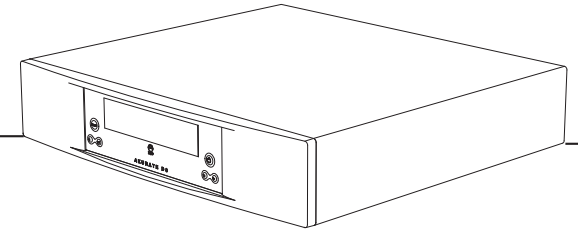


LINN

# AKURATE DS

DIGITAL MUSIC PLAYER



SYSTEM INSTALLATION AND SETUP MANUAL

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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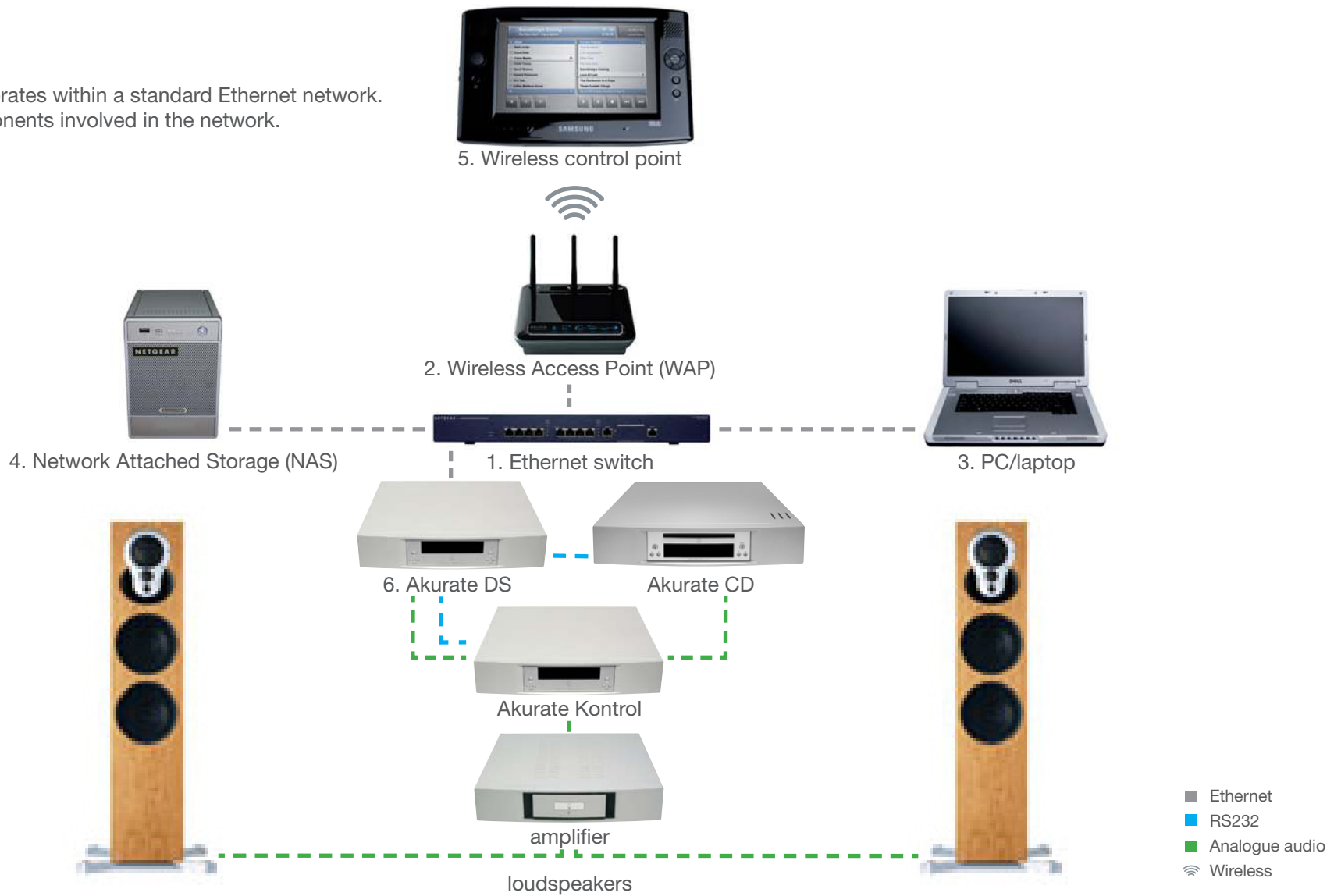
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# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 1 OVERVIEW

The Akurate DS operates within a standard Ethernet network. There are six components involved in the network.



# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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### 1 OVERVIEW (continued...)

The first two components provide network infrastructure.

1. **Ethernet switch**

This device is the connection point for all other components on the network allowing all components to communicate with each other.

2. **WAP**

Plugs into the switch thereby allowing wireless components to communicate with wired ones.

A PC/laptop is required for system installation.

3. **PC/laptop**

The PC or laptop is a standard computer that is used during setup and configuration of the Akurate DS system. The same, or another computer, may be used after setup to add new music to the NAS. In order for the computer to communicate with the Akurate DS system, it must be connected to the switch.

The final three devices interact together to provide the Akurate DS music experience. They are:

4. **NAS**

Securely stores music on a hard drive array. Additionally, the NAS runs three important pieces of software:

a. **Media Server**

Indexes and allows retrieval of the music from the NAS.

b. **DHCP Server**

Responsible for allocating IP addresses to all devices on the network.

c. **Network Sharing Protocols**

Allows computers to place new music on the NAS.

5. **Wireless control point**

Allows the user to browse, select, and control the playback of music. It requests information about the location of the music from the Media Server and then passes this information to the Akurate DS.

6. **Akurate DS**

Follows instructions from the wireless control point to retrieve music from the NAS, and then transforms the digitally stored music into high quality analogue audio. The Akurate DS plays WAV, FLAC or MP3 files.

This describes a default network architecture for the Akurate DS. Many other network configurations are possible, depending on specific requirements.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

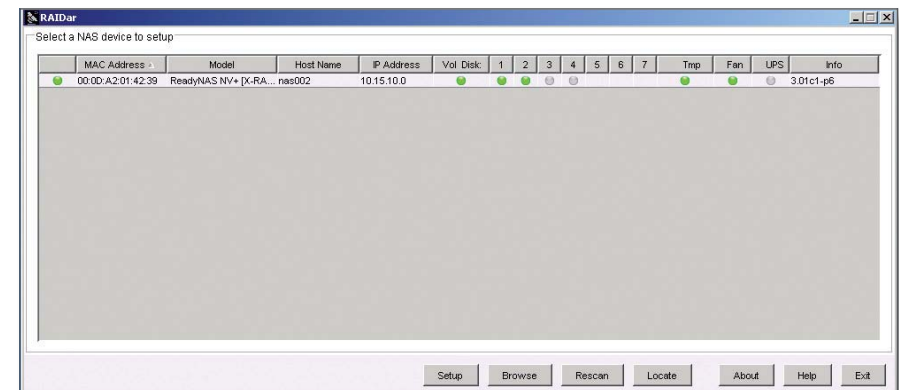
### 2 SET UP OF THE NAS

To make installation easier, here we describe in detail the steps needed to setup an Infrant ReadyNAS NV+. For other NAS devices consult the documentation from your NAS vendor. The instructions below assume that the NAS has been supplied with hard drives pre-installed. The RAID configuration for the Infrant ReadyNAS NV+ is best set at X-RAID. For other manufacturers' devices RAID 5 should be chosen to allow easy future expansion of storage.

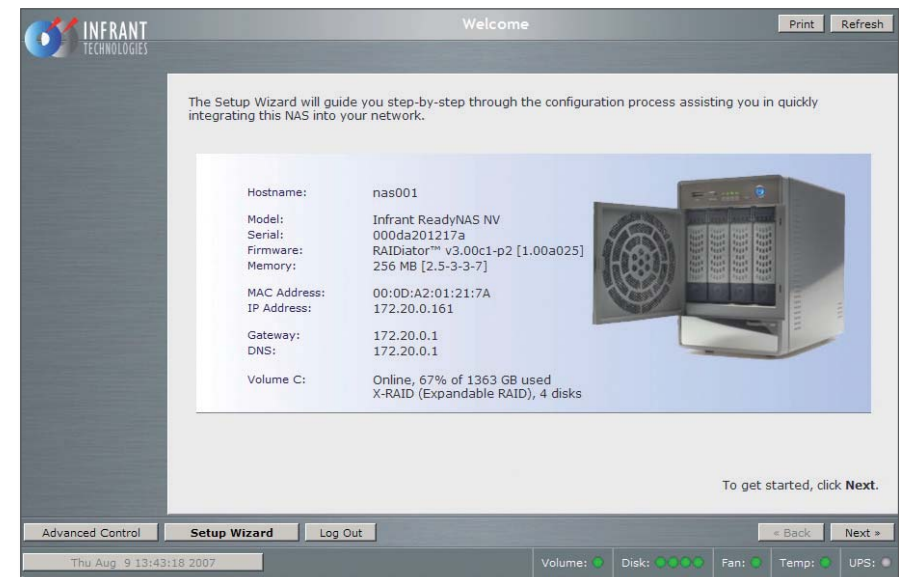
1. On the installation PC/laptop disable all firewalls and the proxy server.
2. Follow the Getting Started Guide supplied with the ReadyNAS, up to and including installing the RAIDar software. Once installed and running, RAIDar will scan the network for the Ready NAS. If the screen below appears, check all connections, ensure all firewalls and the proxy server are disabled, then press 'Rescan'.



When the screen below appears, select the appropriate NAS (if more than one is available), then press 'Setup'.



You will be asked for a user name and password. Enter the default user name and password as shown in the ReadyNAS installation guide. After you login, select 'Next' from the bottom-right corner.



