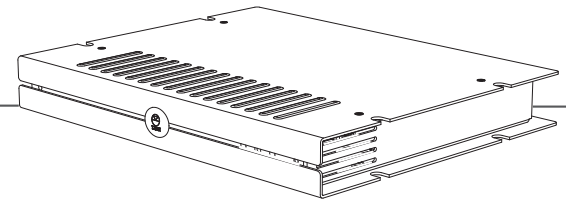


LINN

SNEAKY MUSIC DS

NETWORK MUSIC PLAYER



SYSTEM INSTALLATION AND SETUP MANUAL

SNEAKY MUSIC DS

INSTALLATION AND SETUP

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SNEAKY MUSIC DS

INSTALLATION AND SETUP

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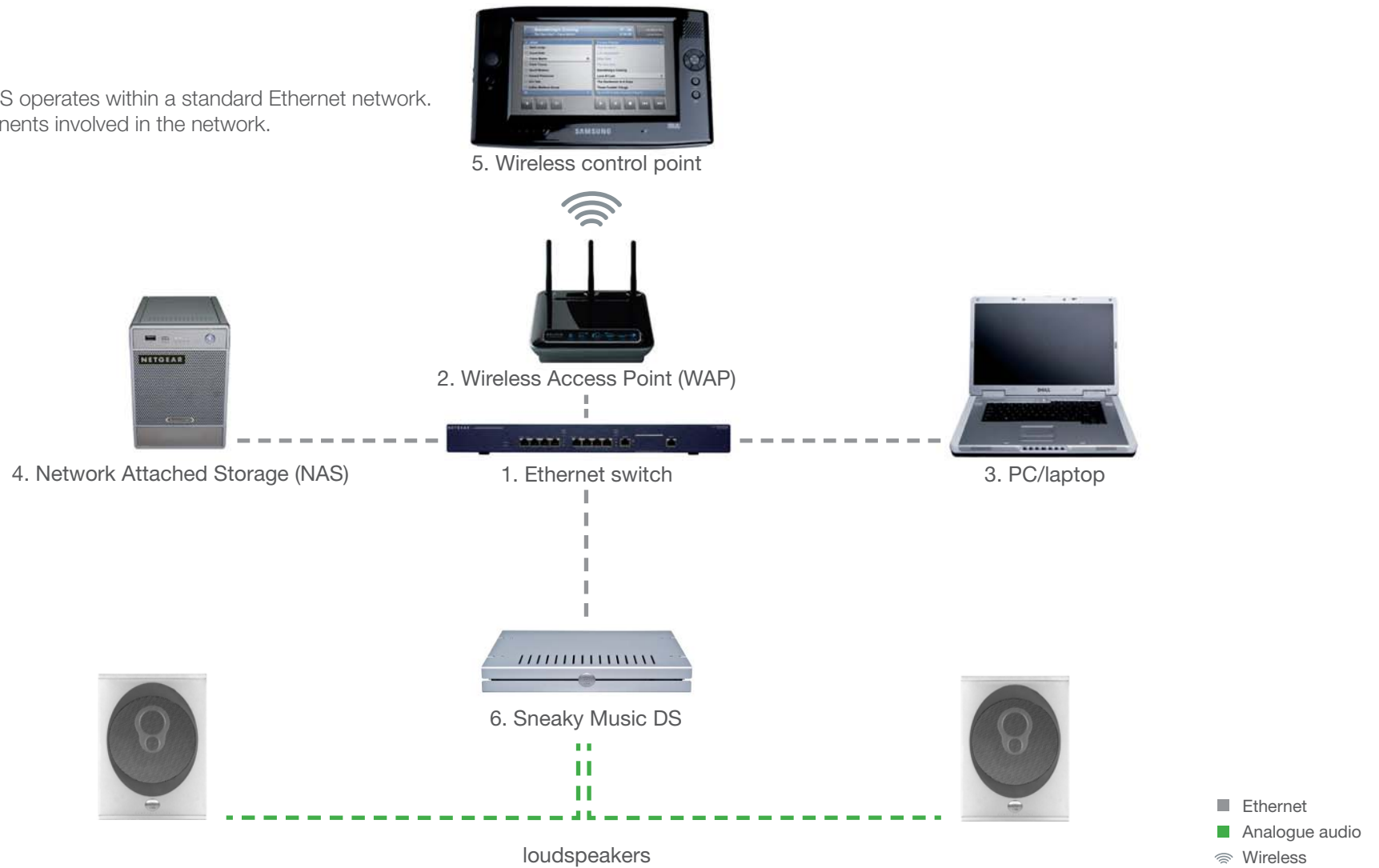
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SNEAKY MUSIC DS

INSTALLATION AND SETUP

1 OVERVIEW

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



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INSTALLATION AND SETUP

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 them to communicate with each other. Also required for accessing SHOUTcast Internet radio.

