <b>Back</b> to return to the <b>Folder</b> screen. |

**NOTE** Folder names are limited to 60 characters. Systems running Windows 98 or earlier may not support file names longer than 15 characters.

### Editing Folders

On the **Folder** screen, press the **Edit** button and the **Edit Folder** screen appears. This screen allows you to change folder information. After entering the information, press **Submit** to apply the changes. Press **Back** to return to the **Folder** screen.

| Edit Folder |  |
|-------------|--|
| Item        | Description  |
| Share Name  | Enter the name of the (Share) folder.                      |
| Description | Provide a description the folder.                          |
| Browseable  | Enable or disable users from browsing the folder contents. |
| Public      | Admit or deny public access to this folder.                |
| Submit      | Press <b>Submit</b> to save your changes.                  |
| Back        | Press <b>Back</b> to return to the <b>Folder</b> screen.   |

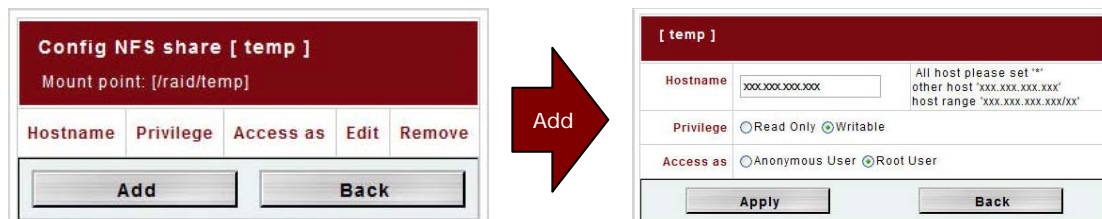
### Deleting Folders

To delete a folder, press the **Del** button from the specified folder row. The system will confirm folder deletion. Press **OK** to delete the folder permanently or **Cancel** to go back to the folder list.

**WARNING** All the data stored in the folder will be deleted once the folder is deleted. The data will not be recoverable.

### NFS Share

To allow NFS access to the share folder, enable the **NFS Service**, and then set up hosts with access rights. Click **Add** to access the **New NFS Share** dialogue.



| NFS Share |   |
|-----------|---|
| Item      | Description   |
| Hostname  | Enter the name of the Host or IP address                                  |
| Privilege | Host has either <b>read only</b> or <b>writable</b> access to the folder. |
| Access as | Access the data as a <b>Root User</b> or an <b>Anonymous User</b> .       |
| Apply     | Click to save your changes.   |
| Back      | Click to exit without saving changes.                                     |

### Folder Access Control List (ACL)

On the Folder screen, press the **ACL** button, and the **Access Control List** screen appears. This screen allows you to configure access to the specific folder for users and groups. Select a user or a group from the left hand column and then choose **Deny**, **Read Only**, or **Writable** to configure their access level. Press the **Submit** button to confirm your settings.



| Access Control List |   |
|---------------------|---|
| Item                | Description   |
| Deny                | Denies access to users or groups who are displayed in this column.                            |
| Read Only           | Provides Read Only access to users or groups who are displayed in this column.                |
| Writable            | Provides Write access to users or groups who are displayed in this column.                    |
| Remove              | Removes the selected user or group from the column in order to reset their access privileges. |
| Submit              | Submits and confirms settings.  |
| Reset               | Cancel your settings and return to the <b>Folder</b> screen.                                  |

To configure folder access, follow the steps below:

1. On the **ACL** screen, all network groups and users are listed in the left hand column. Select a group or user from this list.
2. With the group or user selected, press one of the buttons from the three access level columns at the top. The group or user then appears in that column and has that level of access to the folder.
3. Continue selecting groups and users and assigning them access levels using the column buttons.
4. To remove a group or user from an access level column, press the **Remove** button in that column.
5. When you are finished, press **Submit** to submit and confirm your ACL settings.

## Network Management

Use the **Network** menu to make network configuration settings as well as service support settings.

### WAN Configuration

From the **Network** menu, choose **WAN**, and the **WAN Configuration** screen appears.

This screen displays the network parameters of the WAN connection. You may change any of these items and press **Apply** to confirm your settings. See a description of each item in the following table:



| WAN Configuration   |  |
|---------------------|--|
| Item                | Description  |
| Host name           | Host name that identifies the M3800 on the network.  |
| Domain name         | Specifies the domain name of the M3800.  |
| MAC Address         | MAC address of the network interface.  |
| Jumbo Frame Support | Enable or disable Jumbo Frame Support of the WAN interface on your M3800.  |
| WAN Port            | Enable or disable the M3800 from obtaining in IP address via DHCP server. If you require a static IP, disable this feature and input your network configuration. |
| IP                  | IP address of the WAN interface.   |
| Netmask             | Network mask, which is generally: 255.255.255.0  |
| Gateway             | Default Gateway IP address.  |
| DNS Server          | Domain Name Service (DNS) server IP address.   |
| IP Sharing Mode     | When enabled, PCs connected to the LAN port will be able to access the WAN. Default is Enabled.  |

#### NOTE

- Only use Jumbo Frame settings when operating in a Gigabit environment where all other clients have Jumbo Frame Setting enabled.
- Enabling DHCP automatically turns on UPnP—see the Service Support Screen.
- If you are only using the WAN port, we suggest that you disable IP Sharing Mode. This will result in higher throughput.
- A correct DNS setting is vital to networks services, such as SMTP and NTP.

#### WARNING

Most Fast Ethernet (10/100) Switches/Routers do not support Jumbo Frame and you will not be able to connect to your M3800 after Jumbo Frame is turned on. If this happens, turn off the M3800. Then, power on the M3800 and immediately press and hold the Reset button on the back of the unit for 5 seconds. This will reset your network settings, password, and turn off Jumbo Frame Support.



## LAN Configuration

The M3800 supports two Gigabit Ethernet ports for higher service availability. To configure these ports, choose **LAN** from the **Network** menu, and the **LAN Configuration** screen appears. Press **Apply** to save your changes.



| LAN Configuration   |   |
|---------------------|---|
| Item                | Description   |
| MAC Address         | Displays the MAC address of the LAN interface.              |
| Jumbo Frame Support | Enable or disable Jumbo Frame Support on the LAN interface. |
| IP                  | Specifies the IP address of the LAN interface.              |
| Netmask             | Specifies the Network Mask of the LAN interface.            |

### NOTE

Before enabling Jumbo Frame Support, please make sure your network equipment supports Jumbo Frame. If your equipment is incompatible, you might not be able to connect to your M3800. In this case, you have to reset the system back to default by the holding down front panel reset button for 5 seconds during boot up process.

## DHCP Configuration

A DHCP server can be configured to assign IP addresses to devices connected to the LAN port. To configure these ports, choose **LAN** from the **Network** menu.

| DHCP Configuration |   |
|--------------------|---|
| Item               | Description   |
| DHCP Server        | Enable or disable the DHCP server to automatically assign IP address to PCs connected to the LAN interface. |
| Start IP           | Specifies the starting IP address of the DHCP range.  |
| End IP             | Specifies the ending IP address of the DHCP range.  |
| DNS Server         | Specifies the DNS server IP address.  |

### NOTE

The IP Segment of WAN and LAN should not overlap.

### WARNING

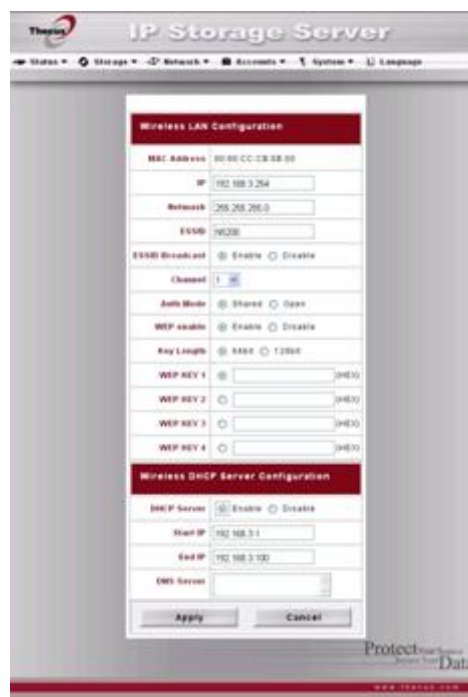
The IP address of the LAN interface should not be in the range of the Start IP address and End IP address.

## WLAN Configuration

When a compatible wireless USB dongle is installed on the M3800, the M3800 will become an access point, and the **Network** dropdown menu will contain a **WLAN** menu item. From the **Network** menu, choose **WLAN**, and the **WLAN Configuration** screen appears. This screen displays the wireless network parameters of the system. You can to change any of these items and press **Apply** to confirm your settings.

### NOTE

- Currently supported USB wireless dongles are: 3Com 3CRUSB10075, Zyxel G220USB, PCI GW-US54mini.
- USB dongles have to be connected before the M3800 is powered up.



| WLAN Configuration |   |
|--------------------|---|
| Item               | Description   |
| MAC Address        | Displays the MAC Address of the USB wireless dongle.  |
| IP                 | Specifies the IP address of the network connection.   |
| Netmask            | Specifies the network mask, which is generally: 255.255.255.0   |
| ESSID              | The ESSID (Extended Service Set Identification) is the identifying name of a wireless network.  |
| ESSID Broadcast    | Specifies whether the ESSID will be broadcasted by the M3800. This will prevent the Access Point from broadcasting the ESSID. The M3800 will still respond to a wireless device that wants to communicate if it sends a matching ESSID. |
| Channel            | The channel that the M3800 uses to communicate with client devices.   |
| Auth Mode          | Authentication mode used by the M3800.<br><b>Shared:</b> Shared key authentication<br><b>Open:</b> Open key authentication  |
| WEP Enable         | Specifies whether to use encryption for transmission or not.  |
| Key Length         | Key length specifies the level of encryption used by the M3800.<br>64 bit: 10 characters from 0 ~ 9 and A ~ F.<br>128 bit: 26 characters from 0 ~ 9 and A ~ F.  |
| WEP KEY 1          | Input up to 4 WEP keys, and select the one you wish to use. When connecting, be sure to enter the same key and select the same index number on each client machine.   |
| WEP KEY 2          |   |
| WEP KEY 3          |   |
| WEP KEY 4          |   |

A DHCP server can be configured to assign IP addresses to devices connected to LAN ports.

| WLAN DHCP Configuration |  |
|-------------------------|--|
| Item                    | Description  |
| DHCP Server             | Select to enable or disable DHCP server.             |
| Start IP                | Specifies the starting IP address of the DHCP range. |
| End IP                  | Specifies the ending IP address of the DHCP range.   |
| DNS Server              | Specifies the DNS server IP address.                 |

## NOTE

The IP Segment of WLAN, WAN and LAN should not overlap.

## NOTE

Users should obey the international RF regulatory rules as they set up the wireless RF channel on the M3800. The RF operating channels for different regions have been specified as following. Thecus has no responsibility for users attempting to violate the international RF regulation.

|    |               |
|----|---------------|
| 11 | N. America    |
| 14 | Japan         |
| 13 | Europe (ETSI) |
| 2  | Spain         |
| 4  | France        |

## DDNS Configuration

From the **Network** menu, choose the **DDNS** item, and the **DDNS Support** screen appears. You can change any of these items and press **Apply** to confirm your settings. A description of each item follows:



| DDNS Support |  |
|--------------|--|
| Item         | Description                                      |
| DDNS         | Enable or disable DDNS support.                  |
| Register     | Enter your desired DDNS server here.             |
| User Name    | Enter your user name.                            |
| Password     | Enter your password or DDNS key.                 |
| Domain Name  | Enter your host name (i.e. www.M3800.dyndns.org) |
| Apply        | Click to save your changes.                      |

### Typical DDNS Configuration Procedure

To setup DDNS on your M3800, follow the steps below:

1. Go to <http://www.dyndns.org> from your home PC.
2. Click on the **Sign Up Now** link.
3. Check the check boxes, select a user name (i.e.: M3800), enter your email address (i.e.: xxx@example.com), check **Enable Wildcard**, and create a password (i.e.: xxxx).
4. Wait for an email from [www.dyndns.org](http://www.dyndns.org).
5. Open the email and click on the link to activate your account.
6. Once your account is activated, enter the DDNS server, user name, password, and host name into the **DDNS Support** screen.
7. Click **Apply** to save your changes.

## Web Services Configuration

From the **Network** menu, choose the **Service** item, and the **Web Service** screen appears. This screen displays the service support parameters of the system. You can change any of these items and press **Apply** to confirm your settings. A description of each item follows:

### NOTE

Disable HTTP support and Enable Secure HTTP support to guarantee secure access.

| Web Service                    |   |
|--------------------------------|---|
| Item                           | Description   |
| HTTP (WebDisk) Support         | Enable or disable WebDisk support. Enter the port number if this option is enabled.                 |
| HTTPs (Secure WebDisk) Support | Enable or disable secure WebDisk support. Enter the port if this option is enabled.                 |
| UPnP                           | Enable or disable Universal Plug and Play protocol. UPnP helps to find the IP address of the M3800. |

## AFP (Apple Network Setup)

From the **Network** menu, choose the **AFP** item, and the **AFP Configuration** screen appears. This screen displays the configuration items for the Apple Filing Protocol. You can change any of these items and press **Apply** to confirm your settings. A description of each item follows:

| Apple Network Configuration |  |
|-----------------------------|--|
| Item                        | Description  |
| AFP Server                  | Enable or disable Apple File Service to use the M3800 with MAC OS-based systems.   |
| MAC CHARSET                 | If your operating system does not support Unicode (e.g. MAC OS9/8), select the same language as your OS here in order to properly view the files and directories on the server.  |
| Zone                        | Specifies Zone for Appletalk service.<br>If your AppleTalk network uses extended networks and is assigned with multiple zones, assign a zone name to the M3800. If you do not want to assign a network zone, enter an asterisk (*) to use the default setting. |

## NFS Setup

From the **Network** menu, choose the **NFS** item, and the **NFS Support** screen appears. The M3800 can act as an NFS server, enabling users to download and upload files with their favorite NFS clients. Press **Apply** to confirm your settings. A description of each item follows:



| NFS Support |  |
|-------------|--|
| Item        | Description                                  |
| NFS         | <b>Enable</b> or <b>Disable</b> NFS support. |
| Apply       | Click <b>Apply</b> to save your changes.     |

## User and Group Management

The M3800 has built-in user database that allows administrators to manage user access using different group policies. From the **Accounts** menu, you can create, modify, and delete users, and assign them to groups that you designate.

### Local User Configuration

From the **Accounts** menu, choose the **Users** item, and the **Local User Configuration** screen appears. This screen allows you to **Add**, **Modify**, and **Delete** local users.



| Local User Configuration |   |
|--------------------------|---|
| Item                     | Description   |
| Add                      | Press the <b>Add</b> button to add a user to the list of local users.     |
| Modify                   | Press the <b>Modify</b> button to modify a local user.                    |
| Delete                   | Press the <b>Delete</b> button to delete a selected user from the system. |

### Adding Users

1. Click on the **Add** button on **Local User Configuration** screen, and **Local User Setting** screen appears.
2. On the **Local User Setting** screen, enter a name in the **User Name** box.
3. Enter a password in the **Password** box and re-enter the password in the **Confirm** box.
4. Select which group the user will belong to. **Group Members** is a list of groups this user belongs to. **Group List** is a list of groups this user does not belong to. Use the << or >> buttons to have this user join or leave a group.
5. Press the **Apply** button and the user is created.