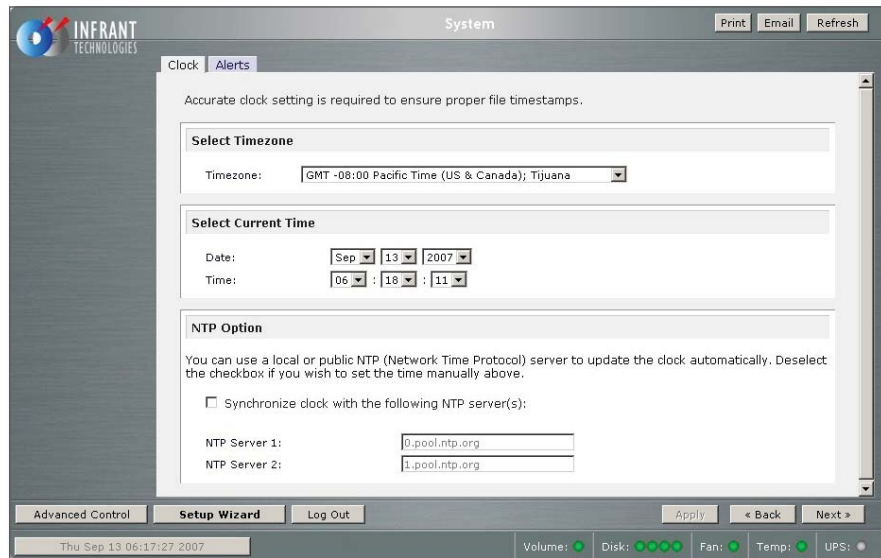
# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 2 SET UP OF THE NAS (continued...)

#### 3. The 'Clock' screen

Select the appropriate timezone and time for your location. If the 'Synchronize clock...' checkbox is selected, deselect it. Press 'Apply', then 'Next'.



#### 4. The 'Alerts' screen

Enter one or more service email contacts. If there are any problems with the NAS, email notification will automatically be sent from the NAS. This allows the problem to be diagnosed and corrective action taken before the user is aware that a problem exists. Press 'Apply', then 'Next'.

#### 5. The 'Ethernet' screen

Select the IP address assignment appropriate for the network the Akurate DS system is being installed into. Press 'Apply', then 'Next'.

#### 6. The 'Global Network Settings' screen

Select a hostname for the NAS, e.g. 'nas001'. This name should be unique to the network. This name will be used to refer to the NAS from other devices on the network, for example the ripping software (please refer to the *EAC Installation* section for details). Leave other settings unchanged. Press 'Apply', then 'Next'.

#### 7. The 'Admin Password' screen

Complete the required information. Press 'Apply', then 'Next'.

#### 8. The 'Security Mode' screen

Nothing on this screen needs changed. Press 'Next'.

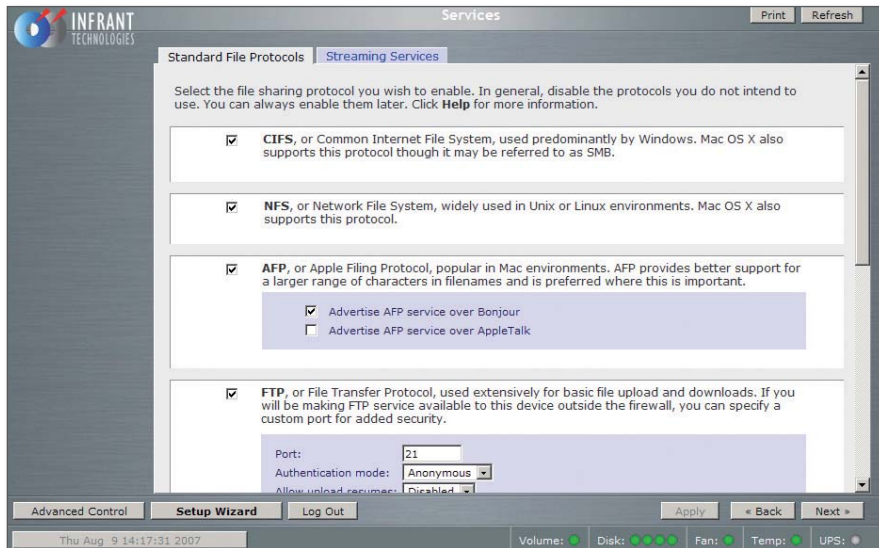
# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 2 SET UP OF THE NAS (continued...)

#### 9. The 'Standard File Protocols' screen

Select the NFS checkbox. Leave other settings unchanged. Press 'Apply', then 'Next'.

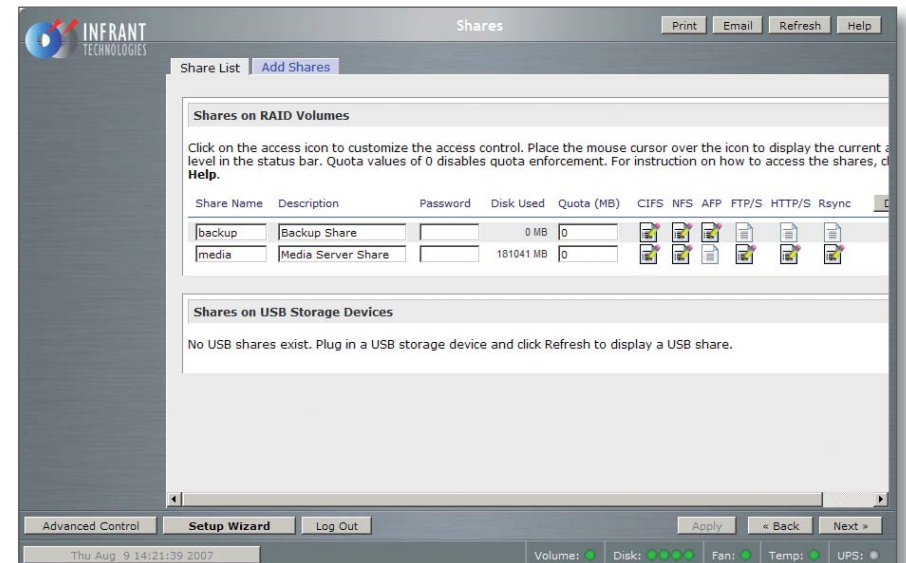


#### 10. The 'Streaming Services' screen

Nothing on this screen needs changes. Press 'Next'.

#### 11. The 'Share List' screen

Click on the CIFS icon on the line beginning 'media'. This will take you to 'Share Options'...





# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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### 2 SET UP OF THE NAS (continued...)

#### 12. The 'Share Options' screen

Set the default access to 'Read/Write'. Repeat this on the NFS, HTTP/S and Rsync tabs. Leave the AFP and FTP/S tabs set to 'Disabled'.

Select the Advanced Options tab.

Make the following settings:

Share folder owner: **media**

Share folder group: **nogroup**

Share folder rights: **Read/write**

Share group rights: **Read/write**

Share folder everyone rights: **Read/write**

Uncheck 'Set ownership and permission for existing files...'

Check 'Grant rename and delete privileges to non-owner of files.'

This completes the initial setup of the NAS.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 3 TwonkyMedia

#### Installing TwonkyMedia Server

To complete the installation of the Infrant ReadyNAS, TwonkyMedia Server software has to be installed onto it. This is a UPnP media server and allows access to all material stored on the NAS.

TwonkyMedia will present the music files to the user in such a way that they will be ordered by Artist, Album, Artist/Album, Genre etc... It gives various options for searching through the music, as explained below.



#### Downloading TwonkyMedia

TwonkyMedia for a PC or NAS other than an Infrant ReadyNAS, can be downloaded from the TwonkyVision website. If you are using an Infrant ReadyNAS, follow the steps below.

1. Enter the following link on your browser to access the installation guide: <http://www.twonkyvision.com/Support/HowTo/ReadyNAS-Install.zip>
2. Enter the following link on your browser to access the TwonkyMedia software: [http://www.twonkyvision.com/Download/4.4/TwonkyMedia\\_4.4.0.bin](http://www.twonkyvision.com/Download/4.4/TwonkyMedia_4.4.0.bin)
3. Follow the instructions in the installation guide. Please note that the firmware version shown in step 3 of the installation instructions may not show the correct information.

#### Suggested TwonkyMedia Setup

There are various options for setting up TwonkyMedia which will effect how the information is displayed to the user. This can be customised for each individual customer as required.

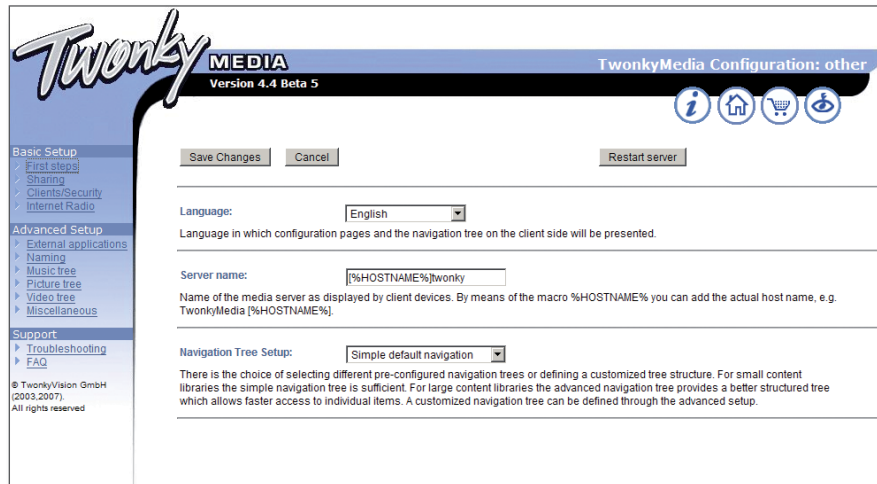
4. Log onto the NAS. Select 'Advanced Control'. From the menu on the left select 'Services' then 'Streaming Services'.
5. Ensure the 'TwonkyMedia' service checkbox is enabled.
6. Follow the http link to connect to the TwonkyMedia server and purchase a license from the online shop.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

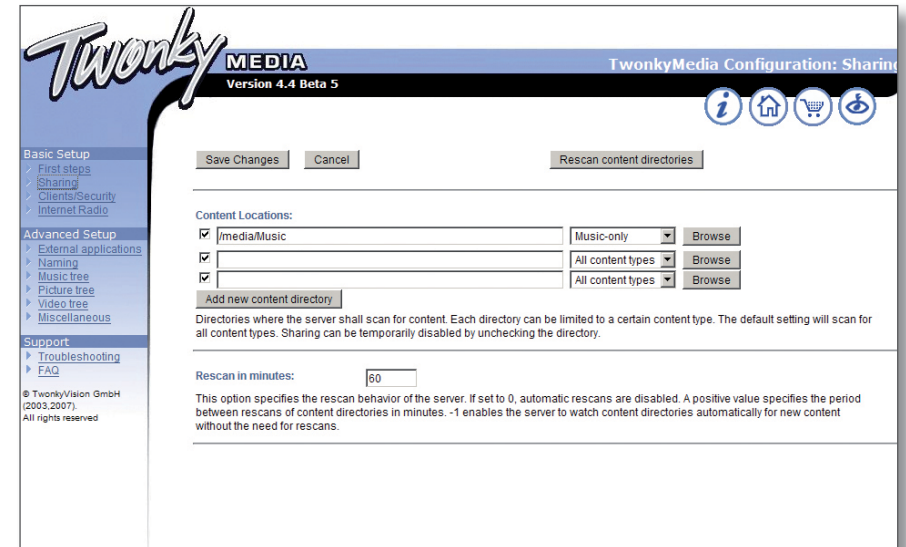
### 3 TwonkyMedia (continued...)