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 Sneaky Music 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 Sneaky Music DS system, it must be connected to the switch.

The final three devices interact together to provide the Sneaky Music 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 Sneaky Music DS.

6. **Sneaky Music DS**

Follows instructions from the wireless control point to retrieve music from the NAS (and SHOUTcast Internet radio via the Ethernet switch), and then transforms the digitally stored music into high quality analogue audio. The Sneaky Music DS plays WAV, FLAC and MP3 files.

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

Important:

Installation of the Sneaky Music DS requires knowledge of networks and network security. You should not attempt to install the Sneaky Music DS unless you are comfortable working in these areas. Linn Products Limited cannot be held responsible for any network security compromise and/or loss of data due to improper installation.

SNEAKY MUSIC DS

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.

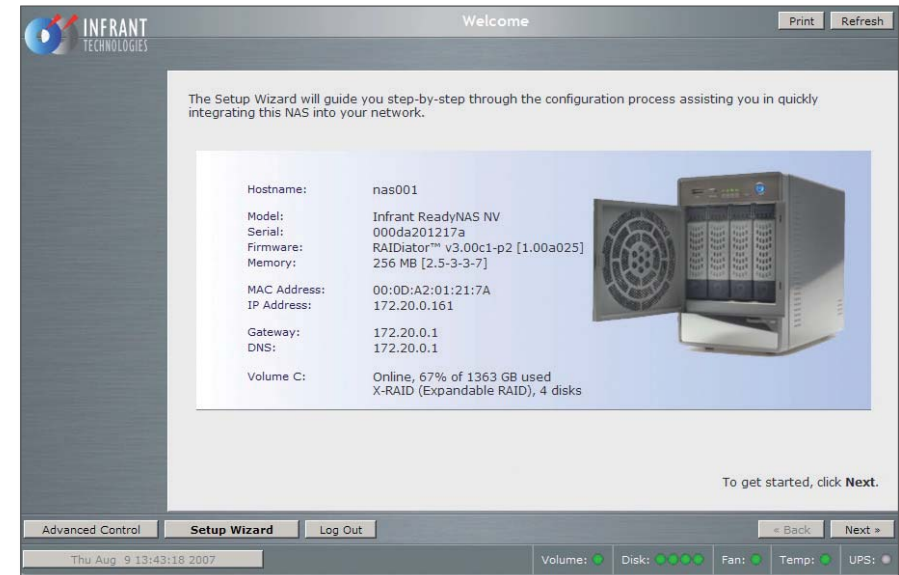
1. On the installation PC/laptop disable all firewalls and the proxy server.
2. Follow the Getting Started Guide supplied with the ReadyNAS, up to and including installing the RAIDar software. Once installed and running, RAIDar will scan the network for the Ready NAS. If the screen below appears, check 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 log in, select 'Next' from the bottom-right corner.



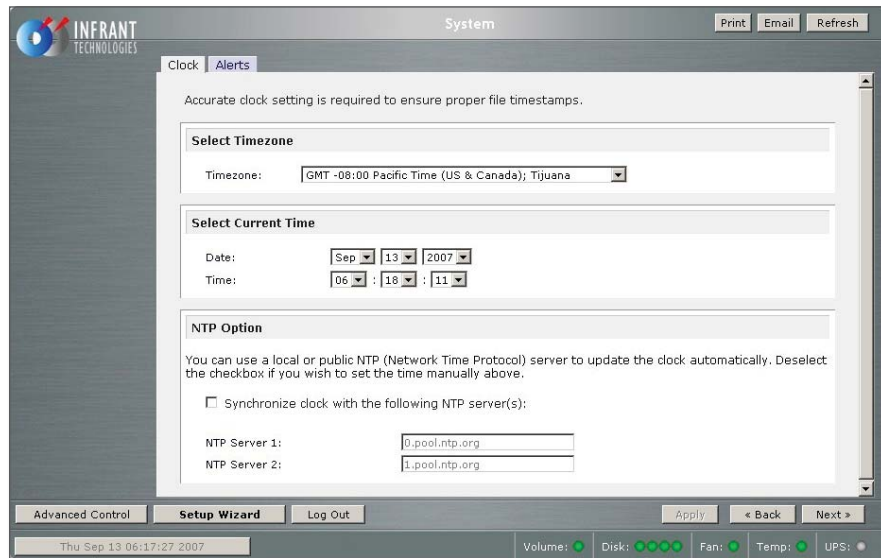
SNEAKY MUSIC DS

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 *Ripstation Micro DS* 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'.