#### NOTE

All users are automatically assigned to the 'users' group.

## Modifying Users

1. Select an existing user from the **Local User Configuration** screen.
2. Click on the **Modify** button, and **Local User Setting** screen appears.
3. From here, you can enter a new password and re-enter to confirm, or use the << or >> buttons to have this user join or leave a group. Click the **Apply** button to save your changes.

## Deleting Users

1. Select an existing user from the **Local User Configuration** screen.
2. Click on **Delete** button and the user is deleted from the system.

## Local Groups Configuration

From the **Accounts** menu, choose the **Groups** item, and the **Local Groups Configuration** screen appears. This screen allows you to **Add**, **Modify**, and **Delete** local groups.



| Local Groups Configuration |  |
|----------------------------|--|
| Item                       | Description  |
| Add                        | Press the <b>Add</b> button to add a user to the list of local groups.     |
| Modify                     | Press the <b>Modify</b> button to delete a selected group from the system. |
| Delete                     | Press the <b>Delete</b> button to delete a selected group from the system. |

## Adding Groups

1. On the **Local Group Configuration** screen, click on the **Add** button.
2. The **Local Group Setting** screen appears.
3. Enter a **Group Name**, and select users to be in this group from the **Users List** by adding them to the **Members List** using the << button.
4. Click the **Apply** button to save your changes.

## Modifying Groups

1. On the **Local Group Configuration** screen, select a group name from the list.
2. Press the **Modify** button to modify the members in a group.
3. To add a user into a group, select the user from the **Users List**, and press the << button to move the user into the **Members List**.
4. To remove a user from a group, select the user from **Members List**, and press the >> button.
5. Click the **Apply** button to save your changes.



## Deleting Groups

1. On the **Local Group Configuration** screen, select a group name from the list.
2. Press **Delete** to delete the group from the system.

## ADS/NT Configuration

If you have a Windows Active Directory Server (ADS) or Windows NT server to handle the domain security in your network, you can simply enable the ADS/NT support feature; the M3800 will connect with the ADS/NT server and get all the information of the domain users and groups automatically. From the **Accounts** menu, choose **Authentication** item and the **ADS/NT Support** screen appears. You can to change any of these items and press **Apply** to confirm your settings. A description of each item follows:





| ADS/NT Support           |  |
|--------------------------|--|
| Item                     | Description  |
| WINS Server              | Specifies the WINS server if necessary.  |
| Work Group / Domain Name | Specifies the SMB/CIFS Work Group / ADS Domain Name (e.g. M3800).  |
| ADS/NT Support           | Select Disable to disable authentication through Windows Active Directory Server or Windows NT.                    |
| Authentication Method    | Select ADS for Windows Active Directory Server, or select NT for Windows NT  |
| ADS/NT Server Name       | Specifies the ADS/NT server name (e.g. adservername).  |
| ADS/NT Realm             | Specifies the ADS/NT realm (e.g. example.com).   |
| Administrator ID         | Enter the administrators ID of Windows Active Directory or Windows NT, which is required for M3800 to join domain. |
| Administrator Password   | Enter the ADS/NT Administrator password.   |
| Confirm Password         | For re-entering password to confirm.   |

To join an AD domain, you can use the example below to configure the M3800:

| AD Domain Example        |               |
|--------------------------|---------------|
| Item                     | Information   |
| Work Group / Domain Name | Thecus        |
| ADS Support              | Enable        |
| ADS Server Name          | ADServer      |
| ADS/NT Realm             | thecus.com    |
| Administrator ID         | Administrator |
| Administrator Password   | *****         |
| Confirm Password         | *****         |

### NOTE

- The DNS server specified in the WAN configuration page should be able to correctly resolve the ADS server name.
- The time zone setting between M3800 and ADS should be identical.
- The system time difference between M3800 and ADS should be less than five minutes.
- The Administrator Password field is for the password of ADS (Active Directory Server), not the M3800.

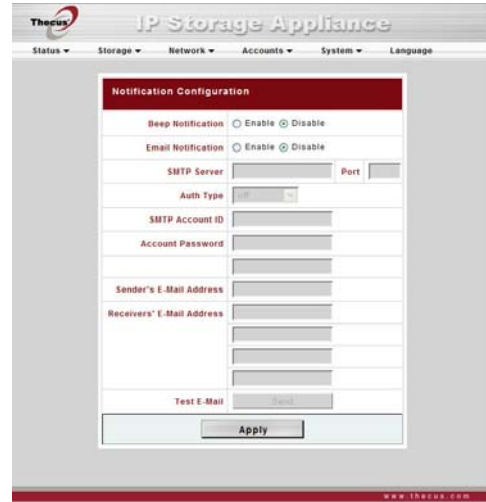
## System Settings

The **System** menu gives you a wealth of settings that you can use to configure your M3800's system administration functions. You can set up system notifications, view system logs, and even upgrade firmware from this menu.

### System Notifications

From the **System** menu, choose the **Notification** item, and the **Notification Configuration** screen appears. This screen lets you have the M3800 notify you in case of any system malfunction. Press **Apply** to confirm all settings. See following table for a detailed description of each item.

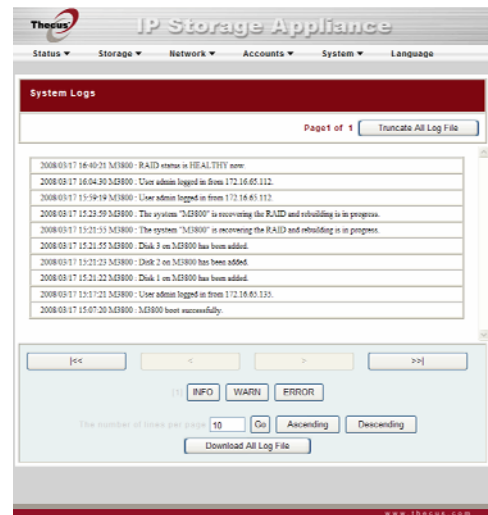
**NOTE** Consult with your mail server administrator for email server information.



| Notification Configuration |   |
|----------------------------|---|
| Item                       | Description   |
| Beep Notification          | Enable or disable the system beeper that beeps when a problem occurs.       |
| Email Notification         | Enable or disable email notifications of system problems.                   |
| SMTP Server                | Specifies the hostname/IP address of the SMTP server.                       |
| Port                       | Specifies the port to send outgoing notification emails.                    |
| Auth Type                  | Select the SMTP Server account authentication type.                         |
| SMTP Account ID            | Set the SMTP Server Email account ID.                                       |
| Account Password           | Enter a new password.   |
| Confirm Account Password   | Confirm a new password.   |
| Receiver's E-mail Address  | Add one or more recipient's email addresses to receive email notifications. |
| Test E-Mail                | Click to send out a test e-mail to make sure the settings are correct.      |

### System Logs

From the **System** menu, choose the **Logs** item and the **System Logs** screen appears. This screen shows a history of system usage and important events such as disk status, network information, and system booting. See the following table for a detailed description of each item:



| System Logs           |   |
|-----------------------|---|
| Item                  | Description   |
| Truncate All Log File | Clear all log files.  |
| << < > >>             | Use the forward ( > >>  ) and backward (  << < ) buttons to browse the log pages. |
| INFO                  | Provides all log information including warning messages and error messages.       |
| WARN                  | Shows all warning messages and error messages.                                    |
| ERROR                 | Shows only error messages.  |
| GO                    | Specify the number of lines per page and press Go.                                |
| Ascending             | Shows logs by date in ascending order.  |
| Descending            | Shows logs by date in descending order.   |
| Download All Log File | Export all logs to an external file.  |

## Time and Date Settings

From the **System** menu, choose the **Time** item and the **Time** screen appears. Set the desired **Date**, **Time**, and **Time Zone**. You can also elect to synchronize the system time on the M3800 with an **NTP (Network Time Protocol) Server**. You can change any of these items and press **Apply** to confirm your settings.

See the following table for a detailed description of each item:



| Time       |  |
|------------|--|
| Item       | Description  |
| Date       | Sets the system date.  |
| Time       | Sets the system time.  |
| Time Zone  | Sets the system time zone.   |
| NTP Server | Select <b>Yes</b> to allow the M3800 to synchronize with the NTP server shown below.<br>Select <b>Manually</b> to allow the M3800 to synchronize with an NTP server of your choice.<br>Select <b>No</b> to not have the M3800 to synchronize with an NTP server. |

### WARNING

If an NTP server is selected, please make sure your M3800's network has been setup to access the NTP server.

## System Configuration Backup and Restore

From the **System** menu, choose the **Config Mgmt** item and the **System Configuration Download/Upload** screen appears. From here, you can download or upload stored system configurations. See the following table for a detailed description of each item.

### NOTE

Backing up your system configuration is a great way to ensure that you can revert to a working configuration when you are experimenting with new system settings.



| System Configuration Download/Upload |  |
|--------------------------------------|--|
| Item                                 | Description  |
| Download                             | Save and export the current system configuration.                            |
| Browse                               | Click to browse for the configuration file you wish to import.               |
| Upload                               | Import a saved configuration file to overwrite current system configuration. |

## Module Management

From the **System** menu, choose the **Module Mgmt** item and the **Module Management** screen appears. From here, you can install separate software modules to extend the functionality of your M3800.

### NOTE

Modules can potentially harm your system. Only install modules from your vendor, or publishers you can trust.



| Module Management |   |
|-------------------|---|
| Item              | Description   |
| Name              | Displays the name of the module.                                  |
| Version           | Displays the module version.                                      |
| Description       | The description of the module.                                    |
| Enable            | Displays whether the module has been enabled or not.              |
| Status            | Displays the status of the module.                                |
| Uninstall         | Click to uninstall the module.                                    |
| Enable (button)   | Click to enable a module.   |
| Disable           | Click to disable a module.  |
| Browse            | Click to browse the folder of your PC to locate the module files. |
| Install           | Click to install the listed module into your M3800                |

## Reset to Factory Default Settings

From the **System** menu, choose the **Factory Default** item and the **Reset to Factory Default** screen appears. Press **Apply** to reset the M3800 to factory default settings. Press **Cancel** to go back to the main menu.



### WARNING

Resetting to factory defaults will not erase the data stored in the hard disks, but WILL revert all the settings to the factory default values.

## Upgrading System Firmware

From the **System** menu, choose the **Firmware Upgrade** item and the **Firmware Upgrade** screen appears.

Follow the steps below to upgrade your firmware:

1. Use the **Browse** button to find the firmware file.
2. Press **Apply**.
3. The beeper beeps and the Busy LED blinks until the upgrade is complete.



### NOTE

- The beeper only beeps if it is enabled in the System Notification menu.
- Check Thecus website for the latest firmware release and release notes.
- Downgrading firmware is not permitted.

### WARNING

Do NOT turn off the system during the firmware upgrade process. This will lead to a catastrophic result that may render the system inoperable.

## Change Administrator Password

From the **System** menu, choose the **Administrator Password** item and the **Change Administrator Password** screen appears. Enter a new password in the **New Password** box and confirm your new password in the **Confirm Password** box. Press **Apply** to confirm password changes. See the following table for a detailed description of each item.



The screenshot shows the 'Change Administrator Password' screen in the IP Storage Appliance web interface. The page has a header with the 'Thecus' logo and 'IP Storage Appliance' title, and a navigation menu with 'Status', 'Storage', 'Network', 'Accounts', 'System', and 'Language'. The main content area features a red-bordered box with the title 'Change Administrator Password'. Inside this box, there are two input fields: 'New Password' and 'Confirm Password', followed by an 'Apply' button. The footer of the page contains the URL 'www.thecus.com'.

| Change Administrator Password |   |
|-------------------------------|---|
| Item                          | Description                             |
| New Password                  | Type in a new administrator password.   |
| Confirm Password              | Type the new password again to confirm. |
| Apply                         | Press this to save your changes.        |

## Reboot and Shutdown System

From the **System** menu, choose **Reboot & Shutdown** item, and the **Shutdown/Reboot System** screen appears. Press **Reboot** to restart the system or **Shutdown** to turn the system off.



The screenshot shows the 'Shutdown/Reboot System' screen in the IP Storage Appliance web interface. The page has a header with the 'Thecus' logo and 'IP Storage Appliance' title, and a navigation menu with 'Status', 'Storage', 'Network', 'Accounts', 'System', and 'Language'. The main content area features a red-bordered box with the title 'Shutdown/Reboot System'. Inside this box, there are two buttons: 'Reboot' and 'Shutdown'. The footer of the page contains the URL 'www.thecus.com'.

## Scheduled Power On/Off

You may also designate a schedule for the M3800 to turn on and off. To do this, first enable the feature by checking the **Enable Timer** checkbox. Then, simply choose an on and off time for each day of the week that you would like to designate a schedule by using the various dropdowns. Finally, click **Apply** to save your changes.

**Example - Monday: On: 8:00; Off: 16:00**  
System will turn on at 8:00 AM on Monday, and off at 16:00 on Monday. System will turn on for the rest of the week.

If you choose an on time, but do not assign an off time, the system will turn on and remain on until a scheduled off time is reached, or if the unit is shutdown manually.

**Example - Monday: On: 8:00**

System will turn on at 8:00 AM on Monday, and will not shut down unless powered down manually.

You may also choose two on times or two off times on a particular day, and the system will act accordingly.

**Example - Monday: Off: 8:00; Off: 16:00**

System will turn off at 8:00 AM on Monday. System will turn off at 16:00 PM on Monday, if it was on. If the system was already off at 16:00 PM on Monday, system will stay off.

|           | Action | Time    | Action | Time    |
|-----------|--------|---------|--------|---------|
| Sunday    |        | 00 : 00 |        | 00 : 00 |
| Monday    |        | 00 : 00 |        | 00 : 00 |
| Tuesday   |        | 00 : 00 |        | 00 : 00 |
| Wednesday |        | 00 : 00 |        | 00 : 00 |
| Thursday  |        | 00 : 00 |        | 00 : 00 |
| Friday    |        | 00 : 00 |        | 00 : 00 |
| Saturday  |        | 00 : 00 |        | 00 : 00 |

## TV Setup

One of very unique feature of M3800 is HDMI/AV out direct connection to TV. They are varies options can be setup, please refer the document "M3800 OSD User's Manual" for more details.

|                    |       |
|--------------------|-------|
| Output Port        | HDMI  |
| Display Standard   | NTSC  |
| Display Ratio      | 16:9  |
| Display Resolution | 1080p |
| On Screen Display  | Off   |

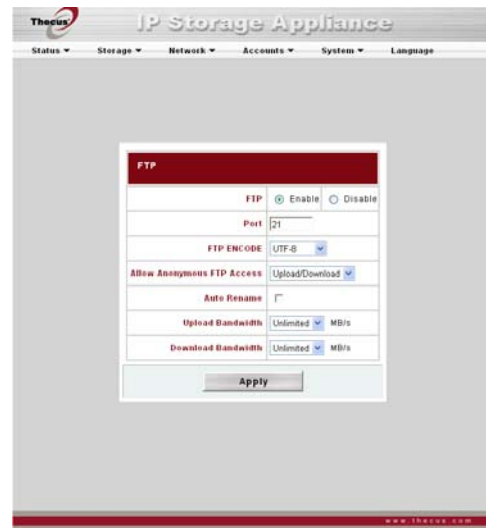
## Logout

To logout of the Web Administration Interface, navigate to **System > Logout**.