7. Select 'First Steps' from the menu on the left-hand side.



Here the name of the server can be set. This is necessary for installations where more than one NAS is available. If you change any of the settings, press the 'Restart server' button before continuing.

8. Select 'Sharing' from the left of the page.



The settings for 'Content Locations' is important as they will be used when setting up EAC (the recommended disc ripping software). Use the browse button to set the path to correspond to the directory into which EAC will rip CDs - typically, this will be '/Media/Music'. Set the drop-down menu to 'Music-only'.

Set 'Rescan in minutes' to '60'.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 3 TwonkyMedia (continued...)

9. Select 'Naming' from the left of the page.

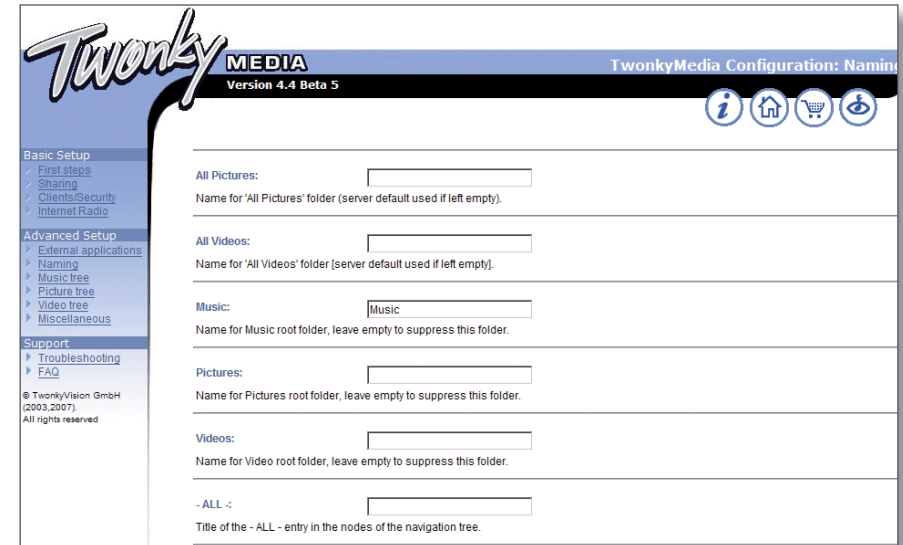
Tick 'Standardize titles' at the top of the page.



The screenshot shows the TwonkyMedia Configuration: Naming page. The left sidebar contains a navigation menu with 'Naming' selected. The main content area has the following fields:

- Standardize titles:**  (checked)
- Folder prefix string:**
- All Tracks:**
- Playlists:**
- Last played:**

Buttons for 'Save Changes', 'Cancel', and 'Restart server' are visible at the top of the main content area.



The screenshot shows the TwonkyMedia Configuration: Naming page. The left sidebar contains a navigation menu with 'Naming' selected. The main content area has the following fields:

- All Pictures:**
- All Videos:**
- Music:**
- Pictures:**
- Videos:**
- ALL -:**

The 'Standardize titles' checkbox is not visible in this view, as it is likely above the 'All Tracks' field.

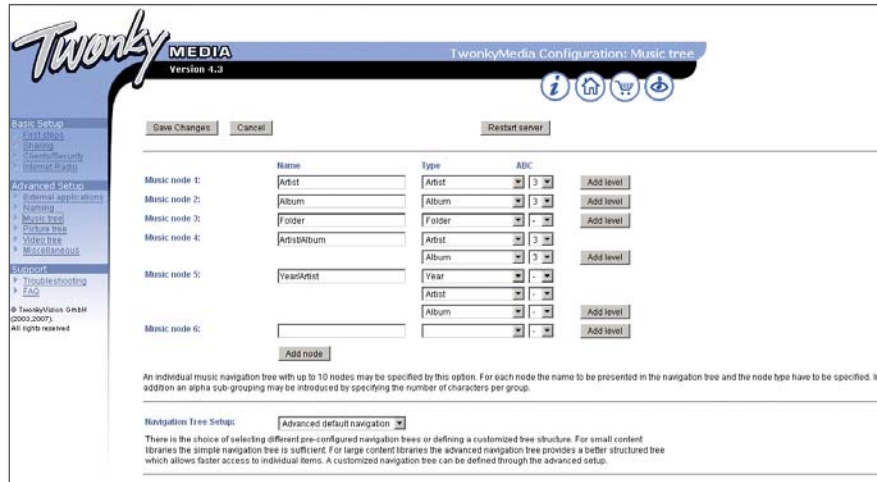
Remove the 'Video', 'Pictures' and '-ALL-' directories.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 3 TwonkyMedia (continued...)

10. Select 'Music Tree' from the left of the page.



Apply the settings shown in the above screen image. Press 'Save Changes' then 'Restart server'.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

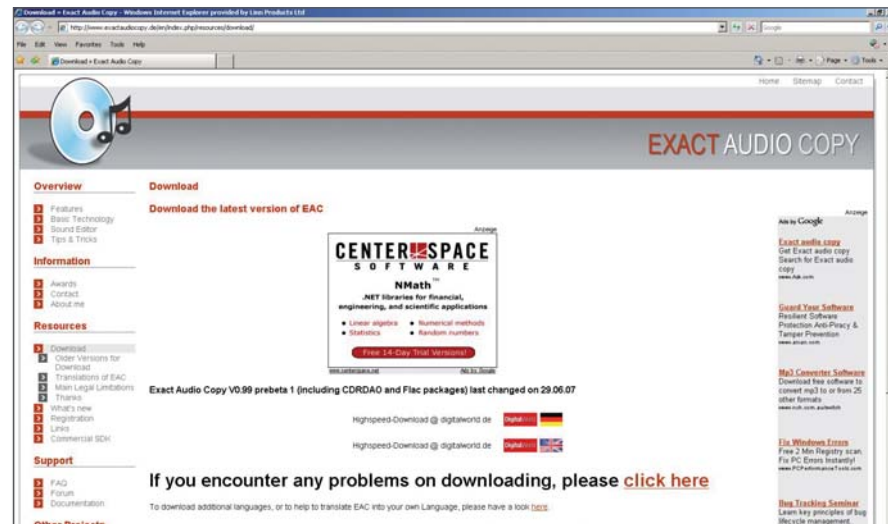
### 4 EAC INSTALLATION

Linn recommends the use of EAC (Exact Audio Copy) for converting CDs to FLAC and ripping them to the NAS. This software is available free of charge from the Internet.

EAC should be installed on the PC/laptop that the customer will use for ripping CDs.

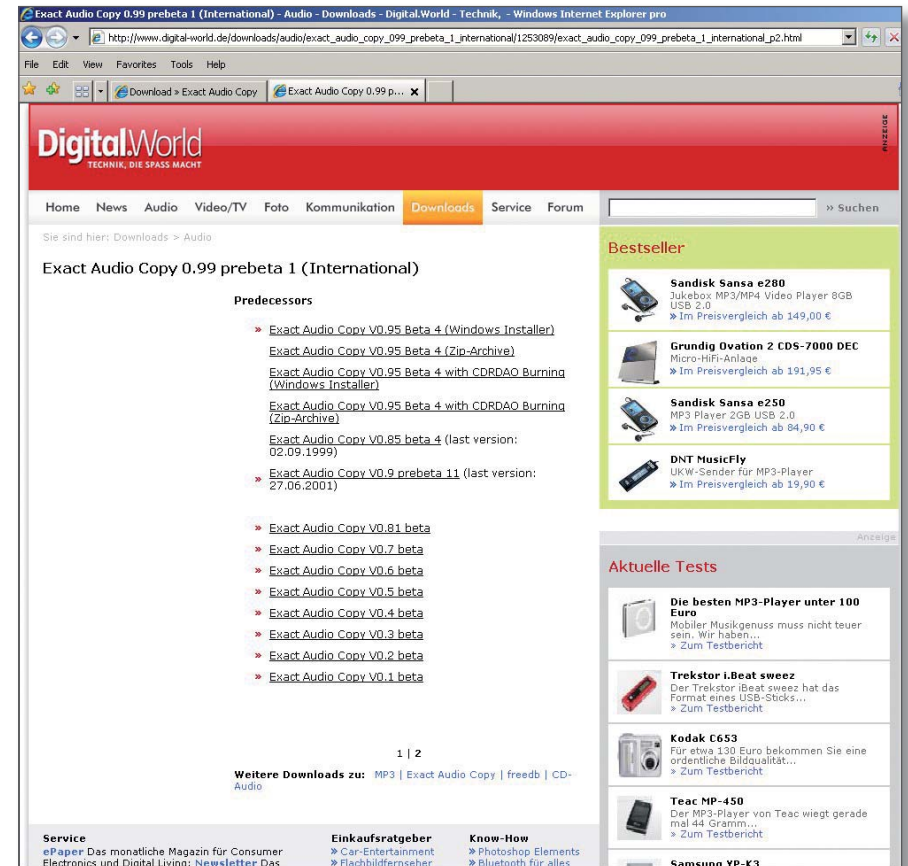
#### EAC Installation

1. Go to the EAC website:  
<http://www.exactaudiocopy.de/en/index.php/resources/download/>



2. Select the link for English download.

3. Select 'Exact Audio Copy V0.99 Prebeta 3, Windows installer'. The download will begin. Once the download is complete, double-click the downloaded .exe file to start the installation process. Follow the on screen instructions. At the end of the install, run EAC.