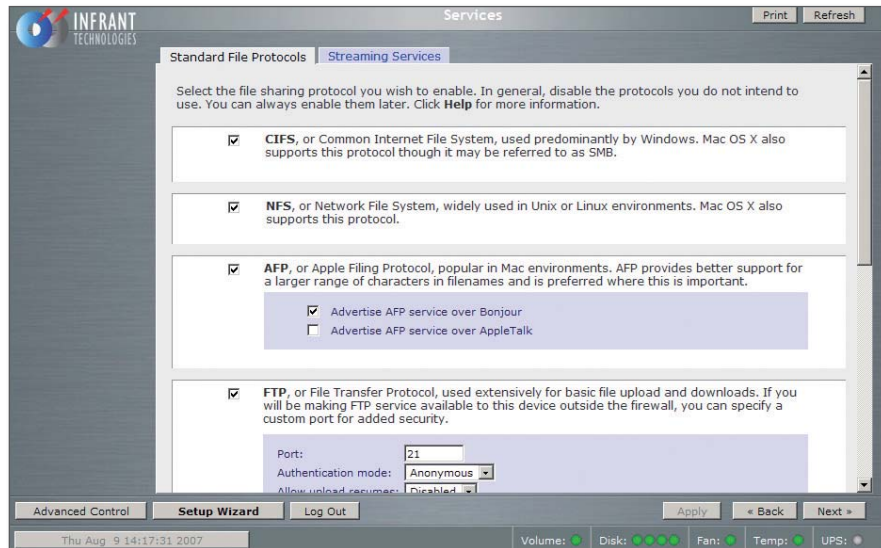
SNEAKY MUSIC DS

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'.

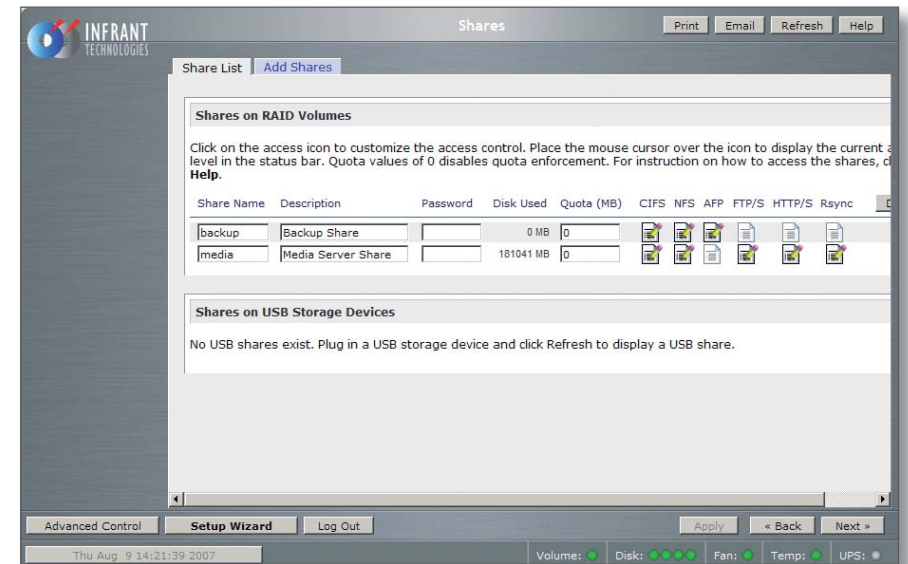


10. The 'Streaming Services' screen

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'...



SNEAKY MUSIC DS

INSTALLATION AND SETUP

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.

SNEAKY MUSIC DS

INSTALLATION AND SETUP

3 TWONKY MEDIA

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 TwonkyMedia website: <http://www.twonkymedia.com>. If you are using an Infrant ReadyNAS, download the software and installation manual from the Linn website: http://www.linn.co.uk/ds_software, then follow the steps below.

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.

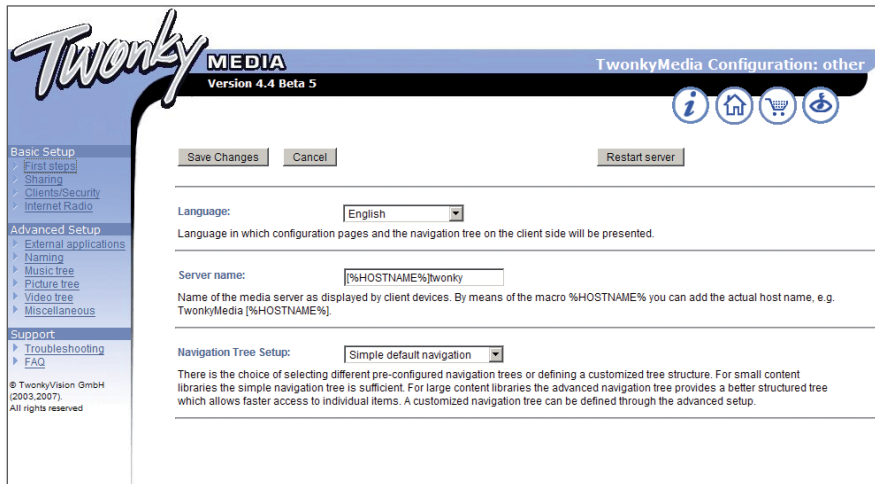
1. Log onto the NAS. Select 'Advanced Control'. From the menu on the left select 'Services', then 'Streaming Services'.
2. Ensure the 'TwonkyMedia' service checkbox is enabled.
3. Follow the http link to connect to the TwonkyMedia server and purchase a license from the online shop.