## Chapter 5: Additional Feature Setup

### FTP Server

M3800 can act as a FTP server, enabling users to download and upload files with their favorite FTP programs. From the **Network** menu, choose the **FTP** item, and the **FTP** screen appears. You can change any of these items and press **Apply** to confirm your settings. A description of each item follows:



| FTP                        |   |
|----------------------------|---|
| Item                       | Description   |
| FTP                        | Enable FTP Service on the M3800.  |
| Port                       | Specifies the port number of an incoming connection on a non-standard port.   |
| FTP ENCODE                 | If your FTP client or operating system does not support Unicode (e.g. Windows® 95/98/ME or MAC OS9/8), select the same encoding as your OS here in order to properly view the files and directories on the server. Available options are BIG5, HZ, GB2312, GB18030, ISO, EUC-JP, SHIFT-JIS and UTF-8. |
| Allow Anonymous FTP Access | <b>Upload/Download:</b> Allow anonymous FTP users to upload or download files to/from public folders.<br><b>Download:</b> Allow anonymous FTP users to download files from public folders.<br><b>No access:</b> Block anonymous FTP user access.  |
| Auto Rename                | If checked, the system will automatically rename files that are uploaded with a duplicate file name. The renaming scheme is [filename].#, where # represents an integer.  |
| Upload Bandwidth           | You may set the maximum bandwidth allocated to file uploads. Selections include <b>Unlimited, 1, 2, 4, 8, and 16 MB/s.</b>  |
| Download Bandwidth         | You may set the maximum bandwidth allocated to file downloads. Selections include <b>Unlimited, 1, 2, 4, 8, 16 MB/s.</b>  |

#### NOTE

Anonymous users are not able to delete files on the M3800. To delete files, users must login and be granted write access on the Access Control List.

To access the share folder on the M3800, use the appropriate user login and password set up on the **Users** page (**Accounts > Users**). Access control to each share folder is set up on the **ACL** page (**Storage > Folder > ACL**).

When trying to access M3800 anonymously, just enter **"anonymous"** as the user name.



## iTunes® Server

With the built-in iTunes server capability, the M3800 enables digital music to be shared and played anywhere on the network!

From the **Network** menu, choose the **iTunes** item, and the **iTunes Configuration** screen appears. You may enable or disable the iTunes Service from here. Once enabled, enter correct information for each field and press **Apply** to save your changes. See the following table for detailed descriptions of each field:



| iTunes Configuration |  |
|----------------------|--|
| Item                 | Description  |
| iTunes               | Enable or disable the iTunes Service.  |
| Server Name          | Name used to identify the M3800 to iTunes clients.   |
| Password             | Enter password to control access to your iTunes music.   |
| Rescan Interval      | Rescan interval in seconds.  |
| MP3 Tag Encode       | Specify tag encoding for MP3 files stored in M3800. All ID3 tags will be sent out in UTF-8 format. |

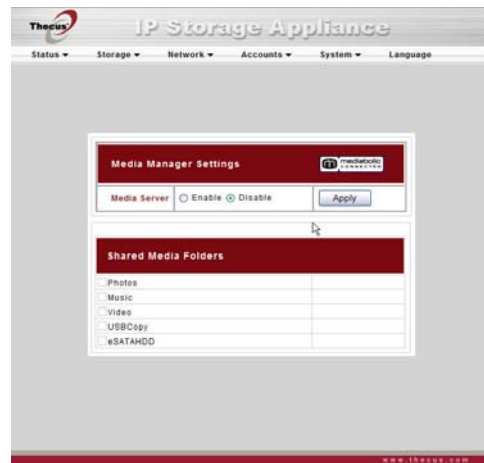
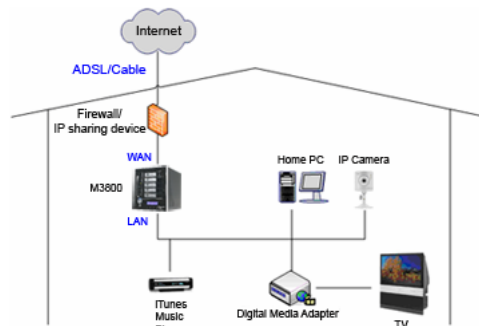
Once the iTunes service is enabled, the M3800 will make all music located in the **Music** folder available for iTunes-equipped computers on the network.

## Media Server

With the built-in Media Server capability, the M3800 provides media streaming service to stand-alone networked home media adapters that support the UPnP AV protocol or are Digital Living Network Alliance (DLNA) standard compliant.

With the M3800's built-in media server capability, you can share digital media such as music, pictures, and movies with any compatible device throughout your entire home.

To configure the media server, under the **Network** menu, click **Media Server** and the **Media Manager Settings** window will appear. A description of each field follows:



| Media Manager Settings |   |
|------------------------|---|
| Item                   | Description   |
| Media Server           | Enable or disable the Media Server service.   |
| Shared Media Folders   | Select the folder(s) that contains media files to be shared.                                    |
| Rescan                 | Click the <b>Rescan</b> button to have the M3800 for new contents in the selected media folder. |

## Adding Media Share Folders

Once the Media Server software is installed, you can start adding folders that contain the media that you would like to share. To create a media share folder, follow the steps below:

1. Click on **Network > Media Server** in the menu bar.
2. From the **Shared Media Folders** window, select the folder that contains your media files, and click its checkbox.
3. The contents in the folder will be scanned for the Media Server. The time required for scanning depends on the size of the folder.

## Connecting DMAs to the Media Server

Next, it's time to connect your Digital Media Adapter (DMA) to the media server:




1. Connect your DMA to your Media Server
  - a. Configure your DMA to use a Dynamic IP address. The IP address will be assigned by the router.
  - b. Some DMAs are wireless enabled. You can connect the DMA to a wireless router. For instructions on how to connect your DMA to a wireless router, please refer to your DMA's user manual.
2. Connect your DMA's video output to video input of your TV set.
3. Turn on the TV and change the video signal input to DMA.
4. Setup the DMA (These steps will be different if you use a different DMA)
  - a. From the Server List screen, select "**M3800:Mediabolic Server**" as the server.
  - b. Go to **My Media**
  - c. Click on the **Up/Down Arrow** buttons to select **Music Jukebox**, **Photo Albums**, or **Video Clips**
  - d. Start enjoying the contents stored in your M3800.

## Download Manager

With the built-in Download Manager, you can have the M3800 download HTTP, FTP, and BT files without having full PC powered on. What's more, you can even schedule your downloads for off-peak hours, ensuring efficient use of bandwidth. To access the Download Manager, go to **Network**, choose the **Download Manager** option, and the **Download Tasks** and **Download Schedule** windows appear.



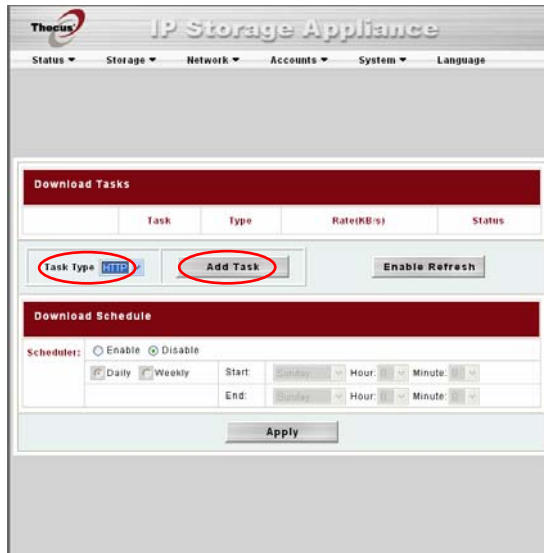
### Download Tasks

| Item  | Description  |
|---|--|
|  | Click to start the specified task.   |
|  | Click to pause the specified task.   |
|  | Click to delete the specified task. A prompt will appear asking you if you would like to delete the task itself, or the task and all related downloaded files. |
| Task  | Name of the task. Click to see more information about this task.   |
| Type  | Type of transfer. Can be <b>HTTP</b> , <b>FTP</b> , or <b>BT</b> .   |
| Rate  | Transfer rate of the task in kilobytes per second (KB/s).<br><b>DL:</b> Download rate<br><b>UL:</b> Upload rate  |
| Status  | Status of the task.<br><b>Complete:</b> Percentage complete (%)<br><b>Completed / Total download size</b>  |
| Task Type   | Use this dropdown to select the type of transfer. <b>HTTP</b> , <b>FTP</b> , and <b>BT</b> are available.  |
| Add Task  | Click to add the kind of task specified beside "Task Type".  |
| Enable Refresh  | Click to refresh the task list.  |

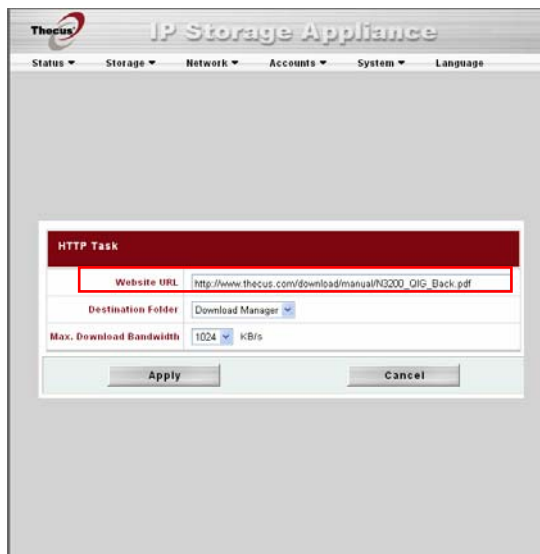
## Adding an HTTP Task

To add a new HTTP task to the Download Manager, follow these steps:

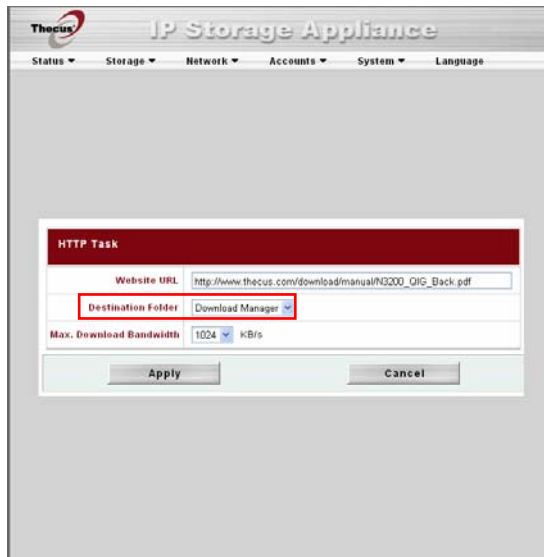
1. Using the **Task Type** dropdown, select **HTTP** and click **Add Task**.



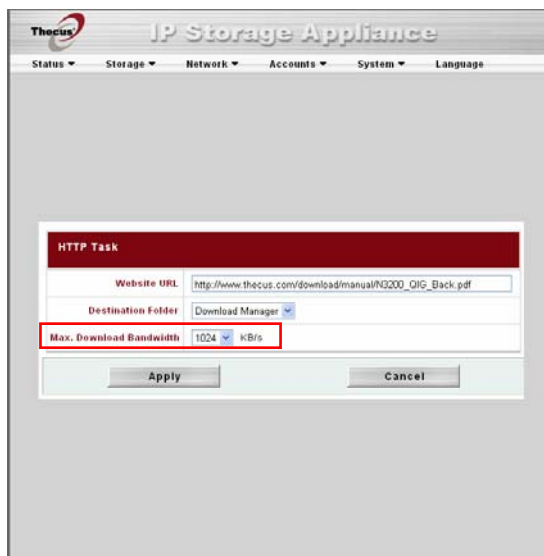
2. In the **HTTP Task** window, start by inputting the target URL in the **Website URL** box. This is the link to the download you want to queue.



- Next, select the destination folder from the **Destination Folder** dropdown. This is where the download will reside.

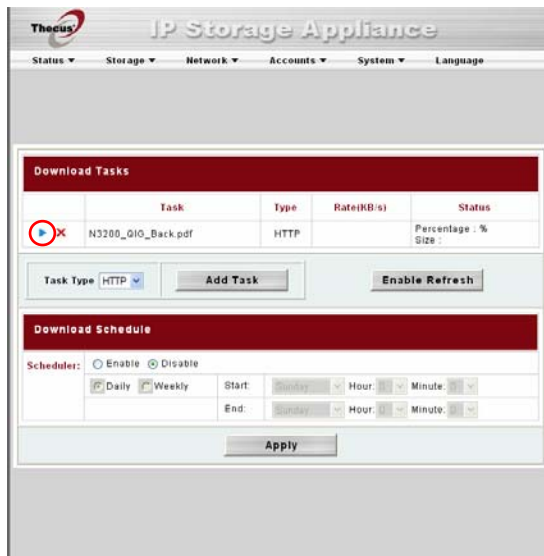


- Select the maximum download bandwidth from the **Max. Download Bandwidth** dropdown.

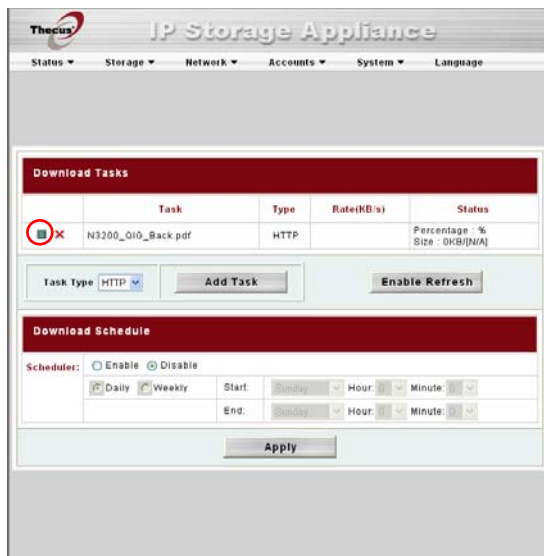


- Press **Apply** to add the task.

- Once added, your download will appear in the list of download tasks. To start the download, simply click the **Start** icon (▶) and the download will begin.



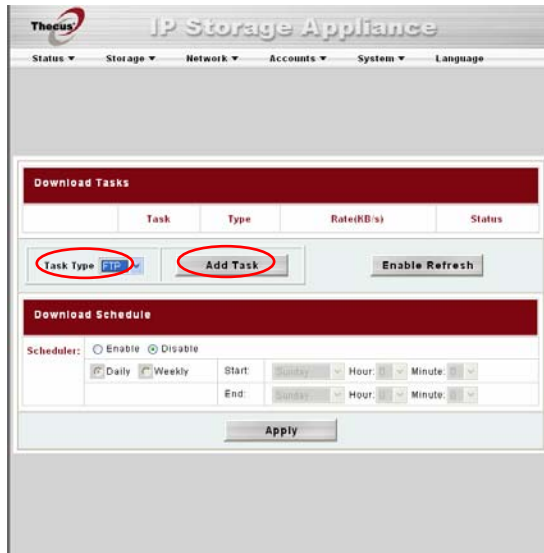
- The download status will continually update in the **Download Tasks** window. To pause the download, click the **Pause** icon (||).