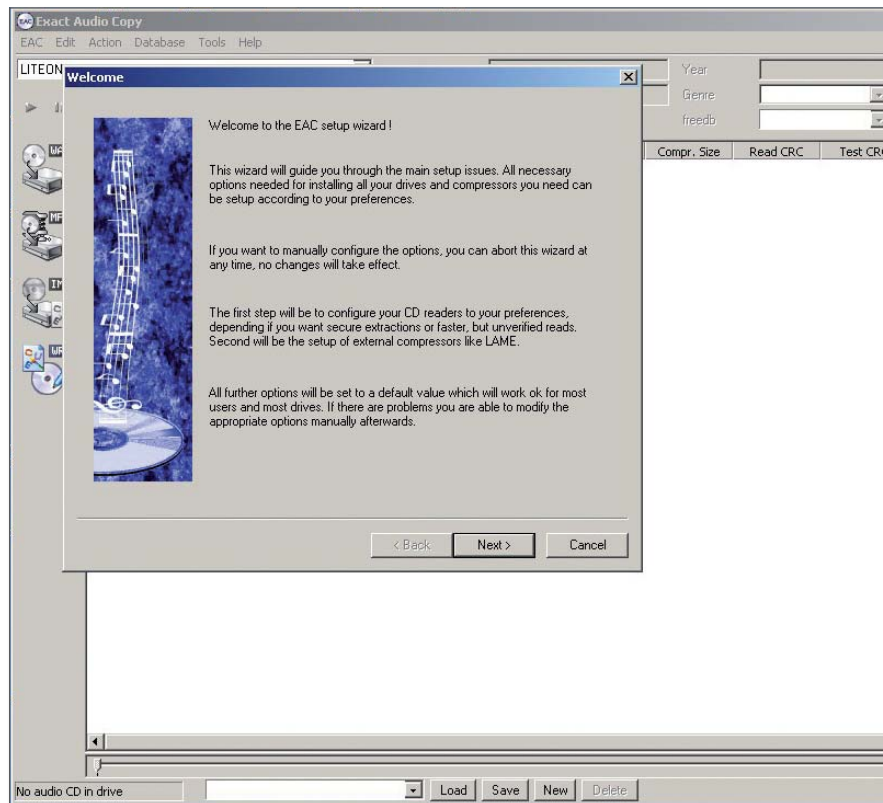


# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

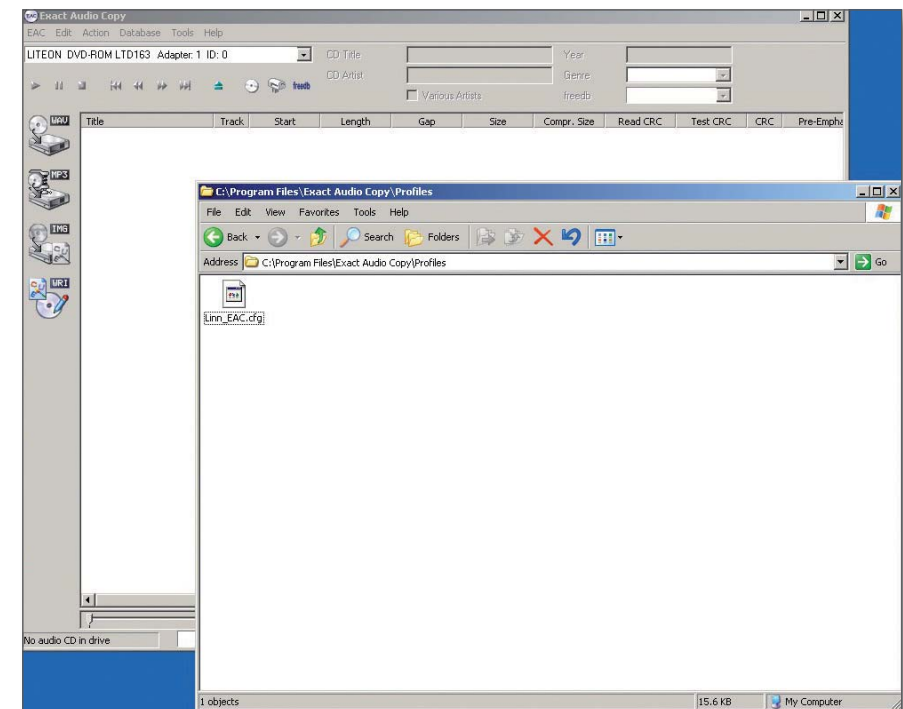
### 4 EAC INSTALLATION (continued...)

4. The EAC setup wizard screen will appear. Select 'Cancel' to prevent the setup wizard running.



### EAC Configuration

5. Copy the files contained within the 'Profile' directory on the disc supplied with the Akurate DS, onto the PC/laptop. Using Windows Explorer, copy the files into Program Files\Exact Audio Copy\Profiles.



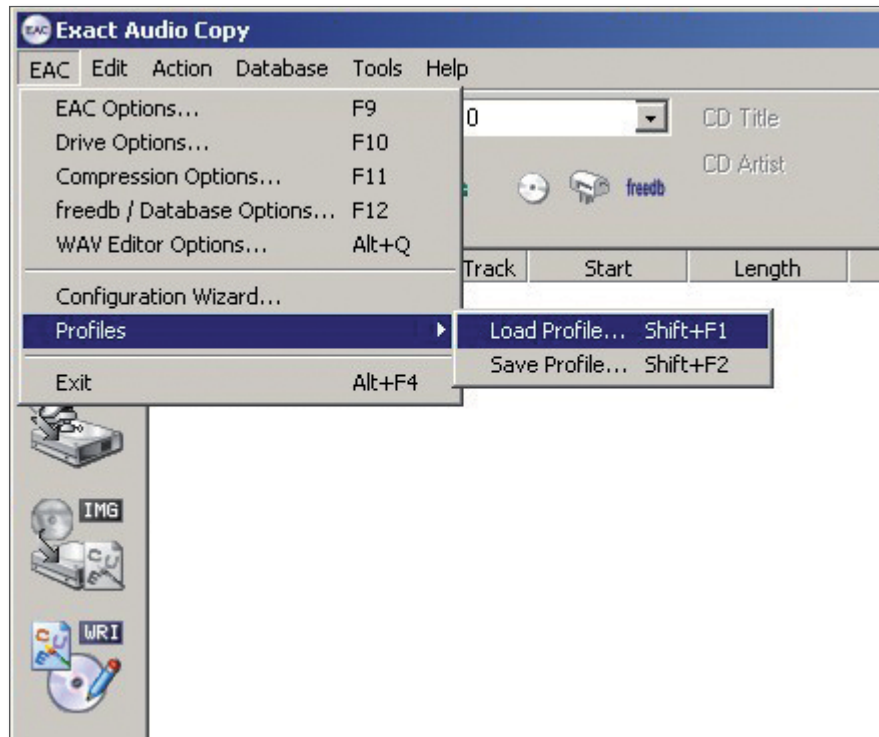


# AKURATE DS SYSTEM

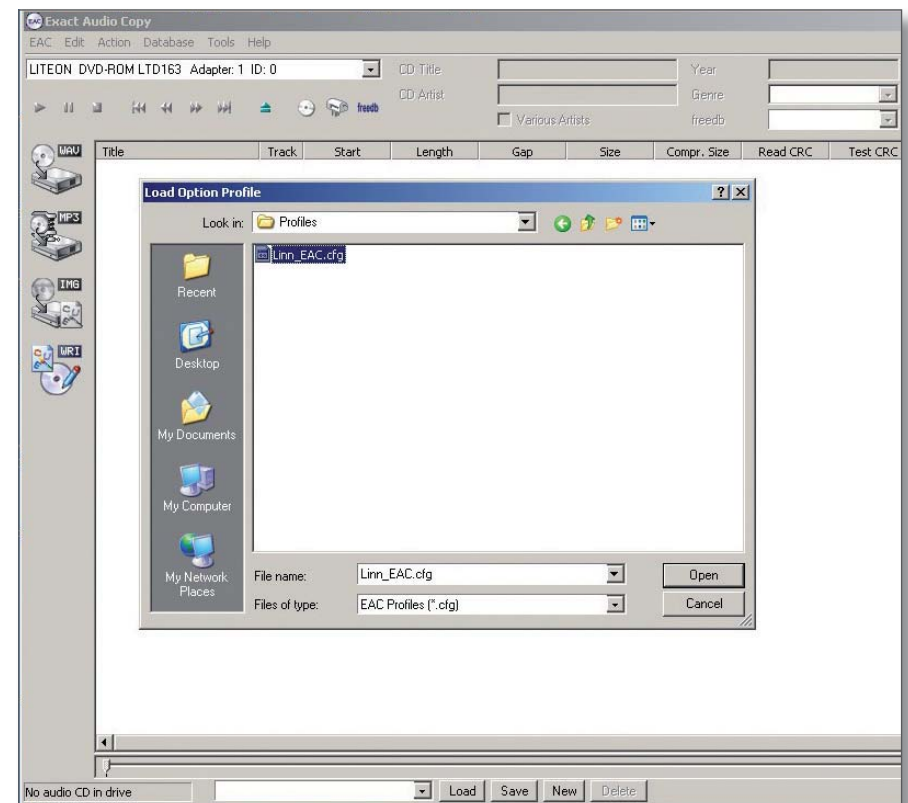
## INSTALLATION AND SETUP

### 4 EAC INSTALLATION (continued...)

6. From the 'EAC' menu, select 'Profiles - Load Profile' and browse to Program Files\Exact Audio Copy\Profiles.



7. Select 'Linn\_EAC099.cfg' for version 0.99 of EAC. Additional configurations are provided for newer versions of EAC, if available.