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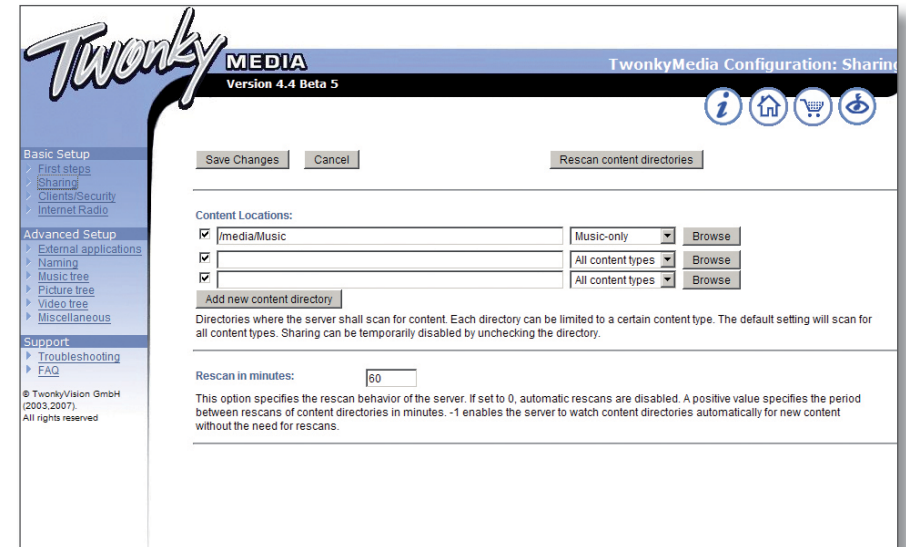
3 TWONKY MEDIA (continued...)

4. 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.

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



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

Set 'Rescan in minutes' to '60'.

Press 'Save Changes'.

SNEAKY MUSIC DS

INSTALLATION AND SETUP

3 TWONKY MEDIA (continued...)

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

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

The screenshot shows the Twonky MEDIA configuration interface. The header includes the Twonky logo, 'MEDIA', and 'TwonkyMedia Configuration: Naming Version 4.4 Beta 5'. A navigation menu on the left lists 'Basic Setup' (First steps, Sharing, Clients/Security, Internet Radio), 'Advanced Setup' (External applications, Naming, Music tree, Picture tree, Video tree, Miscellaneous), and 'Support' (Troubleshooting, FAQ). The main content area has buttons for 'Save Changes', 'Cancel', and 'Restart server'. The 'Standardize titles' checkbox is checked. Below it, there are fields for 'Folder prefix string' and 'All Tracks' (set to 'Total Tracks'). There are also fields for 'Playlists' and 'Last played'.

This screenshot shows the 'Naming' configuration page. The header is identical to the previous screenshot. The left navigation menu is expanded to show 'Naming' under 'Advanced Setup'. The main content area contains several sections with input fields: 'All Pictures' (Name for 'All Pictures' folder), 'All Videos' (Name for 'All Videos' folder), 'Music' (Name for Music root folder), 'Pictures' (Name for Pictures root folder), 'Videos' (Name for Video root folder), and '- ALL -' (Title of the - ALL - entry). Each section has a text box for the name and a note about server defaults.