## Adding an FTP Task

To add a new FTP task to the Download Manager, follow these steps:

1. Using the **Task Type** dropdown, select **FTP** and click **Add Task**.



2. In the **FTP Task** window, start by inputting the target URL in the **FTP File** box. This is the link to the download you want to queue.



- Next, select the destination folder from the **Destination Folder** dropdown. This is where the download will reside.

The screenshot shows the 'FTP Task' configuration page in the 'IP Storage Appliance' interface. The page has a navigation bar with 'Status', 'Storage', 'Network', 'Accounts', 'System', and 'Language'. The 'FTP Task' section includes the following fields:

- Account:** Radio buttons for 'Anonymous Login' (selected) and 'Username'. There is a 'Password' input field.
- Destination Folder:** A dropdown menu with 'Download Manager' selected, highlighted by a red box.
- Download Link:** A text field containing 'Download%20Manager/http%3C00\_0IG\_Back.pdf%3C00\_0IG\_Back.pdf/' with a note '(Example: ftp://ftp.example.com/dir/file)'. There is a 'Port' input field.
- FTP site:** A text field with '(Example: ftp.example.com)' below it.
- Path and file name:** A text field with '(Example: /sdirectory/file, wild card supported)' below it.
- Mode setting:** Radio buttons for 'Default (Active)' (selected) and 'Passive'.
- Max. Download Bandwidth:** A dropdown menu set to '1024' KB/s.

At the bottom of the form are 'Apply' and 'Cancel' buttons.

- The next step depends if you are using an anonymous login for your FTP download. If you are logging in anonymously, select **Anonymous Login** and move on to step 5.

This screenshot is identical to the previous one, showing the 'FTP Task' configuration page. In this view, the 'Anonymous Login' radio button in the 'Account' section is highlighted with a red box. The 'Destination Folder' dropdown is still set to 'Download Manager'.



If you are required to login with a user name and password, select **Username** and input your user name and password into the appropriate fields.

The screenshot shows the 'FTP Task' configuration interface. At the top, there are navigation tabs: Status, Storage, Network, Accounts, System, and Language. The main form is titled 'FTP Task' and contains several sections:

- Account:** Radio buttons for 'Anonymous Login' and 'Username Login'. The 'Username Login' option is selected. Below it are input fields for 'Username' (containing 'user') and 'Password' (containing '\*\*\*\*').
- Destination Folder:** A dropdown menu set to 'Download Manager'.
- Download Link:** A text field containing 'Download%20Manager/http%3200\_OIG\_Back.pdf%3200\_OIG\_Back.pdf' with a note '(Example: ftp://ftp.example.com/dir/file)'. There is a small '(E)' icon to the left.
- FTP site:** Input fields for 'FTP site' and 'Port'.
- Path and file name:** A text field with a note '(Example: /directory/file, wild card supported)'. There is a small '(E)' icon to the left.
- Mode setting:** Radio buttons for 'Default (Active)' and 'Passive'. 'Default (Active)' is selected.
- Max. Download Bandwidth:** A dropdown menu set to '1024 KB/s'.

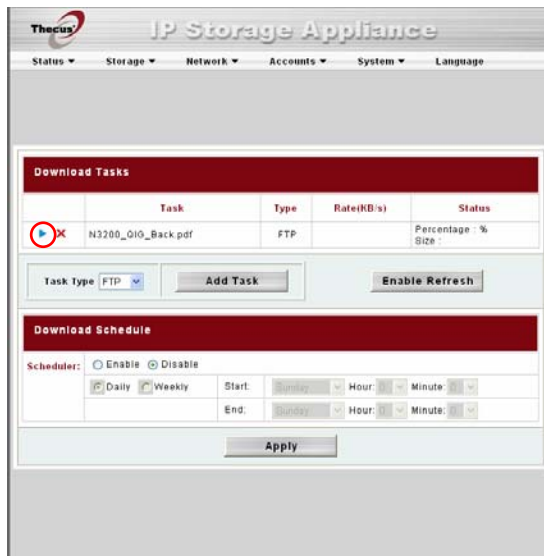
At the bottom of the form are 'Apply' and 'Cancel' buttons.

5. Select the maximum download bandwidth from the **Max. Download Bandwidth** dropdown.

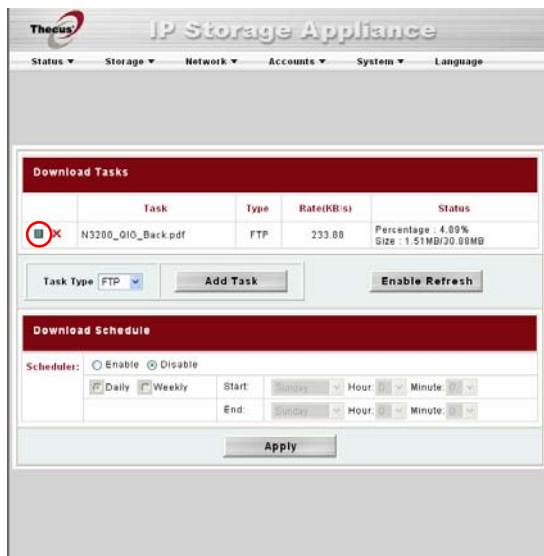
This screenshot is identical to the one above, but with a red rectangular box highlighting the 'Max. Download Bandwidth' dropdown menu, which is currently set to '1024 KB/s'.

6. Press **Apply** to add the task.

- Once added, your download will appear in the list of download tasks. To start the download, simply click the **Start** icon (▶) and the download will begin.



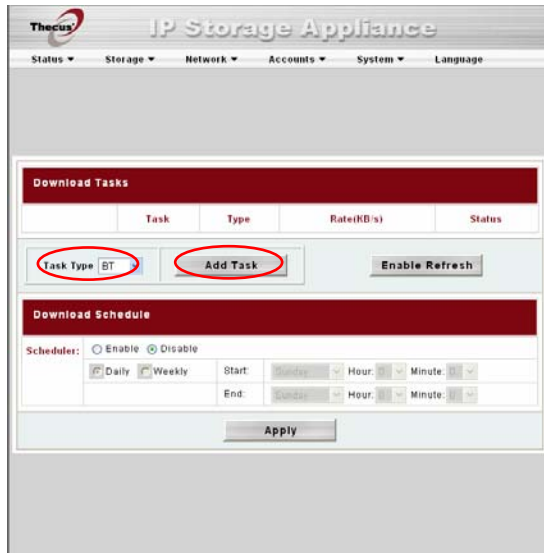
- The download status will continually update in the **Download Tasks** window. To pause the download, click the **Pause** icon (||).



## Adding a BT Task

To add a new BT task to the Download Manager, follow these steps:

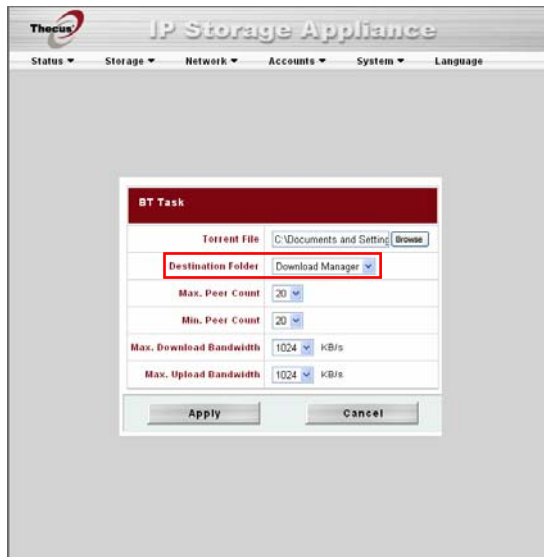
1. Using the **Task Type** dropdown, select **BT** and click **Add Task**.



2. In the **BT Task** window, start by clicking **Browse...** and selecting the torrent file you wish to start.



3. Next, select the destination folder from the **Destination Folder** dropdown. This is where the download will reside.



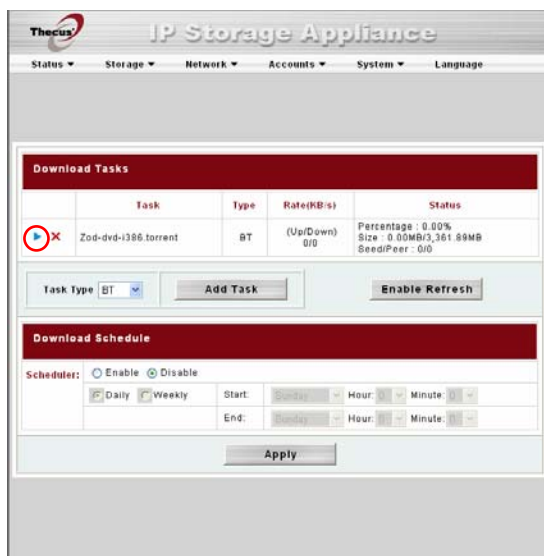
4. Next, you can select the maximum and minimum number of peers from selecting the counts from the appropriate dropdowns.



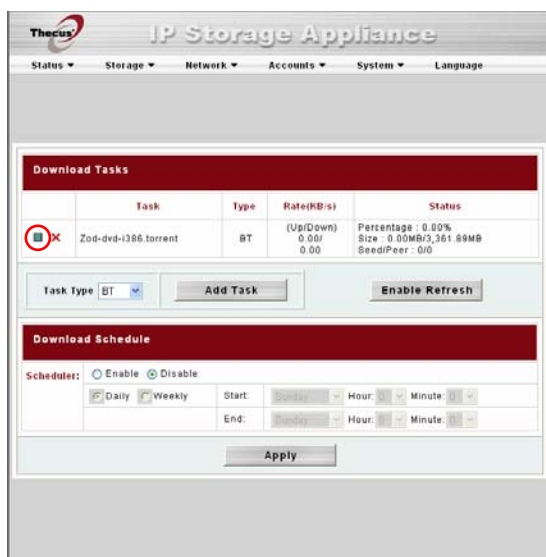
- Next, you can set the maximum download and upload bandwidths from the dropdowns below.



- Press **Apply** to add the task.
- Once added, your download will appear in the list of download tasks. To start the download, simply click the **Start** icon (▶) and the download will begin.



- The download status will continually update in the Download Tasks window. To pause the download, click the **Pause** icon (||).



## Deleting Tasks

To delete a task, simply follow the steps below:

- Click the delete icon (X) beside the task that you wish to delete. The **Delete Task** dialogue box will appear.
- Select **Delete Task only** if you wish to remove only the torrent file and all transient files, leaving the unfinished download files intact.
- Select **Delete Task and Files** if you wish to remove the torrent file and all transient files, and the unfinished download files.
- Click **OK** to delete the task. Click **Cancel** to return to the **Download Manager**.

## Scheduling Downloads

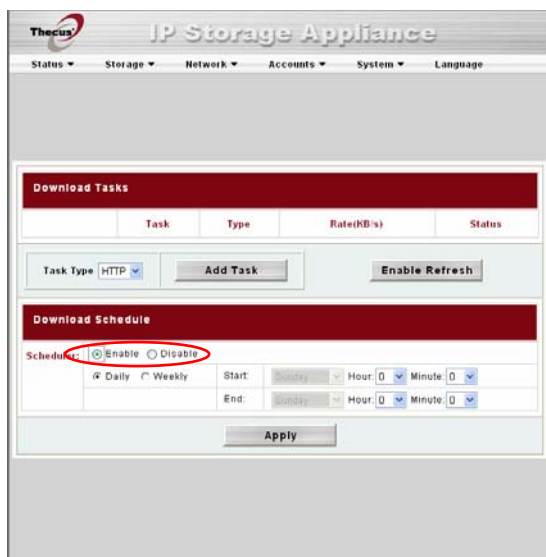
With the Download Manager, you can schedule your downloads to begin at different times of the day. This is useful if you wish to complete your downloads during off-peak hours, reserving your bandwidth for other applications. A table describing the Download Schedule window appears below:

### Download Schedule

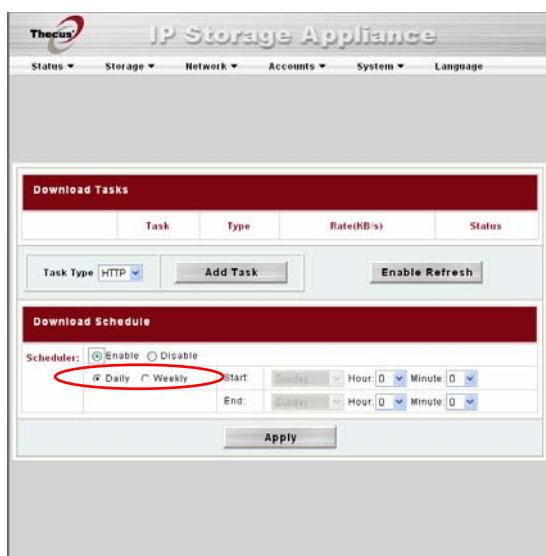
| Item                   | Description  |
|------------------------|--|
| Scheduler              | Enable or disable the Download Scheduler.                                  |
| Daily/Weekly           | Choose to have the Download Scheduler activate on a daily or weekly basis. |
| Start: Day/Hour/Minute | Specify the start day/hour/minute for the download task.                   |
| End: Day/Hour/Minute   | Specify the end day/hour/minute for the download task.                     |

To schedule downloads, follow these steps:

1. Under **Download Schedule**, set **Scheduler** to **Enable**.



2. To schedule a daily download period, select **Daily** and select a start time and end time.  
To schedule a weekly download period, select **Weekly** and select a start day/time and end time/day.



3. Click **Apply** to save your changes.

**NOTE**

If the Download Scheduler is enabled, ALL download tasks will adhere to the designated schedule.

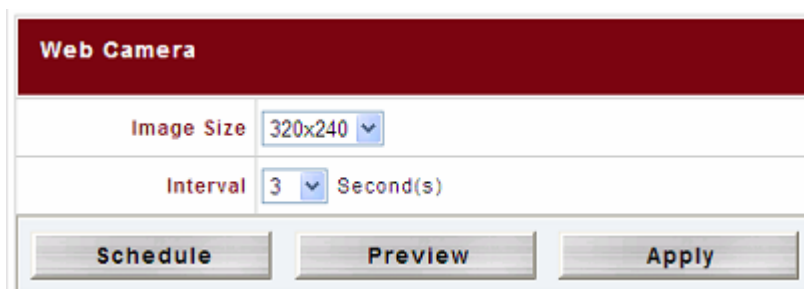
## Web Cam Server

With the Web Cam Server, you can schedule the N3200PRO to capture images with a connected USB webcam. To configure the Web Cam Server, go to **Status**, choose the **Web Camera** option, and the **Web Camera** window appears.

| Web Camera |  |
|------------|--|
| Item       | Description  |
| Image Size | Select an image size for each captured image. Can be 160x120, 320x240, or 640x480. |
| Interval   | Select an interval between each captured image.                                    |
| Schedule   | Click to schedule webcam image capture.  |
| Preview    | Click to preview the image capture.  |
| Apply      | Click to save your changes.  |

## Web Cam Preview

From the **Web Camera** window, you can click the **Preview** button to view the image from the Web Cam before setting up the recording schedule if you wish.





**Note:**

**Picture quality may vary due to the number of different USB Web Cams on market with varying hardware components.**

Once you are happy with the Web Cam preview, you can select the resolution you want. There are 3 different choices:

- 160x120
- 320x240
- 640x480

Use the drop down to select the desired recording interval.