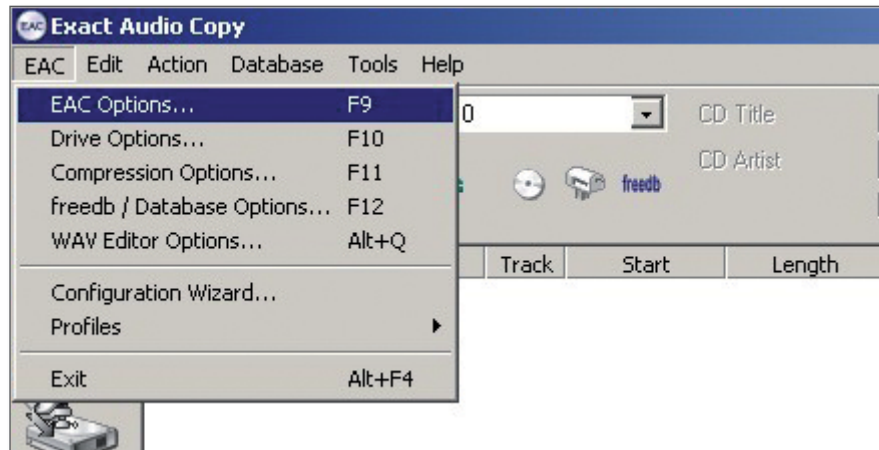


# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 4 EAC INSTALLATION (continued...)

8. Select the 'EAC Options' menu.



9. Select the 'Directories' tab. Click the 'Use this directory' radio button and enter the details of the NAS. This should take the following form:

`\\hostname.domain_name\media\music\flac`

Where,

Hostname – defaulted to NAS001

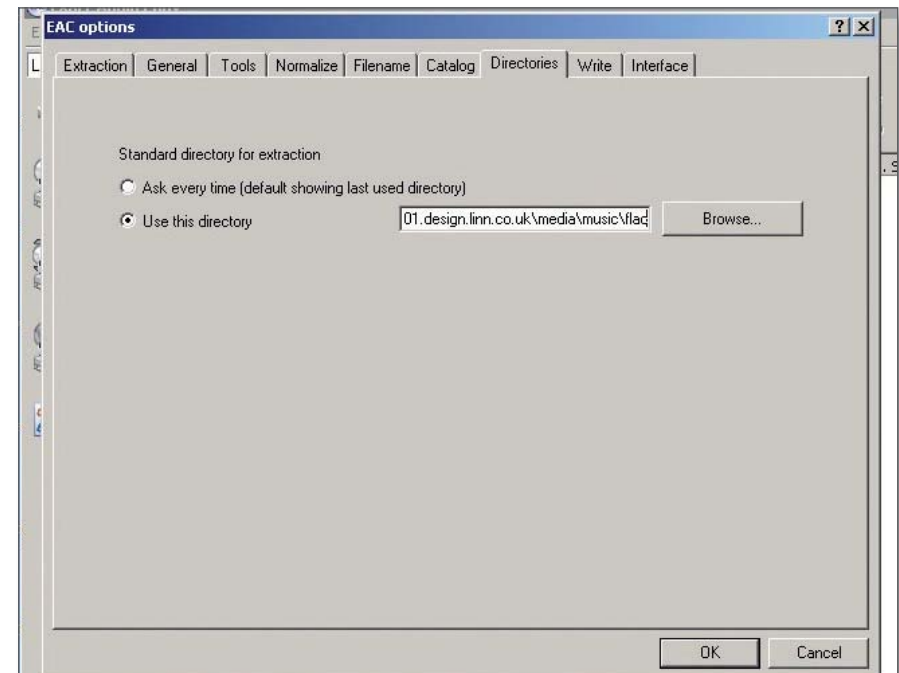
Domain Name – automatically generated by any DNS which would have to be on the same network as the NAS

If there is no DNS you may have to map the NAS as a web page within Windows Explorer. When this is complete the directory will have the form:

`\\192.168.1.3\media\music\flac`

The IP address will be that of the NAS. This is shown on the front panel of the NAS by pressing and releasing the standby switch.

Using the setup wizard lets EAC determine the best setup for the PC/laptop's drive.

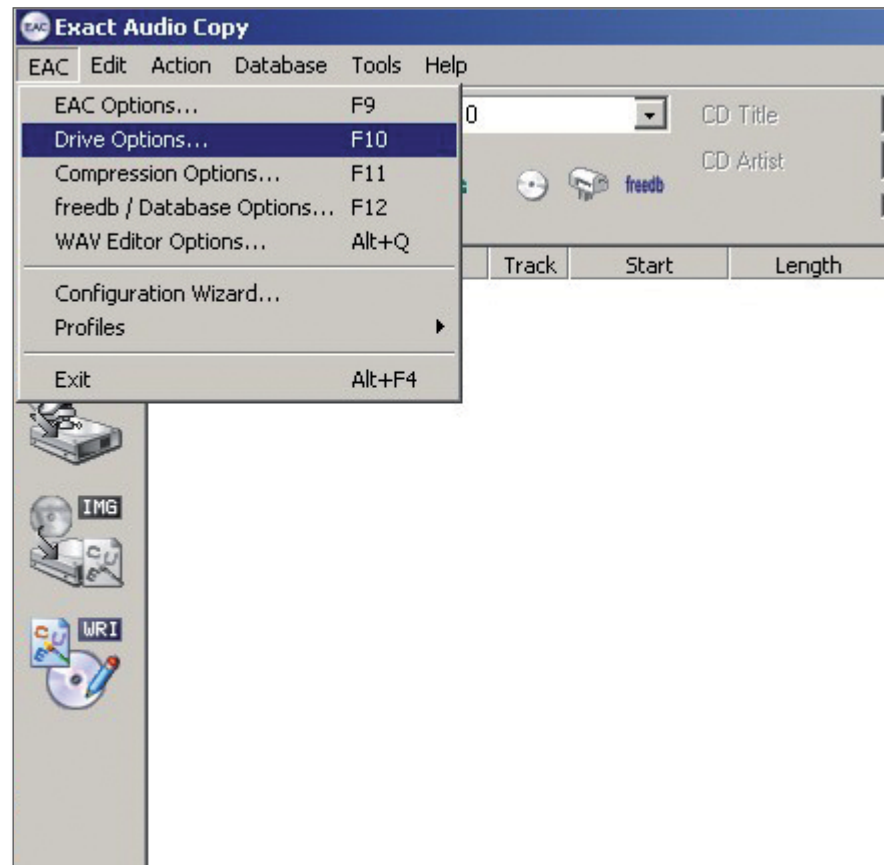


# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

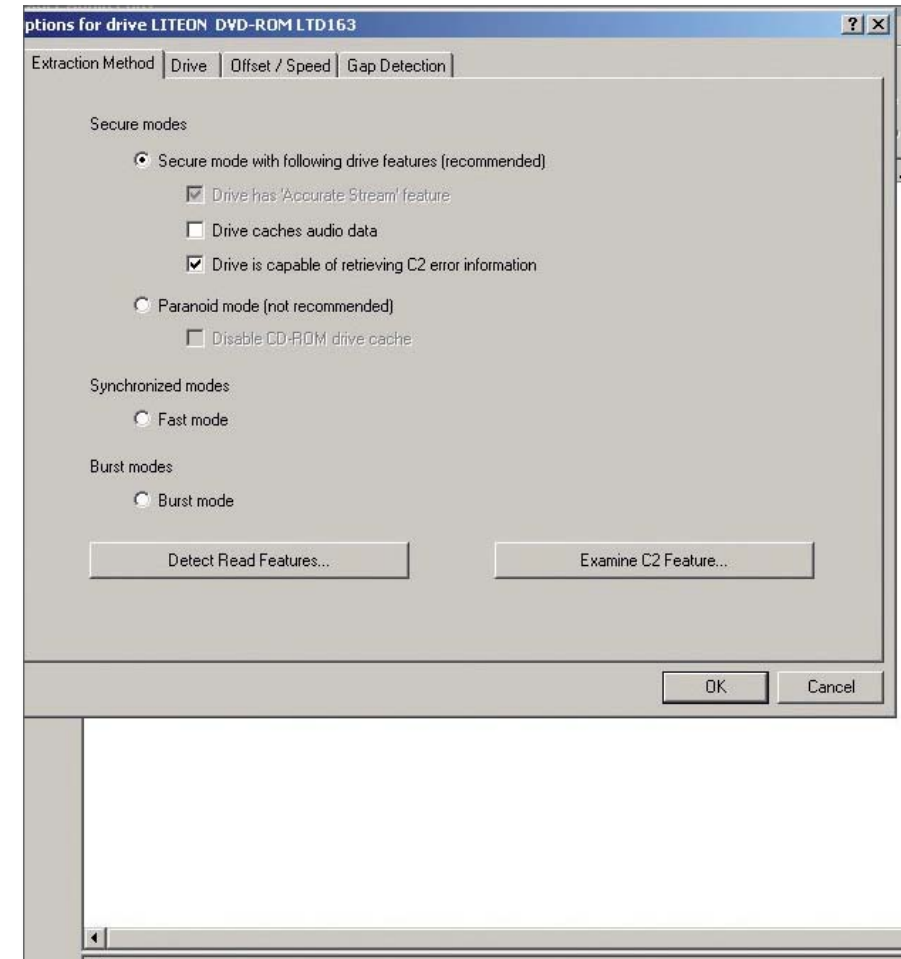
### 4 EAC INSTALLATION (continued...)

10. Disable any proxy server on the network.
11. Select 'Drive Options' from the 'EAC' menu. Insert an audio CD into the appropriate ROM drive.



12. Click 'Detect Read Features'.

The test will start.