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

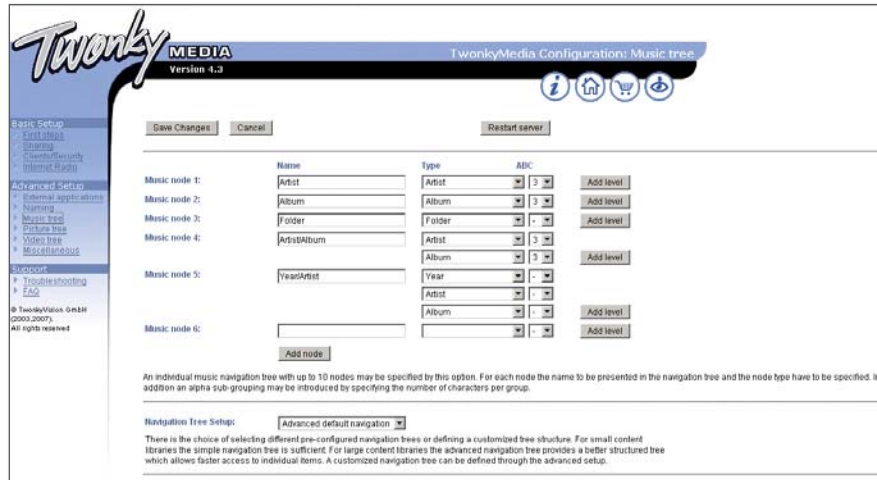
Press 'Save Changes'.

SNEAKY MUSIC DS

INSTALLATION AND SETUP

3 TWONKY MEDIA (continued...)

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



Note:

If you wish to add SHOUTcast Internet radio as a source, select Internet Radio from the Basic Setup menu, enable SHOUTcast and select the required genres.

SNEAKY MUSIC DS

INSTALLATION AND SETUP

4 RIPSTATION MICRO DS

Linn recommends the use of Ripfactory's Ripstation Micro DS for ripping CDs to FLAC and sending them to the NAS. This software is available free of charge from Ripfactory's website.

Ripstation Micro DS should be installed on the PC/laptop that will be used for ripping CDs.

Installation

Go to the Ripfactory website:
<http://www.ripfactory.com/rsmicrods.html>

Download and install the software.

Operation

Full details on using the software can be found in the Ripstation Micro DS User Manual, which you will find in the Ripfactory directory that has been added to the PC's Programs menu. A quick start guide is provided in the manual.

5 RIPPING A LARGE COLLECTION OF CDs

If you have 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, such as Ripfactory (<http://www.ripfactory.com/>).

SNEAKY MUSIC DS

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 point before continuing with this procedure (see the information supplied with the control point), this may take an hour or longer.

1. Update the control point with .NET 2.0, available at 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 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. The Linn GUI and Linn Config must be given firewall permissions to allow them to operate. If the PC/laptop uses the Windows Firewall the Linn software will be added automatically, providing you have admin rights on the PC/laptop. If a different firewall is used, consult the vendor's manual for instructions on how to add the Linn software to the list of permissions.

Note:

Each time you update to a new version of the Linn GUI or Linn Config

software, you must add the new software to non-Windows firewalls' list of permissions.

7. To configure the Sneaky Music DS, follow the instructions in *The Linn Config Application* section.

* You may wish to add a desktop shortcut to the Linn GUI to make it easier to find.

** Install the Linn Config on the PC/laptop you will use to rip CDs. This will allow you to make changes to the product's setup and run the diagnostic tools.

SNEAKY MUSIC DS

INSTALLATION AND SETUP

7 SNEAKY MUSIC DS INSTALLATION

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

Unpacking

The Sneaky Music DS is supplied with the following:

- 2 x red, 2 x black BAF loudspeaker connectors
- mains lead
- 4 feet
- CD-ROM (contains system software, installation manual and owner's manual)

We recommend that you retains all packaging in case you need to transport the Sneaky Music DS at a later date.

Positioning

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

- The unit should be placed on a flat, stable and rigid surface.
- Allow at least 4" (10 cm) free space above and at each side of the unit for air circulation.
- Do not position the unit where sunlight can shine (whether directly, diffused or reflected) on its front surface 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 directly adjacent to, sources of heat such as radiators, other power amplifiers etc. Nor should it be enclosed in a cabinet with such devices.

SNEAKY MUSIC DS

INSTALLATION AND SETUP

7 SNEAKY MUSIC DS INSTALLATION (continued...)

Back panel



- 1. ETHERNET**
For connecting the unit to the network switch
- 2. FALLBACK**
Used when reprogramming the unit
- 3. RS232 1 - 2**
Currently not in use
- 4. RC5 ACCESSORY**
For connecting the unit to a Linn Knekt RCU or Basik 3 IR
- 5. DIGITAL AUDIO OUTPUT**
One SPDIF and one TOSLINK output for connection to a device with digital input capabilities
- 6. ANALOGUE AUDIO OUTPUT**
For connection to a pre-amplifier
- 7. SPEAKER OUTPUT**
For connection to loudspeakers
- 8. EARTH GROUND**
For connecting the unit to an earthing terminal if no mains earth is available
- 9. Mains power inlet**

SNEAKY MUSIC DS

INSTALLATION AND SETUP

7 SNEAKY MUSIC DS INSTALLATION (continued...)

Connecting to the mains supply

The Sneaky Music 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.