Click **Apply** to save your changes.

The screenshot shows a window titled "Web Camera" with a dark red header. Below the header, there are two rows of settings. The first row has "Image Size" with a dropdown menu set to "320x240". The second row has "Interval" with a dropdown menu set to "3" and the text "Second(s)" to its right. At the bottom of the window, there are three buttons: "Schedule", "Preview", and "Apply".

### Adding a Web Cam Schedule

After finishing with the basic settings, we need to now configure the capture schedule. To do this, begin by activating the schedule function by selecting **Enable** in the **Web Camera Schedule** window.

The screenshot shows a window titled "Web Camera Schedule" with a dark red header. Below the header, there are several sections. The first section has two radio buttons: "Enable" (which is selected) and "Disable". The second section has a checkbox labeled "Always". The third section has seven checkboxes for the days of the week: "Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", and "Saturday". The fourth section has a "Time" label and a "Select All" checkbox. Below this is a 3x12 grid of checkboxes for each hour of the day (0-23). At the bottom of the window, there are two buttons: "Apply" and "Back".

Next, select time slot you want to record through the Web Cam.

If **Always** is selected, it will start to record right away and will not stop until the **Web Camera Schedule** is set to **Disabled**.

### Web Camera Schedule

Enable    Disable

Always

Sunday    Monday    Tuesday    Wednesday    Thursday    Friday    Saturday

Time    Select All

|                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 0                        | 1                        | 2                        | 3                        | 4                        | 5                        | 6                        | 7                        | 8                        | 9                        | 10                       | 11                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12                       | 13                       | 14                       | 15                       | 16                       | 17                       | 18                       | 19                       | 20                       | 21                       | 22                       | 23                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Alternatively, you can schedule the Web Cam to capture daily or hourly. Take a look at the example below. It will record every Monday and Tuesday from 2:00 – 6:00 and from 20:00 – 22:00.

### Web Camera Schedule

Enable    Disable

Always

Sunday    Monday    Tuesday    Wednesday    Thursday    Friday    Saturday

Time    Select All

|                          |                          |                                     |                                     |                                     |                                     |                          |                          |                                     |                                     |                          |                          |
|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| 0                        | 1                        | 2                                   | 3                                   | 4                                   | 5                                   | 6                        | 7                        | 8                                   | 9                                   | 10                       | 11                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> |
| 12                       | 13                       | 14                                  | 15                                  | 16                                  | 17                                  | 18                       | 19                       | 20                                  | 21                                  | 22                       | 23                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

One important point worth mentioning is how captured picture is stored. The folder where captured images are stored is the **Video** system folder, which is associated with the system-created **Web Cam** sub folder. See the figure below for reference:



The Web Cam will capture images according to the designated schedule. The files will be stored using following path:

Video + Webcam + date + hour (path) → filename.jpg

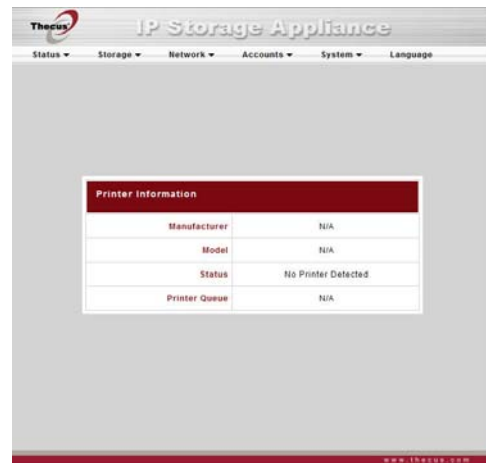
## Printer Server

You can configure the M3800 to act as a printer server. That way, all PCs connected to the network can utilize the same printer.

## Windows XP SP2

To set up the Printer Server in Windows XP SP2, follow the steps below:

1. Connect the USB printer to one of the USB ports (preferably the rear USB ports; front USB ports can be used for external HDD enclosures).
2. Go to **Start > Printers and Faxes**.
3. Click on **File > Add Printer**.
4. The **Add Printer Wizard** appears on your screen. Click **Next**.
5. Select the **"A network printer, or a printer attached to another computer"** option.



6. Select "**Connect to a printer on the Internet or on a home or office network**", and enter "**http://M3800\_IP\_ADDRESS:631/printers/usb-printer**" into the URL field.
7. Your Windows system will ask you to install drivers for your printer. Select correct driver for your printer.
8. Your Windows system will ask you if you want to set this printer as "Default Printer". Select **Yes** and all your print jobs will be submitted to this printer by default. Click **Next**.
9. Click **Finish**.

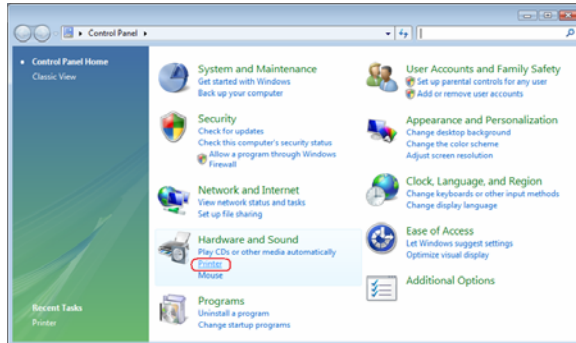
**NOTE**

- Not all USB printers are supported. Please check Thecus website for a list of supported printers.
- Note that if a multi-function (all-in-one) printer is attached to the M3800, usually only the printing and fax functions will work. Other features, such as scanning, probably will not function.

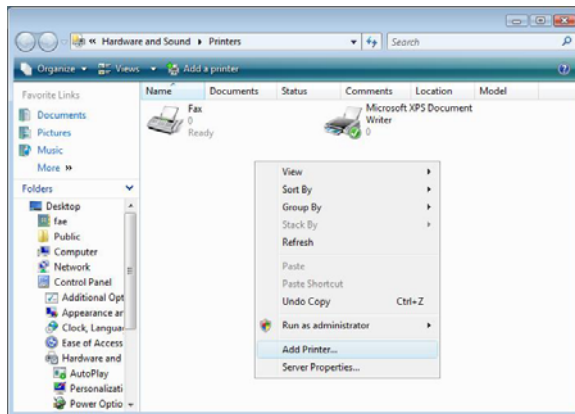
## Windows Vista

To set up the Printer Server in Windows Vista, follow the steps below:

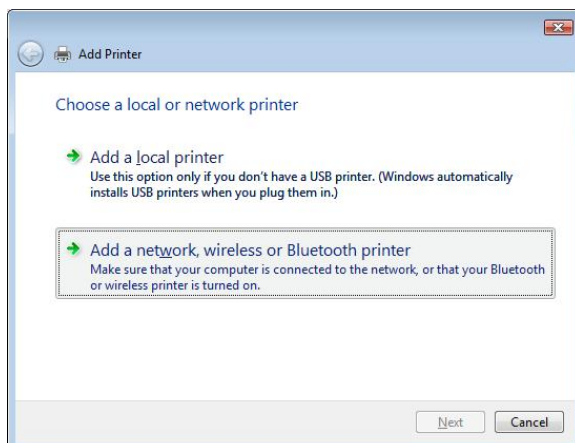
1. Open **Printer Folder** from the **Control Panel**.



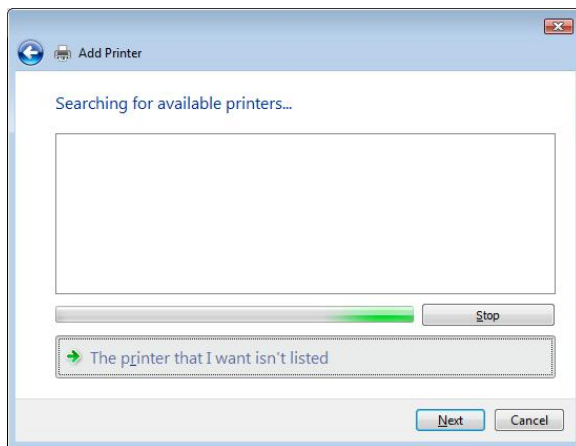
2. Click the right mouse button in anywhere on the **Printers** folder and then select **Add Printer**.



3. Select **Add a network, wireless or Bluetooth printer**.

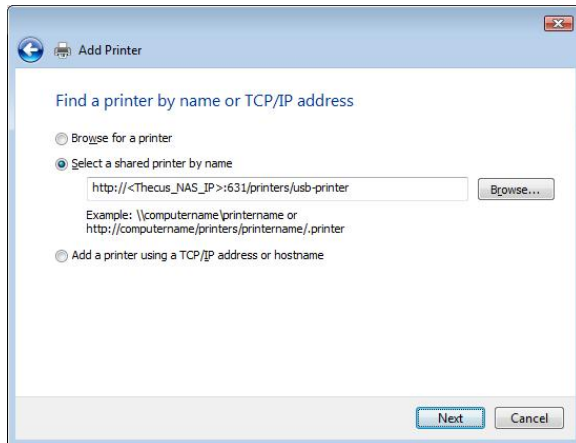


4. Select **The printer that I want isn't listed**.



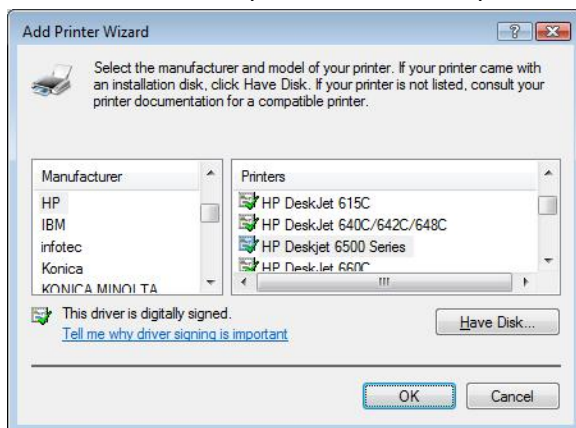
You can press **The printer that I want isn't listed** to go into next page without waiting for **Searching for available printers** to finish.

5. Click **Select a shared printer by name**.



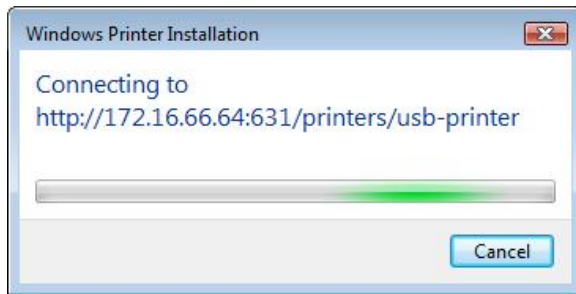
Type `http://<Thecus_NAS_IP>:631/printers/usb-printer` in the box, where `<Thecus_NAS_IP>` is the IP address of the M3800. Click **Next**.

6. Select or install a printer and then press **OK**.

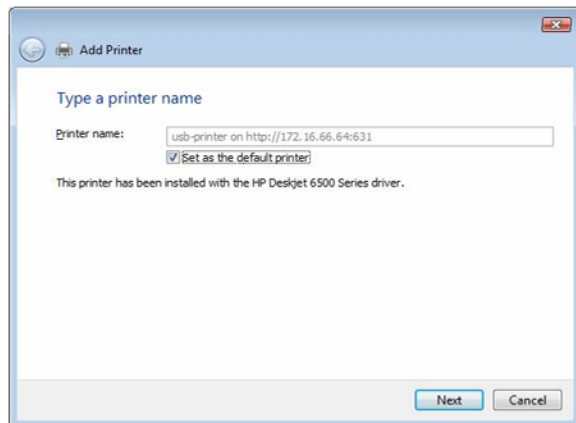


If your printer model is not listed, please contact your printer manufacturer for help.

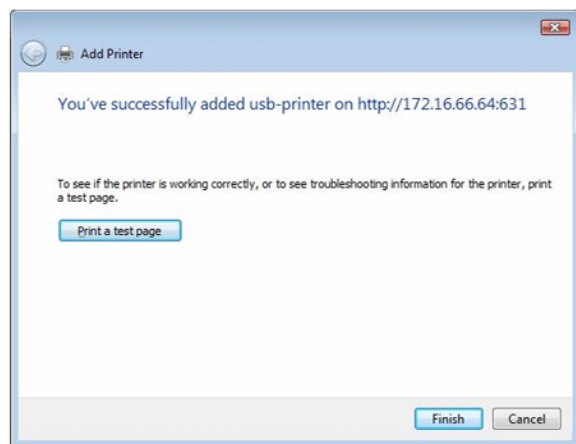
7. Windows will attempt to connect to the printer.



8. You can choose to set this printer as the default printer by checking the **Set as the default printer** box. Click **Next** to continue.



9. Done! Click **Finish**.



## Chapter 6: Using the M3800

### Overview

Once the M3800 is setup and operating, users on the network may manage all varieties of digital music, photos, or files by simply using their web browsers. To manage your personal files or access public files on the M3800, just enter its IP address into your browser (default IP address is `http://192.168.1.100`), and you will be taken to the **M3800 Login** page.

#### NOTE

Before proceeding, make sure that WebDisk Support or Secure WebDisk Support is enabled in the Service Support screen in the system's **Network** menu. See Service Support in Chapter 4: System Management > Network Management > Web Services Configuration.

### Login Page

To login to the system, enter your user name and password, and click **Login** to log into the system. You will be taken to the **Web User Interface**.









### Web User Interface

The Web User Interface is where users interact with the M3800, and manage all sorts of digital media. The simple layout makes it easy for anyone to enjoy the many features of the M3800.

On the left of the interface is the **Main Menu**, where you can easily access the **WebDisk**, **Music**, and **Gallery** functions of the M3800. Along the top of the interface, you can choose to browse all storage devices connected to the M3800, including SATA and eSATA hard disks, USB disks, and contents stored from the USB One-Button Copy function.

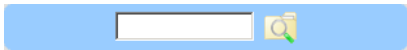



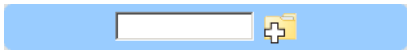
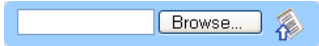




| Web User Interface  |  |
|---|--|
| Item  | Description                                    |
| WebDisk          | Click to use the <b>WebDisk</b> function.      |
| Music            | Click to use the <b>Music</b> function.        |
| Photos           | Click to use the <b>Photo Gallery</b> function |
| Login            | Click to login to the M3800.                   |
| Logout           | Click to return to the M3800 Login page.       |
| Change Password  | Click to change your login password.           |

## Using WebDisk

1. When any user clicks on the **WebDisk** icon, they will see all available public folders.
2. When they click on the name of a public folder, they will see the files within that folder.
3. When user clicks on a file name, the file will be downloaded.

| WebDisk   |                   |   |
|---|-------------------|---|
| Icon  | Function          | Description   |
|  | File Search       | Search for specific files or folders.   |
|  | Sort              | Arrange all files and folders by type, name, size, or last modified date.                               |
|  | Delete            | Delete the selected files or folders.   |
|  | Page Number       | Use this to navigate when multiple pages are required to list the contents of the selected directories. |
|  | Create New Folder | Enter a new folder name and press the <b>Create</b> button.   |
|  | Upload Files      | Browse to the desired file location and press the Upload button.  |

### NOTE





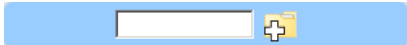
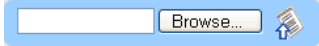
The Delete, Create New Folder, and Upload Files options are only visible if the user has write access to the specific folder.