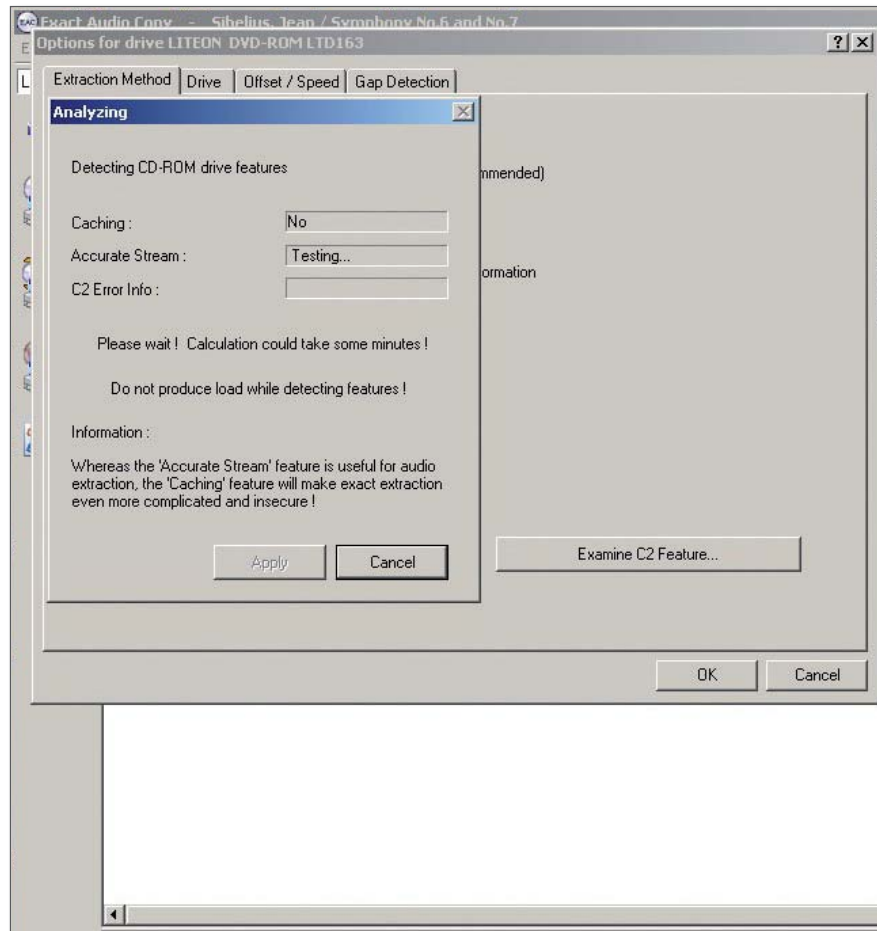


# AKURATE DS SYSTEM

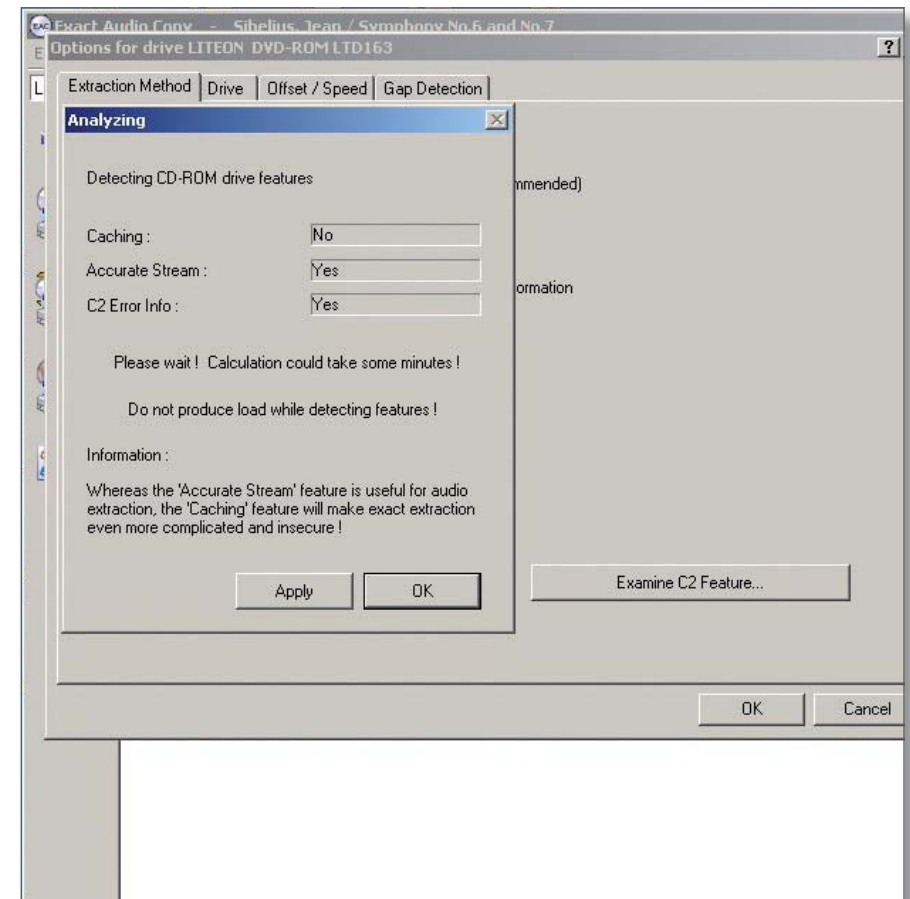
## INSTALLATION AND SETUP

### 4 EAC INSTALLATION (continued...)

13. When complete you will then be asked to apply the results.



14. Click 'Apply'. This will close the current window and take you back to the 'Extraction Method' tab. Select 'OK' from this tab to exit 'Drive Options'. Now, the current configuration will have the correct drive features and be pointing to the desired NAS.

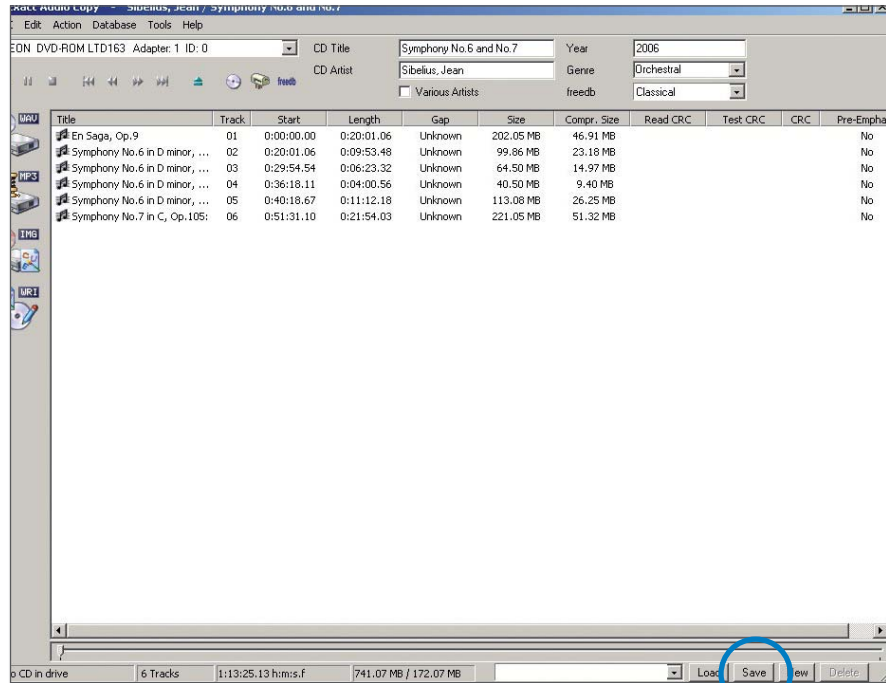


# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 4 EAC INSTALLATION (continued...)

15. Save this new configuration.



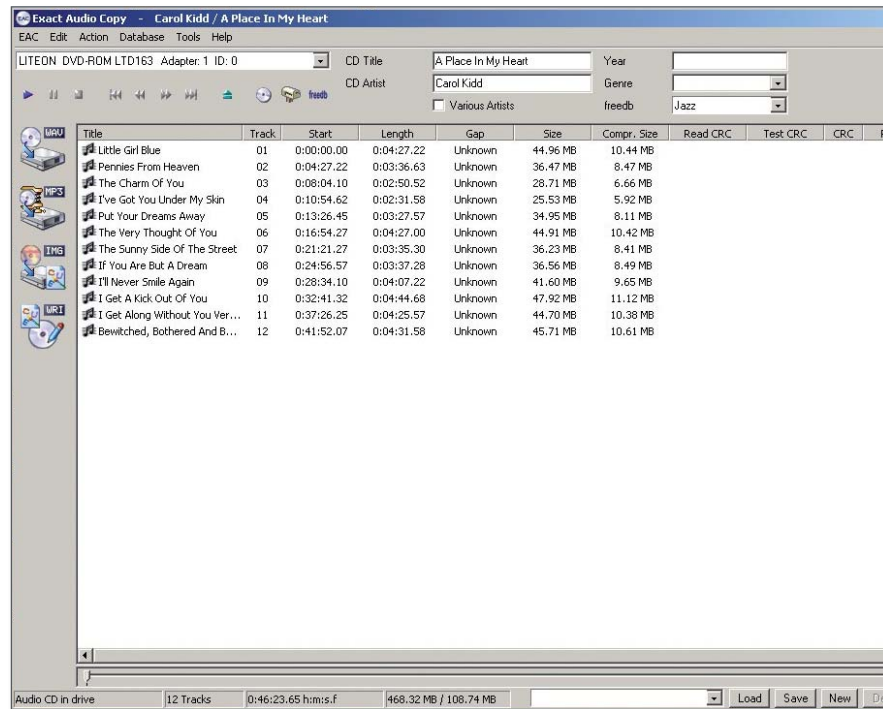
# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 5 RIPPING CDs

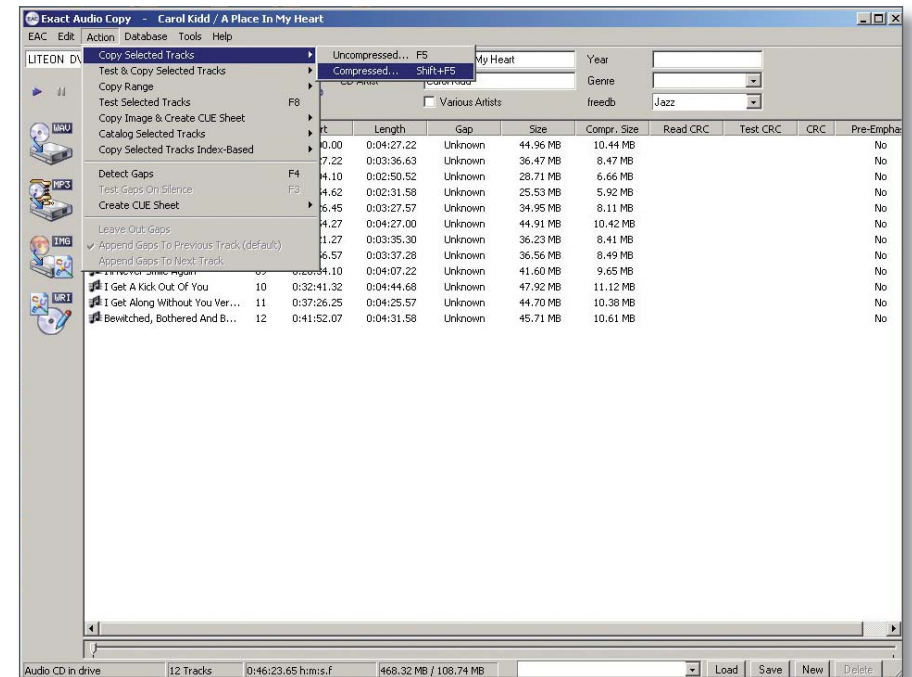
#### Ripping CDs onto the NAS

1. Disable any proxy server on the network.
2. Insert the CD into the PC/laptop's drive. Start EAC. The screen will show the disc's contents.