Amplifier protection

The Sneaky Music DS features two methods of protecting its internal power amplifier from damage.

Short-circuit protection

If the speaker outputs are accidentally short-circuited, the power amplifier will shut down instantly and will remain in that state until the short-circuit is rectified.

Over-temperature protection

If the power amplifier's temperature rises above its safe operating limit, it will cease operation until the temperature drops to a safe level and will then automatically resume.

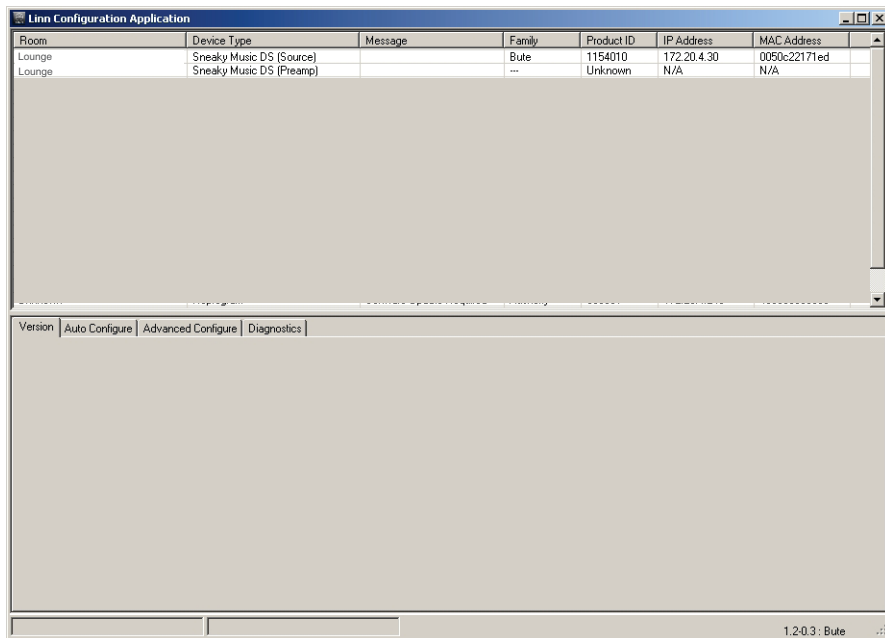
SNEAKY MUSIC DS

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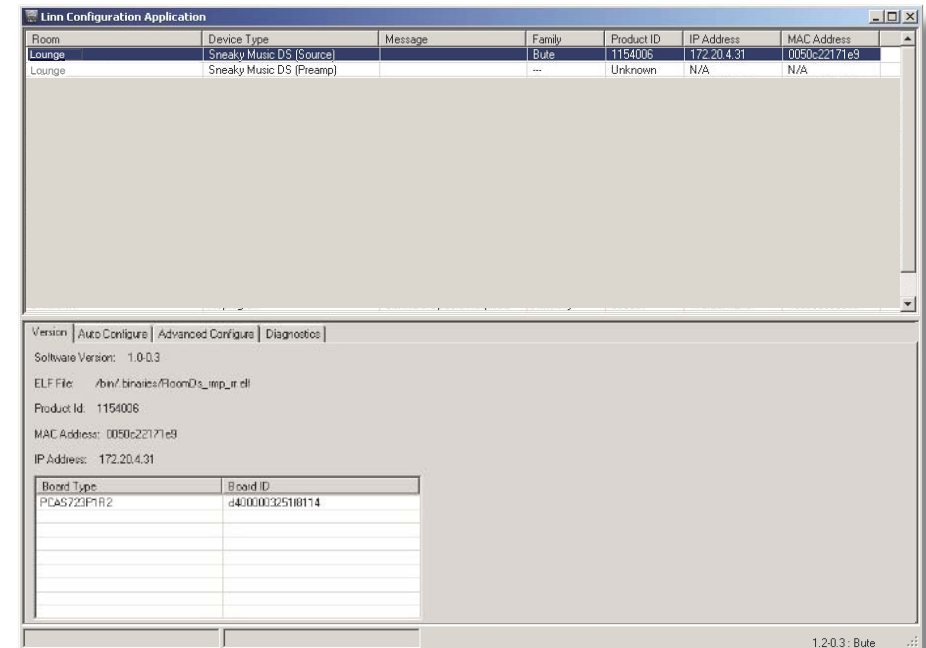
8 THE LINN CONFIG APPLICATION

The Linn Config application is used to configure the settings on the Sneaky Music DS.

1. Switch on the Sneaky Music DS.
2. Launch the Linn Config.



3. Highlight the 'Sneaky Music DS (Source)' and wait until the Linn Config connects to the unit. The 'Version' tab contains information on the Sneaky Music DS for use by Linn Service personnel.