For more information on how to setup user rights to the folders, please check **Chapter 3: System Management > Storage Management > Folder Management > Folder Access Control List (ACL)**

To access folders with access control, you must first login with a local user account. To log in, please click on the **Login** icon on the lower left hand corner.

## Using Music Server

To manage your digital music and share it with iTunes clients on the network, click on the **Music** icon from the left panel.

| Music   |                    |   |
|---|--------------------|---|
| Icon  | Function           | Description   |
|  | File Search        | Search for specific files or folders.   |
|  | Sort               | Arrange all files and folders by type, name, size, or last modified date.                               |
|  | Delete*            | Delete the selected files or folders.   |
|  | Page Number        | Use this to navigate when multiple pages are required to list the contents of the selected directories. |
|  | Create New Folder* | Enter a new folder name and press the <b>Create</b> button.   |
|  | Upload Files*      | Browse to the desired file location and press the Upload button.  |

### NOTE

The Delete, Create New Folder, and Upload Files options are only visible if the user has write access to the specific folder.

## Adding Music Files

You could add music files into iTunes Server through Web User Interface; however, if you have lots of folders and files to upload, there is a simpler way.

1. Open a Windows Explorer and type the M3800 IP address in the address bar (i.e. \\192.168.1.100).
2. Double click the **Music** folder to enter it. Then drag and drop music folders and files here.
3. The M3800 iTunes server will take some time to cache the ID3 tag of every file. Once the process is done, you will see all the music files from iTunes clients.

## Playing Music Files

Once your music files are added to the M3800, playing them on any iTunes-equipped computer connected to the network is easy:

1. Open iTunes.
2. You should see **Thecus\_M3800** under the **SHARED** heading in the left hand menu.
3. Click **Thecus\_M3800** and all shared music will be displayed, ready to be enjoyed right from iTunes.
- 4.

## Using Photo Gallery






Using the Photo Gallery, users can view and share photos, and even create their own albums right on the M3800. To manage your photo gallery or see other photo albums, click on the **Photos** icon from the left panel.

You will see your own Photo Gallery and all public Photo Albums on the network.



To manage any picture files, you must first select the item by clicking its check box.

## Managing Albums and Photos

| Photo   |            |  |
|---|------------|--|
| Icon  | Function   | Description  |
|    | Make Cover | Make selected photo your cover picture.  |
|   | Back       | Return to the previous screen.   |
|  | Add        | Add a new album or photos.   |
|  | Modify     | Edit the name and description of the selected album or photo. Each name is limited to 20 characters and each description is limited to 255 characters. |
|  | Delete     | Delete the selected albums or photos.  |

### NOTE

- Only logged in users will see these icons.
- To prevent system errors, the M3800 sets the following limitations on photo files:
  - Each file upload is limited to a size of 4MB. Files exceeding 4MB will NOT be uploaded and no error message will appear.
  - Only these photo file types will be uploaded: \*.jpg, \*.gif, \*.bmp, \*.png, \*.pcx, \*.psd, \*.bmp.
  - If duplicate file names exist during upload process, system will add a number in front of the original file name (abc → 1abc).

## Creating Albums

To create a photo album, follow the steps below:

1. Click the **Add** button to create a new album.
2. Enter a name for the album, and enter a description if you wish. Then, click on the **Create Album** button.

## Password Protecting Albums

If you would like to put a password on a particular album, follow these steps:

1. Select the album to be protected, click on the **Edit** button, and the **Album Edit** screen will appear.

2. The owner of the album can enter an album password to protect the album, so that only people with the correct password can view the album.

## Uploading Pictures to Albums

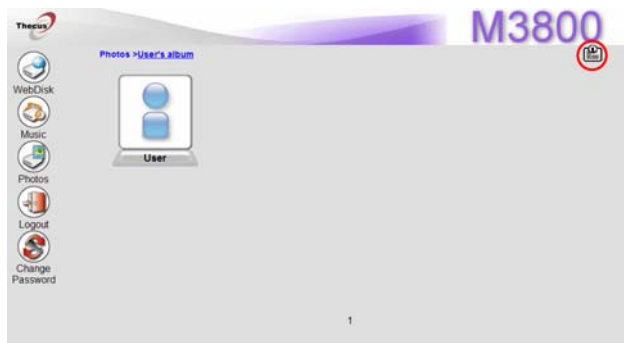
Uploading pictures to albums using the Web User Interface is easy:

1. When the album is created, click the album icon to enter the album. Initially the album is empty.
2. Click the **Add** button to upload pictures into the album. The **Upload Photos** screen will appear. Users can select and upload up to 8 pictures at a time.
3. Once the picture is uploaded, you can view it in the album.
4. The owner of the album can delete or modify the pictures with the **Delete** or **Modify** buttons on the top right hand corner.

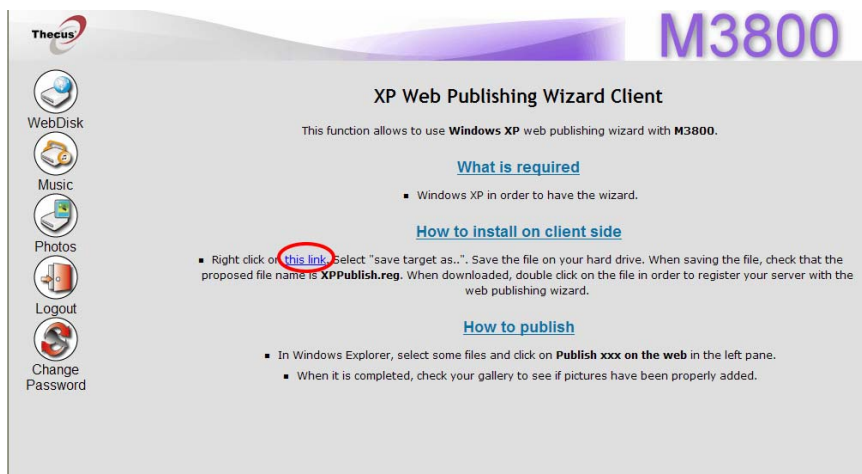
## Windows XP Publishing Wizard

There are many ways for a local user to upload pictures into their photo album. Users of Windows XP can upload their pictures using the Windows XP Publishing Wizard.

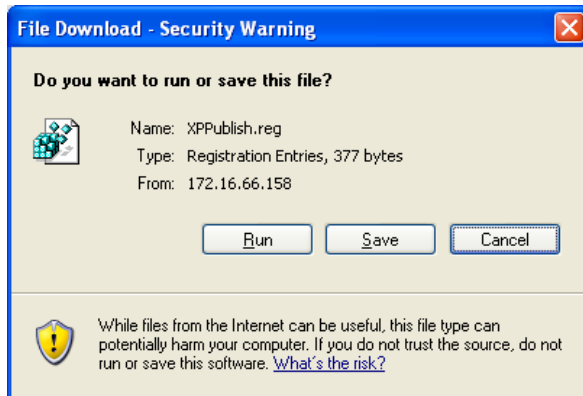
1. Click on the **XP Publishing Wizard** icon.



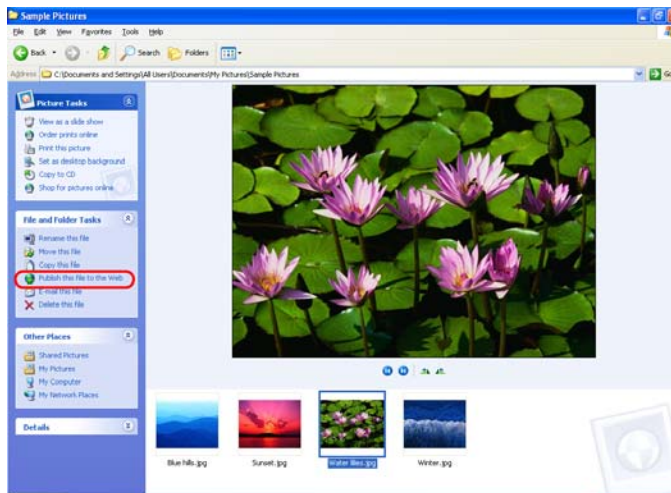
2. The **XP Web Publishing Wizard Client** screen appears. Click on the link to install the Publishing Wizard.



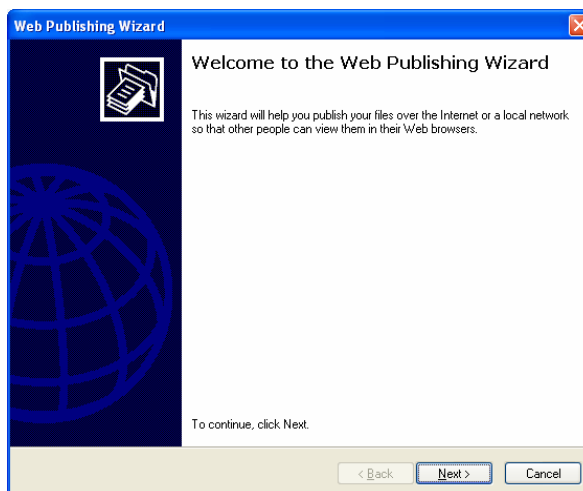
3. Windows XP will ask whether you want to run or save this file. Click **Run**.



4. Once the Wizard is installed, use the Windows file manager to browse the folder that contains the picture you want to publish. On the left pane, there will be an icon labeled "**Publish this folder to the Web**".



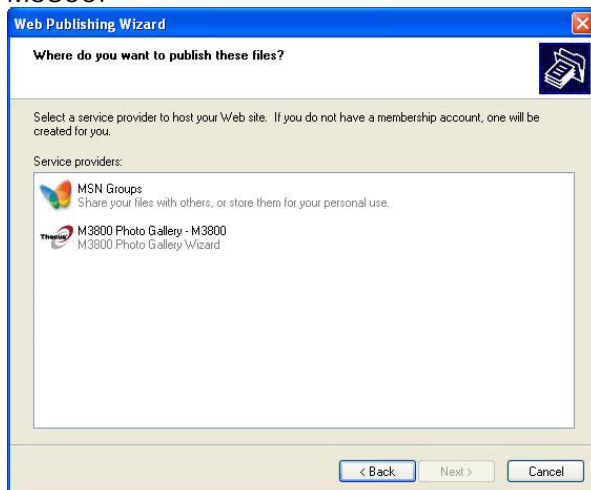
5. Click on this icon and **Web Publishing Wizard** will start.



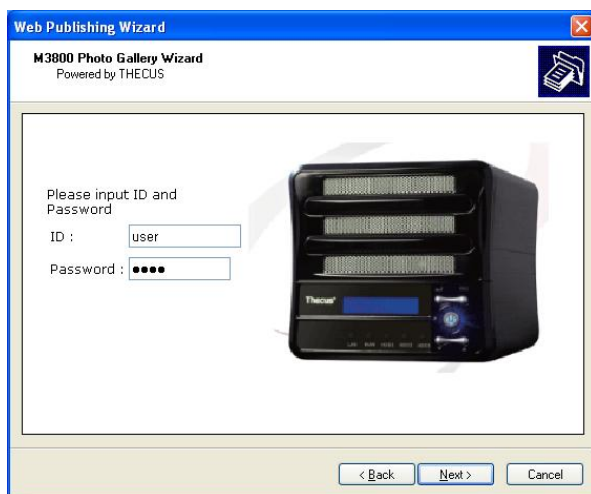
6. Select the pictures you want to publish to the Photo Web Server by placing a check mark on the top left hand corner of the picture. Click **Next**.



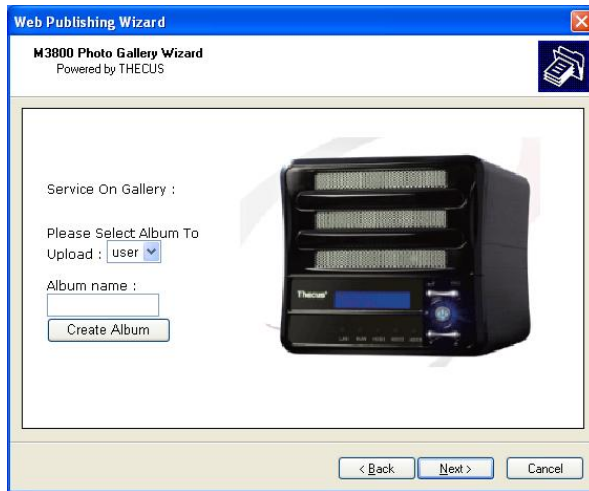
7. Your PC will start to connect to the Photo Web Server.
8. Select **M3800 Photo Gallery Wizard** to publish your pictures to the M3800.



9. Login into the M3800 with your local user name and password.

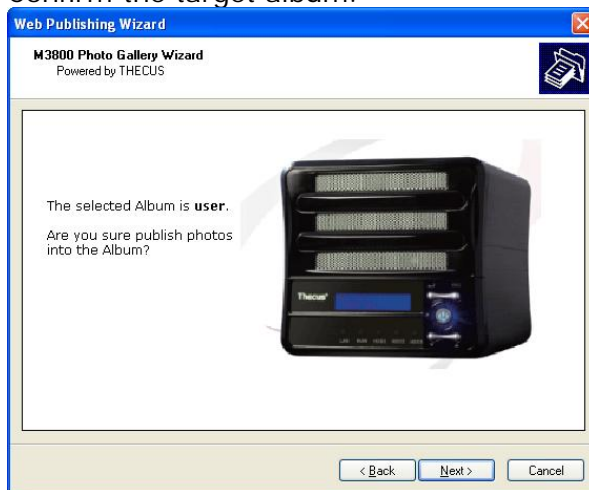


10. Create your album by entering an album name and clicking on the **Create Album** button.

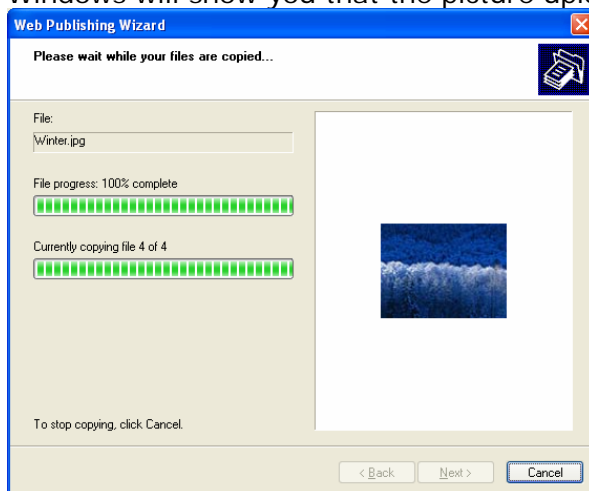


11. Select the album you want to upload your pictures to.

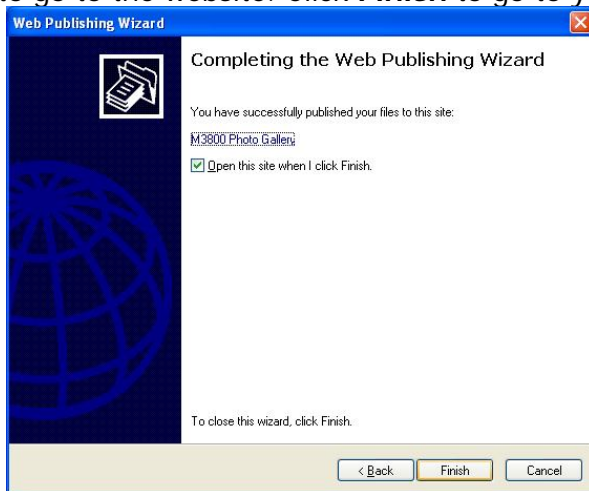
12. Confirm the target album.