3. To start the process of ripping the CD, select 'Action', 'Copy Selected Tracks', 'Compressed'. Alternatively, the key shortcut is Shift + F5.

Ripping will begin.

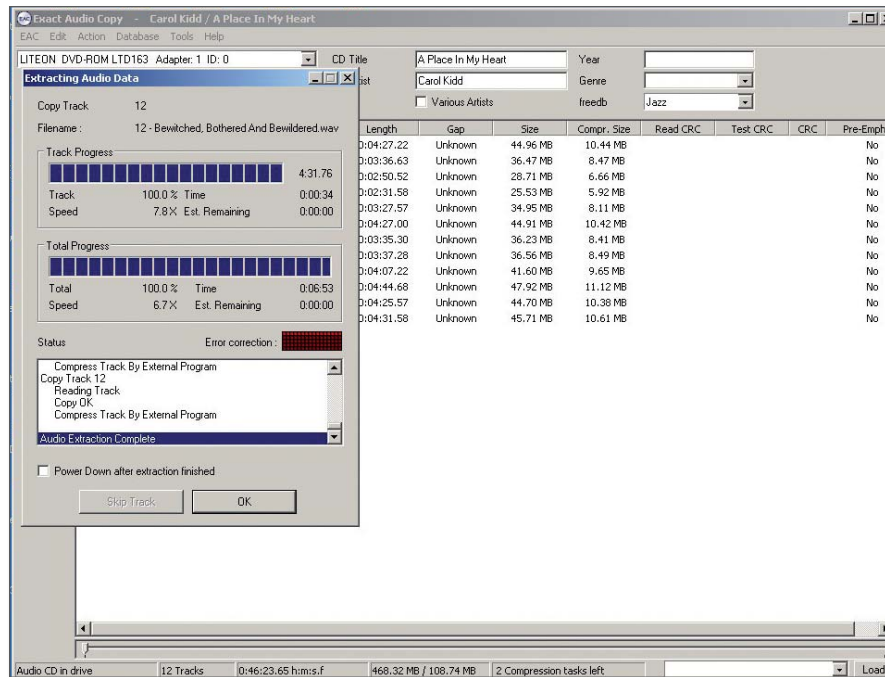


# AKURATE DS SYSTEM

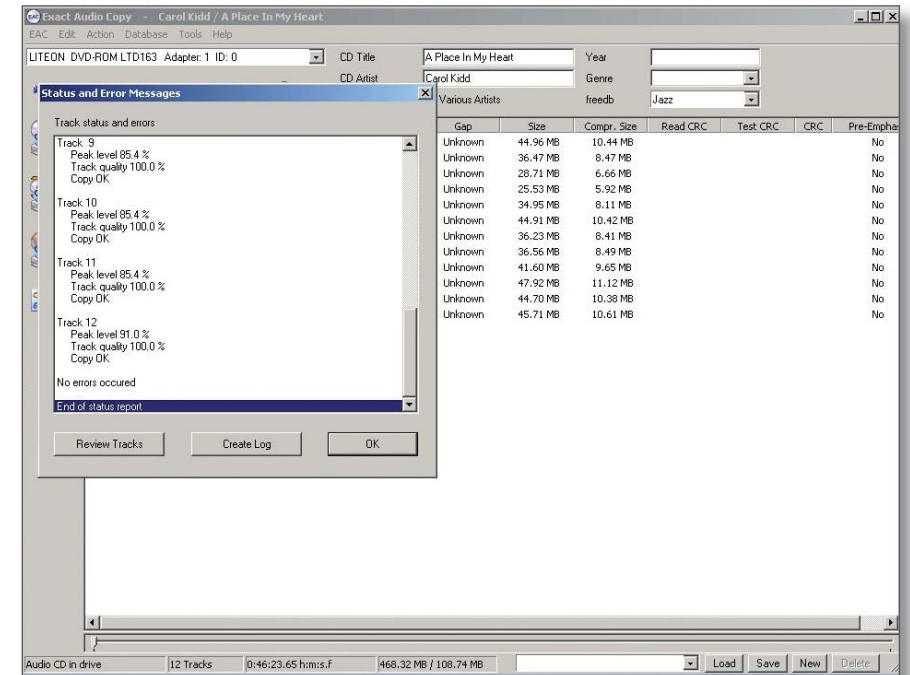
## INSTALLATION AND SETUP

### 5 RIPPING CDs (continued...)

4. On completion, the following will be displayed and the disc will be ejected. Select 'OK'.



5. Select 'OK' again. The CD will now be copied onto the NAS. No further actions are required. After a short time the new content will be available to select and listen to.



# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

---

### 5 RIPPING CDs (continued...)

#### **Ripping a large collection of CDs**

If the customer has a large collection of CDs that need to be ripped to the NAS, using the above method may be too time consuming. An alternative method is to use a ripping service, details of which can be found on the Akurate DS product information page on Linfo.



# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

---

### 6 THE WIRELESS CONTROL POINT, AND INSTALLING THE LINN GUI AND CONFIG APPLICATION

You may need to fully charge the battery on the control device before continuing with this procedure (see the information supplied with the control device), this may take an hour or longer.

1. Update the control device with .NET 2.0, available at [www.microsoft.com/net](http://www.microsoft.com/net).
2. Copy the Linn GUI installer to the wireless control point.
3. Copy the Linn Config installer onto the installation PC/laptop.\*
4. Run both the installers. Do not launch the Linn GUI or Linn Config at this time.
5. On the wireless control point, disable the 'Auto Right Click' behaviour. This can be done by locating the notification area at the bottom-right of the Windows screen, and clicking the Touchkit: USB Controller icon
  - Select the Setting tab
  - Press the Option button
  - Deselect 'Enable Auto Right Click'.
6. You must give the installation PC/laptop's firewall permissions for the Linn Config and Linn GUI to access the network.

If the owner uses the Windows Firewall, follow the instructions from the following link to add Linn Config and Linn GUI.

<http://www.microsoft.com/windowsxp/using/networking/security/winfirewall.msp>

If they use a different firewall, consult the vendor's manual for instructions.

**Note:**

If you update the Akurate DS system with new Linn Config or Linn GUI software, you must add the new software to the firewall permissions.

7. To configure you Akurate DS system, follow the instructions in *The Linn Config Application* section.

\* You may wish to install the Linn Config on the PC/laptop the customer will use to rip CDs. This would mean the customer will be able to make changes to their system's setup (e.g. add a new source), and run the diagnostic tools, should their be a problem.



# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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### 7 AKURATE DS INSTALLATION

This section describes how to connect the Akurate DS into a Linn hi-fi system.

#### Unpacking

The Akurate DS is supplied with the following:

- handset
- 2 x AAA batteries for the handset
- 1 pair of black interconnect cables
- RS232 lead
- mains lead
- CD-ROM (contains system software, installation manual and owner's manual)
- warranty pack

We recommend that the owner retains all packaging in case they need to transport the Akurate DS at a later date.

#### Positioning

The Akurate DS can be positioned almost anywhere, but please consider the following points:

- The unit should be placed on a flat, stable and rigid surface.
- Do not position the unit where sunlight can shine (whether directly, diffused or reflected) on its display, as the infra-red (IR) radiation in sunlight will be picked up by the unit's IR remote sensor and this can adversely affect its operation. Similarly, some electrical devices such as plasma TVs, fluorescent lights and energy saving lamps can emit IR which can likewise affect the operation.
- For best performance do not stack the unit with other products. Ideally, position the unit on a shelf by itself or, if proximity to other products is unavoidable, positioning side-by-side is preferable to stacking.
- The unit should not be situated above, or otherwise directly adjacent to sources of heat such as radiators, power amplifiers etc. Nor should it be enclosed in a cabinet with such devices.
- The unit itself produces very little heat; however it is advisable to allow a little space to the sides, rear and above the unit (ideally 10 cm / 4") for air circulation which will allow any heat to dissipate.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

### 7 AKURATE DS INSTALLATION (continued...)

#### Back panel



- 1. OFF, ON**  
Mains power switch
- 2. POWER**  
Mains power inlet
- 3. EARTH GROUND**  
For connecting the unit to an earthing terminal if no mains earth is available
- 4. ETHERNET**  
For connecting the unit to the network switch
- 5. FALLBACK**  
Used when reprogramming the unit
- 6. RS232 1 - 4**  
Port 1 is for connecting to a Linn Akurate Kontrol, port 2 for a Linn Akurate CD. Ports 3 and 4 are currently not in use
- 7. BALANCED RIGHT/LEFT**  
For connection to a Linn Kisto or other pre-amplifier
- 8. ANALOGUE AUDIO OUTPUT**  
For connection to a Linn Akurate Kontrol or other pre-amplifier

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

---

### 7 AKURATE DS INSTALLATION (continued...)

#### Connecting to the mains supply

The Akurate DS contains an automatic internal mains voltage switch. This switch operates on all worldwide mains voltages from 100 V to 240 V. The unit can be connected to any worldwide mains voltage with no adjustment.

This unit must be earthed. Use the earthed moulded mains lead supplied, or if no mains earth is available, ensure the product's EARTH GROUND connector is connected to an earthing terminal.



#### RS232 connection on the Akurate Kontrol

For communication to take place between the components in an Akurate DS system, the RS232 Setup settings must be correctly configured on the Akurate Kontrol.

The correct RS232 Setup settings are.

Baud Rate: **9600**

Parity: **Even**

Data Bits: **7**

Stop Bits: **1**

RS232 Events: **Enabled**

#### To access the setup menus:

Using the handset -

- Press **AMP**, then **SETUP** on the handset.

Using the front panel -

- Hold **SELECT** on the front panel until MAIN MENU / SPEAKER SETUP is shown on the display.

#### To navigate through the menus and options:

- Use the **▲ / ▼** keys on the handset or front panel.

#### To make a selection:

- Press on the handset, or **SELECT** on the front panel.