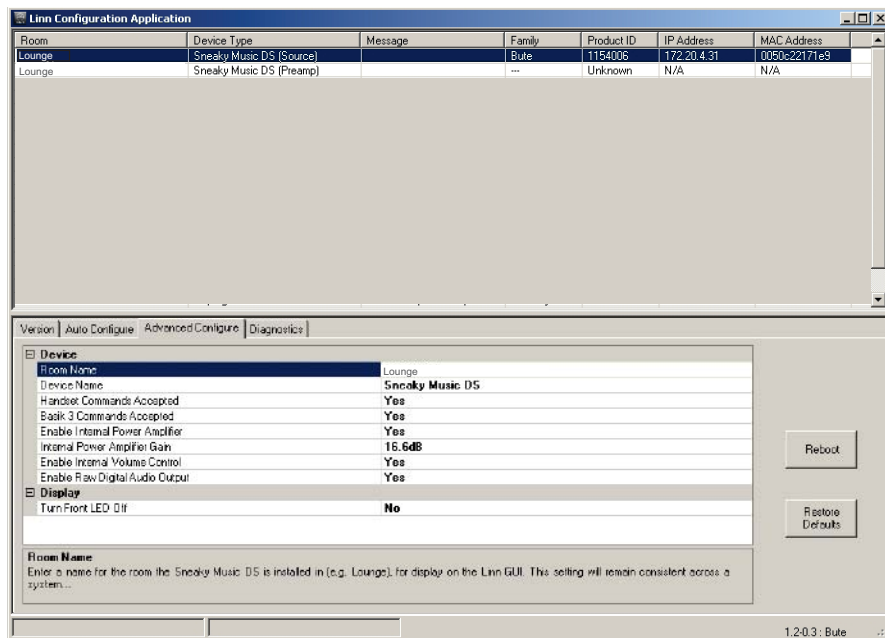
SNEAKY MUSIC DS

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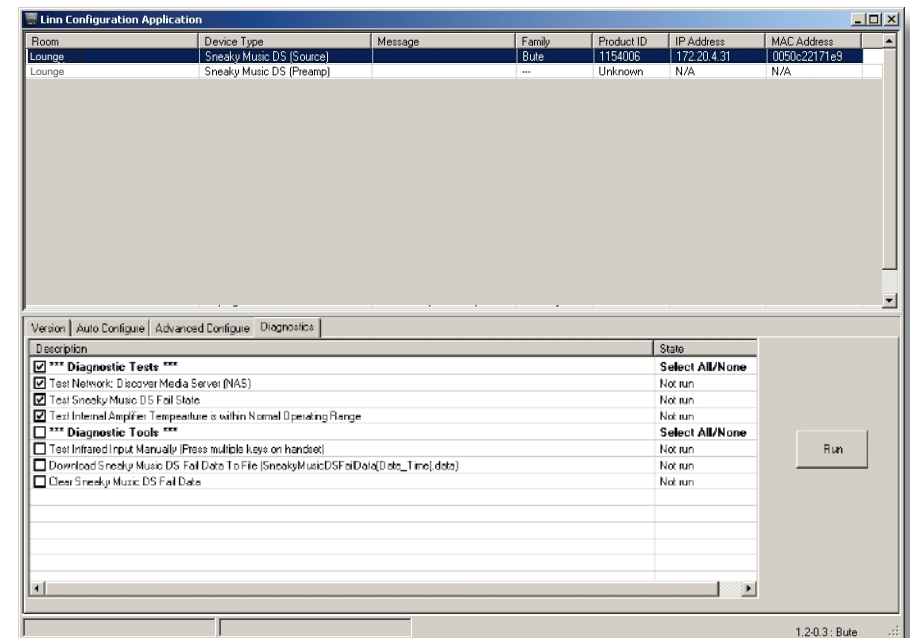
8 THE LINN CONFIG APPLICATION (continued...)

4. Select the 'Advanced Configure' tab. On this screen you are able to customise aspects of the configuration, for example you may want to change the 'Room Name' or 'Device Name'. The 'Internal Power Amplifier Gain' option is for use if you require more volume (you may want to increase the setting if using the Sneaky Music DS in a large room).

Note: If you are bi-amping the Sneaky Music DS by using the internal power amplifier and an external Linn power amplifier, set the 'Internal Power Amplifier Gain' option to '28.6dB'. Other settings will cause an imbalance in the volume from the speaker drivers.