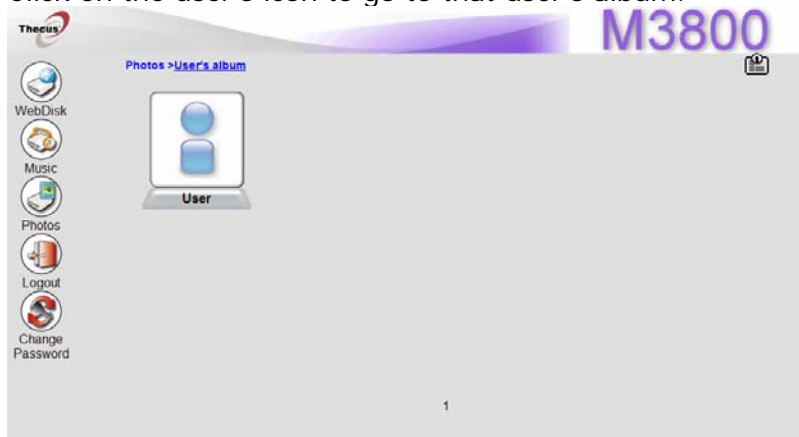
13. Windows will show you that the picture upload is in progress.



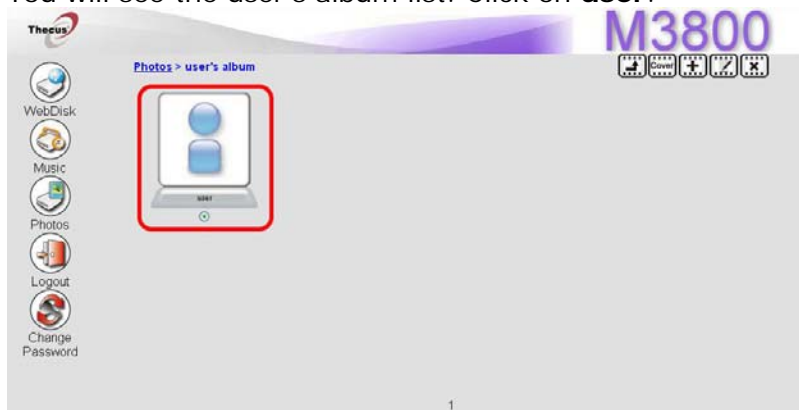
14. When the upload is finished, the Wizard will ask you whether if you want to go to the website. Click **Finish** to go to your Photo Web Server.



15. Click on the user's icon to go to that user's album.

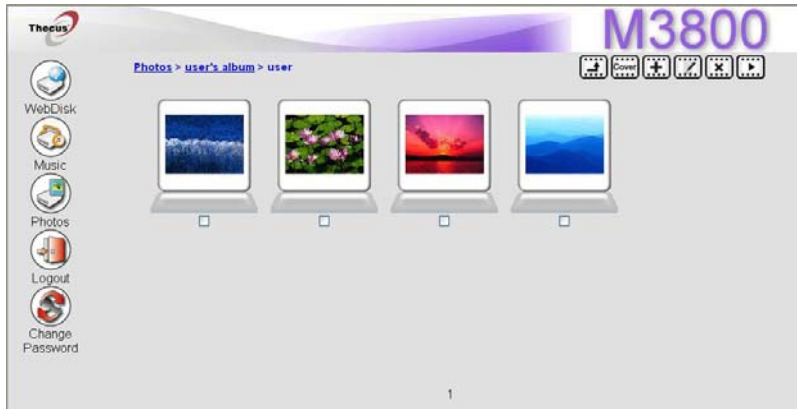


16. You will see the user's album list. Click on **user**.



17. Finished! You will see the pictures just selected in the album.





## EXIF Information

While viewing pictures, you can also have the M3800 display the EXIF information for each photo.



Simply click the **EXIF** button to display EXIF information. To hide this information, click the **EXIF** button again.

## Slide Shows

Slide shows are a great way to enjoy pictures stored on your M3800.

You can click on the **Start Slide Show** icon on the top right hand corner to start the slide show.



To stop the slide show, click on the **Stop Slide Show** icon on the top right hand corner.



## **Mapping a Client PC to the M3800**

You can map share folders on the M3800 so that you can access them as if they were drives on your computer. You can connect to the shared network folders on the M3800 as follows:

### **Windows**

1. Go to the **My Computer** folder in Windows.
2. In the menu bar, select **Tools** and then **Map Network Drive...**
3. The **Map Network Drive** window appears.
4. Assign a drive letter for the share folder.
5. Click the **Browse** button to find the folder over your network. Alternatively, you may enter the folder name you wish to connect to or enter its IP address. (i.e. \\192.168.1.100\share)
6. Click **Finish**. When the **Connect As...** window appears, enter your user name and password.
7. Click **OK**. The share folder appears as the drive you assigned. You can now access this folder as though it were a drive on your computer.

### **Apple OS X**

On an Apple computer, you can connect to shared computers and servers using a network address.

1. Choose **Go > Connect to Server...**
2. Enter the network address for the server in the Server Address text box.

When connecting using SMB/CIFS protocol, type:  
smb://192.168.1.100/Folder1

When connecting using AFP protocol, type:  
afp://192.168.1.100/Folder1

Click **Connect**.

3. When MAC OS X is trying to connect M3800, it will ask for a User Name and Password which has access to the folder.
4. When MAC OS X has connected to the M3800 successfully, an icon representing the folder will appear on the MAC OS X desktop. You can access the folder by double clicking on the icon.

## File Backup

There are a number of ways to back up data with the M3800.

### Thecus Backup Utility

The Thecus Backup Utility is on your Installation CD. When you click on the CD, the Backup Utility will be installed under **Program Groups > Thecus > Thecus Backup Utility**. If it is not installed, you can copy the file (**Thecus Backup Utility.exe**) to a convenient location on your hard disk and double click to execute it.



#### NOTE

If you can not find Thecus Backup Utility on your CD, please download it from the Thecus website (<http://www.thecus.com>).

When you execute this utility for the first time, it will ask you whether to create a DB file. Click **Yes**.

1. Click **Add** to create a Backup task. The **Add New Task** dialog box appears.

| Add New Task        |  |
|---------------------|--|
| Item                | Description  |
| Task                | Specifies a name for the current task.   |
| Source              | Click to specify the source folder/file location.  |
| Incremental         | Click to specify whether the backup will be incremental. If unchecked, the backup will be a full backup. |
| Destination         | Click to specify the destination folder/file location.   |
| Excluded extensions | Files with these file name extensions will be skipped and not back up to the destination.                |
| Comments            | If you wish, enter comments here for your records.   |

2. To schedule the task to run at regular intervals, click on the **Schedule** icon for that task. You can schedule the task to run **Monthly** or **Weekly**.
3. To check the log for that task, click on the **Log** icon for that task.

#### NOTE

Thecus Backup Utility also supports MAC OS X. Just copy the Thecus Backup Utility.dmg to your MAC OS X machine and double click to execute it.

## Windows XP Data Backup

If you use Windows XP Professional, you can also use the Windows Backup Utility (Ntbackup.exe) to backup your files.

If you use Windows XP Home Edition, follow these steps to install the utility:

1. Insert the Windows XP CD into a drive and double-click the **CD** icon in **My Computer**.
2. When the Welcome to Microsoft Windows XP screen appears, click **Perform Additional Tasks**.
3. Click **Browse this CD**.
4. In Windows Explorer, navigate to **ValueAdd > Msft > Ntbackup**.
5. Double-click **Ntbackup.msi** to install the backup utility.

Once installed, you can use the Windows Backup Utility by following the steps below:

1. Click **Start**, and point to **All Programs > Accessories > System Tools > Backup** to start the wizard.
2. Click **Next** to skip past the opening page. Choose **Backup files and settings** from the second page, and then click **Next**.
3. Select which option you want to back up.
4. Click **Next** and in the Backup Type, Destination, and Name page, specify a back up location using the **Browse** button.
5. Find and select the drive that specifies your M3800 as your backup destination and click **Next**.
6. Click **Next** to display the wizard's final page and click **Finish** to start backing up.

## Apple OS X Backup Utilities

Mac OS X does not include any backup software. However, there are a number of backup solutions available for the Mac OS X, including: [iBackup](#), [Psyncx](#), [iMSafe](#), [Rsyncx](#), [Folder Synchronizer X](#), [Tri-BACKUP](#), [Impression](#), [Intego Personal Backup](#), [SilverKeeper](#), and Apple's dotMac Backup utility to name just a few. To find even more freeware and shareware backup utilities to choose from, go to [VersionTracker](#) or [MacUpdate](#) and search on "backup".

## Chapter 7: Tips and Tricks

### **USB and eSATA Storage Expansion**

The M3800 supports external USB hard disks through its three USB ports. Once a USB hard disk has successfully mounted, the entire volume will be copied automatically to the default USB HDD folder. The M3800 supports up to 6 USB external storage devices. All file names on the USB disk volume are case sensitive.

The M3800 also supports eSATA hard disks with its eSATA port.

Before attaching an eSATA or USB disk drive to M3800, you have to partition and format it on a desktop computer or a notebook first. The attached device will be located at `\\192.168.1.100\usbhdd\sdf1` where `192.168.1.100` means the IP address of M3800 and `sdf1` stands for the first partition on disk #6, the eSATA or USB disk drive. If it is an NTFS partition, NAS users can open or copy files from `\\192.168.1.100\usbhdd\sdf1` but cannot add new files or modify existing files.

#### **NOTE**

If you want to write to an USB storage device, the file system must be FAT32.

| USB Storage | FAT32 Partition | NTFS Partition |
|-------------|-----------------|----------------|
| Read        | OK              | OK             |
| Write       | OK              | -              |

### **Adding a Spare Disk**

With a RAID 1 array, you can add a spare disk after the initial RAID is setup. To add a spare disk, follow the steps below:

1. On the **RAID Configuration Screen**, tick the checkbox of the hard disk you wish to designate as a spare disk.
2. Click **Add Spare**.

Once the disk is set as a spare disk, it will automatically rebuild the previous RAID set when one of the disks becomes degraded.

### **Remote Administration**

You can set up your M3800 for remote administration. With remote administration, you can access your M3800 over the Internet, even if your M3800 is behind a router. This is especially useful if you are traveling and suddenly need a file from your M3800.

Setting up remote administration is a three-part process, and will require the following equipment:

- Thecus M3800 NAS device
- Cable/DSL Router with Dynamic DNS support
- Home PC
- Internet Connection

#### **NOTE**

Router setup will differ slightly depending on router used. For this example, we will use the Asus WL500g because it has support for Dynamic DNS. Contact your router hardware vendor for setup help.

## Part I - Setup a DynDNS Account

1. Go to <http://www.dyndns.org> from your home PC.
2. Click on the **Sign Up Now** link.
3. Check the Check boxes, select a user name (i.e.: M3800), enter your email address (i.e.: xxx@example.com), check **Enable Wildcard**, and create a password (i.e.: xxxx).
4. Wait for an email from www.dyndns.org.
5. Open the email and click on the link to activate your account

## Part II - Enable DDNS on the Router

1. Go to the router setup screen and select **IP Config > Miscellaneous DDNS Setting** from your Home PC.
2. Click on **Yes** for **Enable the DDNS Client?**
3. Select **www.dyndns.org**.
4. Go to router setup screen, and enter the following information:
  - a. User Name or E-mail Address: **xxx@example.com**
  - b. Password or DDNS Key: **xxxx**
  - c. Host Name: **www.M3800.dyndns.org**
  - d. Enable wildcard? Select **Yes**
  - e. Update Manually: Click **Update**

## Part III - Setting up Virtual Servers (HTTPS)

1. Navigate to **NAT Setting > Virtual Server**.
2. For **Enable Virtual Server?**, select **Yes**
3. Setup the HTTPS Server
  - a. **Well-Known Applications**: Select **User Defined**
  - b. **Local IP**: Enter **192.168.1.100**
  - c. **Port Range**: **443** (the default HTTPS port setting on the M3800)
  - d. **Protocol**: select **TCP**
  - e. Click **Add**.
  - f. Click **Apply**.
4. Test the HTTPS connection from another computer on the Internet
  - a. From a remote computer, open your browser and enter **https://www.M3800.dyndns.org**
  - b. You should see the login page of M3800.

## Firewall Software Configuration

If you are using a software firewall (i.e. Norton Internet Security) and are having trouble connecting to the M3800, you can try the following steps:

1. Double click the **NIS** icon on system tray, and then configure the **Personal Firewall**.
2. On the **Programs** page, find the **SetupWizard.exe** and change its permission to "Permit All". If it's not in the program list, use the **Add** or **Program Scan** buttons to find it.
3. On the **Networking** page, manually add M3800 IP address (i.e. 192.168.1.100) to the **Trusted** list.

## ***Replacing Damaged Hard Drives***

If you are using RAID 1 or RAID 5, you can easily replace a damaged hard drive in the Thecus M3800 while keeping your data secure with the system's automatic data recovery.

### **Hard Drive Damage**

When a hard drive is damaged, LCM will display 「RAID Damage」 and system beeps.

### **Replacing a Hard Drive**

To replace a hard disk drive in the M3800:

1. Remove the tray with the damaged hard disk.
2. Insert the hard disk tray then slide into the M3800 until it snaps into place.
3. The LED solid green when the HDD is accessed.

### **RAID Auto-Rebuild**

When using RAID 1 or RAID 5 on the M3800, you can use the auto-rebuild function when an error is detected.

1. When a hard disk fails the system beeps and/or an email notification is sent to specified receivers.
2. Check the log message to see which disk has failed.
3. Follow the steps mentioned above to replace the failed hard disk.
4. The system automatically recognizes the new hard disk and starts the auto-rebuild sequence to resume its status before the hard disk crash.

## ***File System Check***

The M3800 has a built-in utility that allows you to check the M3800's file system for errors. To use the File System Check utility, follow the steps below:

### **WARNING**

The File System Check utility works only with WAN and not LAN.

1. Power off the M3800.
2. With the unit powered off, press and hold the reset button.
3. With the reset button held down, power on the system by pressing the power button. You can release the reset button after 3 seconds along with 2 beeps. After that, the M3800's WAN IP address will be reset to 192.168.1.100 temporarily. Please note that all file services at this time will be stopped.
4. When you point your browser to 192.168.1.100, you will see the following screen.