#### To exit the setup menus:

- Press **SETUP** on the handset, or select **EXIT** from the MAIN MENU (if changes have been made you will be prompted to save or not save the changes).

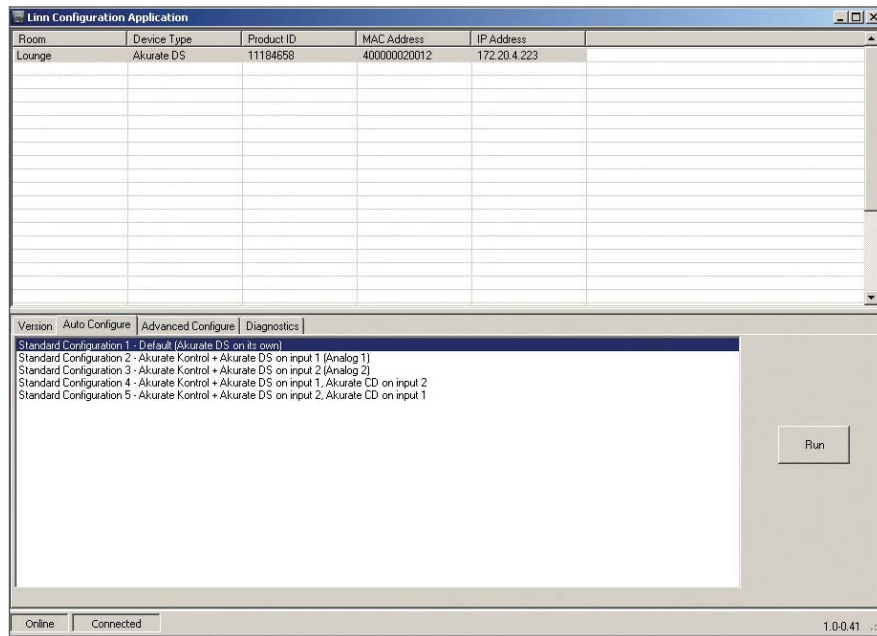


# AKURATE DS SYSTEM

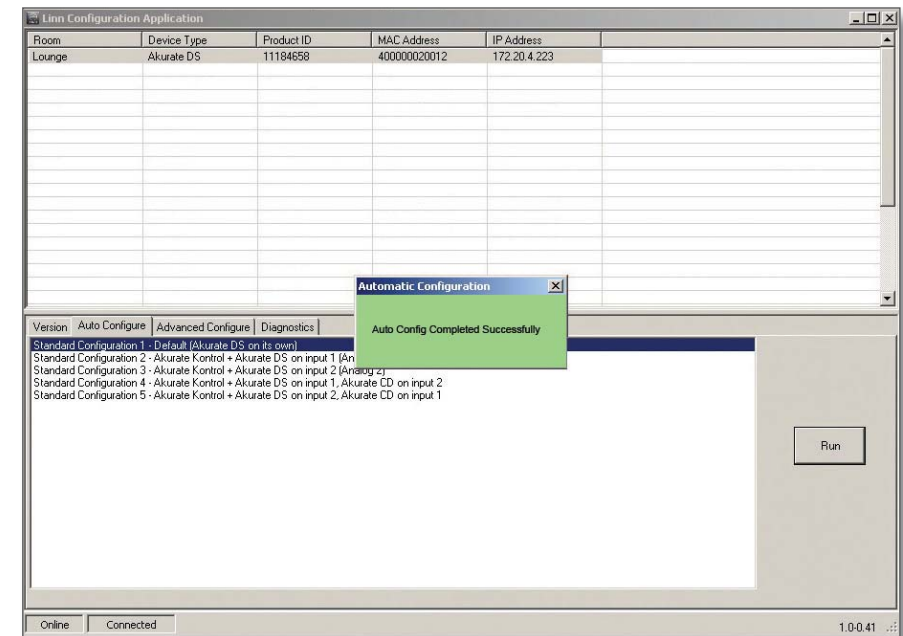
## INSTALLATION AND SETUP

### 8 THE LINN CONFIG APPLICATION (continued...)

5. Select the 'Auto Configure' tab. Select the configuration appropriate for the Akurate DS system, and press 'Run'.



6. Wait until the configuration has completed, then close the Automatic Configuration notice and select the 'Advanced Configure' tab.

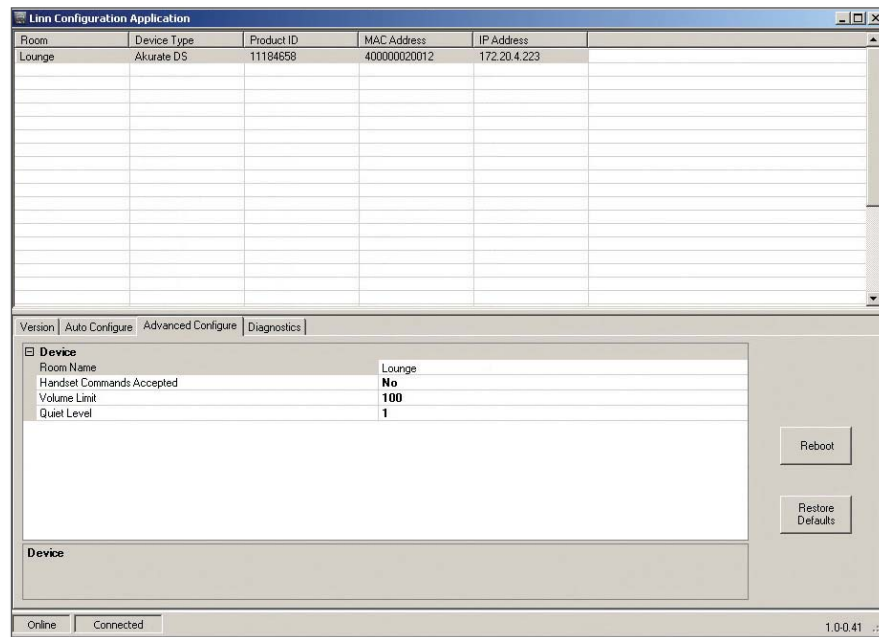


# AKURATE DS SYSTEM

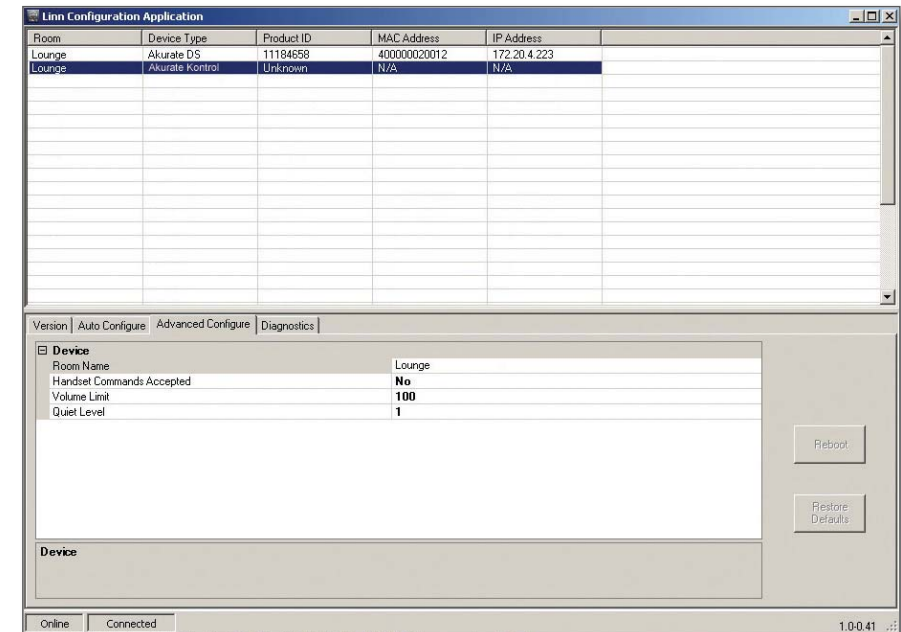
## INSTALLATION AND SETUP

### 8 THE LINN CONFIG APPLICATION (continued...)

7. On this screen you are able to customise aspects of the configuration, for example you may want to change the Room Name, Device Name or Display Brightness. You are also able to add additional source products that you wish to select from the Linn GUI. If you change items in the 'Advanced Configuration' tab, press 'Reboot'.



8. For systems with an Akurate Kontrol. From the top window, select Akurate Kontrol. On the 'Advanced Configuration' tab you will see the current configuration settings for the unit. You are able to change the settings, if required.



# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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### 9 FINAL STEPS

This section describes the final steps involved in getting the Akurate DS system up and running.

#### **Final steps**

1. Turn on the NAS.
2. Turn on the Ethernet switch and the Wireless Access Point.
3. Wait for the NAS to finish booting.
4. Turn on the Akurate Kontrol and wait for the standby symbol to appear on the front panel.
5. Turn on the Akurate DS and the rest of the hi-fi system.
6. Turn on the wireless control point and start the Linn GUI.
7. Follow the instructions in the *Operation* chapter of the Akurate DS owner's manual.

# AKURATE DS SYSTEM

## INSTALLATION AND SETUP

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### 10 TECHNICAL SPECIFICATION

<b>Date of introduction</b>	November 2007
<b>Type</b>	Digital music player
<b>Size</b>	(H) 80 mm x (W) 381 mm x (D) 360 mm (H) 3.1 inches x (W) 15 inches x (D) 14.2 inches
<b>Weight</b>	4.2 kg 9.2 lb
<b>Supported file types</b>	WAV, FLAC, MP3
<b>Audio sample rates</b>	44.1 k, 48 k, 88.2 k, 96 k, 176.4 k, 192 k
<b>Word depths</b>	16 – 24 bits
<b>Analogue audio outputs</b>	Stereo RCA phono sockets, stereo XLR balanced audio outputs
<b>Ethernet interface</b>	100Base-T RJ45
<b>Control protocol</b>	Compatible with UPnP™ media servers, UPnP™ AV 1.0 control points
<b>Local control</b>	Front panel 6 button interface RS232 x 4 Luminous remote control handset 128 x 32 front panel display
<b>Power supply</b>	Switching power supply with auto-ranging (AC 100 – 120 V @ 50 – 60 Hz) (AC 220 – 240 V @ 50 – 60 Hz)
<b>Power consumption</b>	13 W