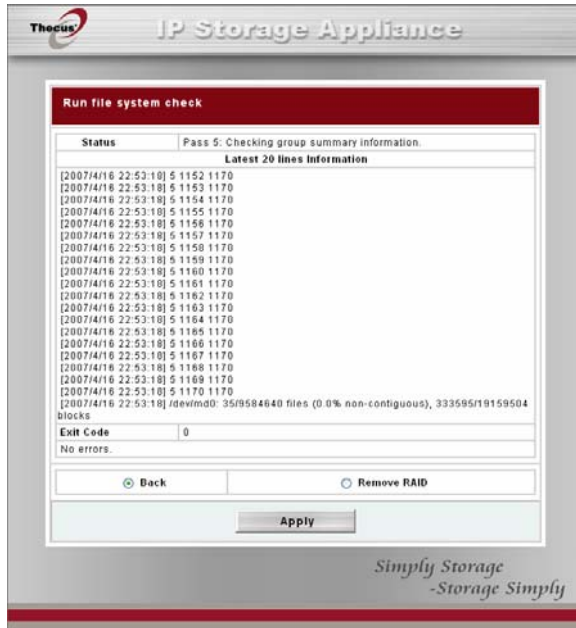




5. If you select "Run file system check" option, the file system check utility will be started, and last 20 lines of the result will be displayed in your browser.



6. When the file system check is finished, the result will be displayed in your browser.



## NOTE

If the file system is corrupted beyond repair, you may have to remove RAID and recreate the file system.

## Chapter 8: Troubleshooting

### ***Forgot My Network IP Address***

If you forget your network IP address and have no physical access to the system, you can find out the IP address by either looking directly onto the M3800's LCD panel, or by using the setup wizard to retrieve the IP of your M3800.

1. Start the Setup Wizard, and it will automatically detect all Thecus IP storage products on your network.
2. You should be able to find the IP address of the M3800 which you have forgotten in the **Device Discovery** screen.

### ***Resetting NAS IP Address and Admin Password***

In case you changed the M3800 IP address and then forgot it, or forgot the administration password, follow the steps below to reset to default settings:

1. Power on the M3800 and immediately press the **Reset** button for 5 seconds. (The reset button is near the LAN connector)
2. This resets the M3800 to its default IP address and password settings.

Default IP: 192.168.1.100 for WAN and 192.168.2.254 for LAN

Default admin password: admin

Jumbo Frame support: disabled

### ***Can't Map a Network Drive in Windows XP***

You may have problems mapping a network drive under the following conditions:

1. The network folder is currently mapped using a different user name and password. To connect using a different user name and password, first disconnect any existing mappings to this network share.
2. The mapped network drive could not be created because the following error has occurred: **Multiple connections to a server or shared resource by the same user, using more than one user name, are not allowed.** Disconnect all previous connections to the server or shared resource and try again.

To check out existing network connections, type `net use` under the DOS prompt.

### ***Restoring Factory Defaults***

From the **System** menu, choose the **Factory Default** item and the **Reset to Factory Default** screen appears. Press **Apply** to reset the M3800 to factory default settings.

#### **WARNING**

Resetting to factory defaults will not erase the data stored in the hard disks, but WILL revert all the settings to the factory default values.

### ***Problems with Time and Date Settings***

The administrator is able to select an NTP Server to keep the M3800's time synchronized. However, if the M3800 can not access the Internet, you may encounter a problem when setting the Time and Time Zone. If this happens:

1. Login to the Web Administration Interface.

2. Navigate to **System > Time**.
3. Under **NTP Server**, select **No**.
4. Set the **Date**, **Time**, and **Time Zone**.
5. Click **Apply**.

In addition, if the M3800 is able to access the Internet and you want to keep the NTP Server clock.isc.org by default, please make sure the DNS Server is correctly entered, thereby allowing the NTP Server name to correctly resolve. (See **Network > WAN > DNS Server**)

# Appendix A: Product Specifications

## Hardware Specifications

|                    |   |
|--------------------|---|
| Network Interfaces |   |
| WAN                | Gigabit RJ-45 connector   |
| LAN                | Gigabit RJ-45 connector   |
| WLAN               | IEEE 802.11b/g (using approved USB Dongles)**                                       |
| Storage            |   |
| HDD Bays           | 3 x 3.5" SATA HDD, hot-swappable  |
| HDD Support        | SATA II HDDs up to 1000GB   |
| I/O Interfaces     |   |
| USB Ports          | 2 x USB 2.0 ports   |
| eSATA              | 1 x eSATA connector for capacity expansion  |
| PCI Interface      | For proprietary Thecus applications   |
| IR Receiver        | For future options  |
| System Information |   |
| LCD Module         | For basic configurations and status display   |
| System LED Display | 1 x Power LED<br>2 x Network Link/Activity LED<br>3 x Hard Drive Power/Activity LED |
| Physical           |   |
| Power Supply       | AC 100 ~ 240V, 50/60Hz, Auto-detection  |
| Environment        |   |
| Temperature        | 5 ~ 40°C  |
| Humidity           | 0 ~ 80% relative humidity (non-condensing)  |
| Certifications     | CE, FCC, BSMI, C-Tick, RoHS Compliant   |

## Software Specifications

|                        |  |
|------------------------|--|
| Network                |  |
| Network Configuration  | Fixed IP address<br>Dynamic IP address<br>PPPoE<br>DDNS  |
| Network File Protocols | Microsoft Networks (CIFS/SMB)<br>Apple Filing Protocol (AFP 3)<br>Network File System (NFS v3)<br>File Transfer Protocol (FTP)<br>Hyper Text Transfer Protocol (HTTP)<br>Secure Hyper Text Transfer Protocol (HTTPS) |
| Network Client Type    | Microsoft Windows NT/2000/XP/2003/Vista<br>Unix/Linux/BSD<br>MAC OS X/9/8.6  |
| DHCP Server            | Assigns IP addresses on LAN/WLAN ports   |
| Disk Management        |  |
| RAID                   | RAID 0, 1, 5, and JBOD<br>Auto rebuild<br>Hot swappable  |
| Power Management       | Disk idle spin-down  |
| Disk Status Monitoring | Disk status monitoring (S.M.A.R.T.)  |

| Multimedia Support    |  |
|-----------------------|--|
| Media Server          | Works with DLNA-certifies players<br>Supported file types: RMP, WPL, PLS, M3U, ASX, WAV, PNG, BMP, AVI, WMV, WMA, LPCM, JPEG                                       |
| iTunes® Server        | Supported File Types: WAV  |
| Photo Web Server      | Supported File Types: GIF, JPG (JPEG), BMP, PNG<br>Supports EXIF display<br>Supports slide show  |
| Web Cam Server        | Supports image capture, preview, schedule<br>Supported image sizes: 160x120, 320x240, 640x480  |
| Share Management      |  |
| Authentication        | Local User Account<br>Microsoft NT Domain Controller (PDC)*<br>Microsoft Active Directory Authentication (AD)*   |
| Folder Management     | Share folder level permission<br>File level permission<br>Public folder  |
| File System           |  |
| File System Type      | Journaling File System   |
| Language Support      | Unicode Support  |
| File Size Supported   | Supports files up to 2TB max.  |
| Authorization         | Read, Write or Deny options on individual users or groups  |
| Administration        |  |
| Interface             | Web-based server management GUI<br>Multilingual support (English, French, German, Italian, Traditional Chinese, Simplified Chinese, Japanese, Korean, and Spanish) |
| Setup Wizard          | Device discovery and setup utility program<br>Windows 2000/XP/2003<br>MAC OS X   |
| Notification          | Sends system messages via e-mail to specified email accounts   |
| Backup                |  |
| Thecus Backup Utility | Client backup utility<br>Windows XP/2000<br>MAC OS X   |
| One-Button Copy       | Copy USB mass storage device contents to NAS   |
| Miscellaneous         |  |
| Print Server          | Network printing through IPP using USB printer   |
| Download Manager      | Supports BT, FTP, HTTP scheduled downloads   |
| Scheduled On/Off      | Scheduled on/off for power saving  |

\*PDC/AD support: Works as a client member in a Microsoft NT 4.0 domain/Active Directory domain, allowing the M3800 to utilize the domain users and groups setting for authentication to the system and authorization to the share folders.

\*\*For supported USB dongles, please contact [sales@thecus.com](mailto:sales@thecus.com)

## Appendix B: Customer Support

If your M3800 is not working properly, we encourage you to check out **Chapter 8: Troubleshooting**, located in this manual. You can also try to ensure that you are using the latest firmware version for your M3800. Thecus is committed to providing free firmware upgrades to our customers. Our newest firmware is available on our Download Center:

<http://www.thecus.com/download.php>

If you are still experiencing problems with your M3800, or require a Return Merchandise Authorization (RMA), feel free to contact technical support via our Technical Support Website:

[http://www.thecus.com/support\\_tech.php](http://www.thecus.com/support_tech.php)

Customers in the US should send all technical support enquiries to this email address:

[support-us@thecus.com](mailto:support-us@thecus.com)

For Sales Information you can e-mail us at:

[sales@thecus.com](mailto:sales@thecus.com)

# Thank you for choosing Thecus!



## Appendix C: RAID Basics

### **Overview**

A Redundant Array of Independent Disks (RAID) is an array of several hard disks that provide data security and high performance. A RAID system accesses several hard disks simultaneously, which improves I/O performance over a single hard disk. Data security is enhanced by a RAID, since data loss due to a hard disk failure is minimized by regenerating redundant data from the other RAID hard disks.

### **Benefits**

RAID improves I/O performance, and increases data security through fault tolerance and redundant data storage.

### **Improved Performance**

RAID provides access to several hard disk drives simultaneously, which greatly increases I/O performance.

### **Data Security**

Hard disk drive failure unfortunately is a common occurrence. A RAID helps prevent against the loss of data due to hard disk failure. A RAID offers additional hard disk drives that can avert data loss from a hard disk drive failure. If a hard drive fails, the RAID volume can regenerate data from the data and parity stored on its other hard disk drives.

### **RAID Levels**

The Thecus M3800 supports standard RAID levels 0, 1, 5, and JBOD. You choose a RAID level when you create a system volume. The factors for selecting a RAID level are:

- Your requirements for performance
- Your need for data security
- Number of hard disk drives in the system, capacity of hard disk drives in the system

The following is a description of each RAID level:

#### **RAID 0**

RAID 0 is best suited for applications that need high bandwidth but do not require a high level of data security. The RAID 0 level provides the best performance of all the RAID levels, but it does not provide data redundancy.

RAID 0 uses disk striping and breaking up data into blocks to write across all hard drives in the volume. The system can then use multiple hard drives for faster read and write. The stripe size parameter that was set when the RAID was created determines the size of each block. No parity calculations complicate the write operation.



## **RAID 1**

RAID 1 mirrors all data from one hard disk drive to a second one hard disk drive, thus providing complete data redundancy. However, the cost of data storage capacity is doubled.

This is excellent for complete data security.

## **RAID 5**

RAID 5 offers data security and good performance. It is best suited for networks that perform many small I/O transactions at the same time, as well as applications that require data security such as office automation and online customer service. Use it also for applications with high read requests but low write requests.

RAID 5 includes disk striping at the byte level and parity information is written to several hard disk drives. If a hard disk fails the system uses parity stored on each of the other hard disks to recreate all missing information.

## **JBOD**

Although a concatenation of disks (also called JBOD, or "Just a Bunch of Disks") is not one of the numbered RAID levels, it is a popular method for combining multiple physical disk drives into a single virtual one. As the name implies, disks are merely concatenated together, end to beginning, so they appear to be a single large disk.

As the data on JBOD is not protected, one drive failure could result total data loss.

## ***Stripe Size***

The length of the data segments being written across multiple hard disks. Data is written in stripes across the multiple hard disks of a RAID. Since multiple disks are accessed at the same time, disk striping enhances performance. The stripes can vary in size.

## ***Disk Usage***

When all 3 disks are of the same size, and used in RAID, M3800 disk usage percentage is listed below:

| <b>RAID Level</b> | <b>Percentage Used</b> |
|-------------------|------------------------|
| RAID 0            | 100%                   |
| RAID 1            | 50%                    |
| RAID 5            | 66%                    |
| JBOD              | 100%                   |

## **Appendix D: Active Directory Basics**

### ***Overview***

With Windows 2000, Microsoft introduced Active Directory (ADS), which is a large database/information store. Prior to Active Directory the Windows OS could not store additional information in its domain database. Active Directory also solved the problem of locating resources; which previously relied on Network Neighborhood, and was slow. Managing users and groups were among other issues Active Directory solved.

### ***What is Active Directory?***

Active Directory was built as a scalable, extensible directory service that was designed to meet corporate needs. A repository for storing user information, accounts, passwords, printers, computers, network information and other data, Microsoft calls Active Directory a "namespace" where names can be resolved.

### ***ADS Benefits***

ADS lets the M3800 integrate itself with the existing ADS in an office environment. This means the M3800 is able to recognize your office users and passwords on the ADS server. Other major benefits ADS support provides include:

1. Easy integration of the M3800 into the existing office IT infrastructure

The M3800 acts as a member of the ADS. This feature significantly lowers the overhead of the system administrator. For example, corporate security policies and user privileges on an ADS server can be enforced automatically on the M3800.

2. Centralized user/password database

The M3800 does not maintain its own copy of the user/password database. This avoids data inconsistency between the M3800 and other servers. For example, without ADS support, an administrator might need to remove a specific user privilege on the M3800 and each individual server. With ADS support, the change on an ADS server is known to all of its ADS members.

## Appendix E: Licensing Information

### Overview

This product included copyrighted third-party software licensed under the terms of GNU General Public License. Please see THE GNU General Public License for extra terms and conditions of this license.

### Source Code Availability

Thecus Technology Corp. has exposed the full source code of the GPL licensed software. For more information on how you can obtain our source code, please visit our web site, <http://www.thecus.com>.

### Copyrights

- This product includes cryptographic software written by Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)).
- This product includes software developed by Mark Murray.
- This product includes software developed by Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)).
- This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).
- This product includes PHP, freely available from (<http://www.php.net/>).
- This product includes software developed by the University of California, Berkeley and its contributors.
- This product includes software developed by Winning Strategies, Inc.
- This product includes software developed by the Apache Group for use in the Apache HTTP server project (<http://www.apache.org/>).
- This product includes software developed by Softweyr LLC, the University of California, Berkeley, and its contributors.
- This product includes software developed by Bodo Moeller.
- This product includes software developed by Greg Roelofs and contributors for the book, "PNG: The Definitive Guide," published by O'Reilly and Associates.
- This product includes software developed by the NetBSD Foundation, Inc. and its contributors.
- This product includes software developed by Yen Yen Lim and North Dakota State University.
- This product includes software developed by the Computer Systems Engineering Group at Lawrence Berkeley Laboratory.
- This product includes software developed by the Kungliga Tekniska Högskolan and its contributors.
- This product includes software developed by the Nick Simicich.
- This product includes software written by Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)).
- This product includes software developed by Christopher G. Demetriou for the NetBSD Project.

## **CGIC License Terms**

### Basic License

CGIC, copyright 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 by Thomas Boutell and Boutell.Com, Inc.

Permission is granted to use CGIC in any application, commercial or noncommercial, at no cost. HOWEVER, this copyright paragraph must appear on a "credits" page accessible in the public online and offline documentation of the program. Modified versions of the CGIC library should not be distributed without the attachment of a clear statement regarding the author of the modifications, and this notice may in no case be removed. Modifications may also be submitted to the author for inclusion in the main CGIC distribution.

## **GNU General Public License**

Version 2, June 1991

Copyright © 1989, 1991 Free Software Foundation, Inc.  
51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

### PREAMBLE

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

#### TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program).

Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
  - a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
  - b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:
  - a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
  - b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
  - c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the

operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.
6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.
7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

#### NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

#### END OF TERMS AND CONDITIONS