5. The 'Diagnostics' tab contains a number of tests and tools you can use for troubleshooting problems.

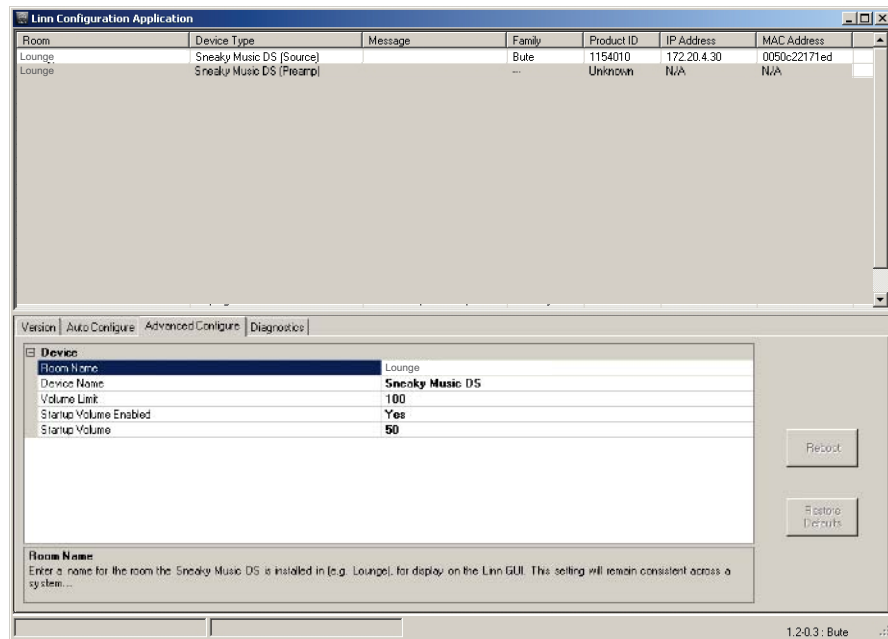


SNEAKY MUSIC DS

INSTALLATION AND SETUP

8 THE LINN CONFIG APPLICATION (continued...)

- From the top window select 'Sneaky Music DS (Preamp)'. On the 'Advanced Configuration' tab you will see the current pre-amplifier settings for the unit. Change the settings, if required.



SNEAKY MUSIC DS

INSTALLATION AND SETUP

9 FINAL STEPS

This section describes the final steps involved in getting your Sneaky Music DS system up and running.

1. Turn on the Ethernet switch and the Wireless Access Point.
2. Turn on the NAS and wait for it to finish booting.
4. Turn on the Sneaky Music DS.
5. Turn on the wireless control point and start the Linn GUI.
6. Follow the instructions in the *Operation* chapter of the Sneaky Music DS owner's manual.

SNEAKY MUSIC DS

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10 TECHNICAL SPECIFICATIONS

Date of introduction	March 2008
Type	Network music player
Supported file types	WAV, FLAC, MP3
Audio sample rates	7.35 k, 8 k, 11.025 k, 12 k, 14.7 k, 16 k, 22.05 k, 24 k, 29.4 k, 32 k, 44.1 k, 48 k, 88.2 k, 96 k, 176.4 k, 192 k
Word depths	16 – 24 bits
Ethernet interface	100Base-T RJ45
Control protocol	Compatible with UPnP™ media servers, UPnP™ AV 1.0 control points
Local control	RS232 x 2 RJ11
Connector types	<ul style="list-style-type: none"> optical digital output TOSLINK coaxial digital output RCA phono line outputs RCA phono speaker outputs Inverted safety 4 mm BFA Sockets
Output impedance	<ul style="list-style-type: none"> line outputs 300 Ω speaker outputs 0.06 Ω
Output voltage	<ul style="list-style-type: none"> line outputs 2.8 V peak, 2 V rms (0 dBFS) speaker outputs 15 V peak, 10 V rms (0 dBFS, 16.6 dB gain, vol. 79)
Output offset	<ul style="list-style-type: none"> line outputs < 2 mV speaker outputs < 3 mV

Signal-to-noise ratio	
line outputs	Better than -120 dB
Channel balance	Better than +/- 0.2 dB
Channel separation	
line outputs	Better than -120 dB
speaker outputs	Better than -100 dB
Gain range	-80 dB to +20 dB
Gain resolution	1 dB
Unity gain volume	0 dB = volume 80
Dynamic range	120 dB
Damping factor	67
Signal level for clipping	415 mV rms (0 dBFS, +16.6 dB gain, vol. 79)
Harmonic distortion	< 0.03% at 1 kHz at 10 W
Load tolerance	Unconditionally stable into all loudspeaker loads
Frequency response	
– pre	2.5 Hz – 170 kHz (-3 dB)
– power	2.5 Hz – 48 kHz (-3 dB)
Speaker output voltage	15 V peak
Speaker output power	20 W into 4 Ω
Power consumption	
standby	10 W
operational	14 W
maximum continuous	120 W
Mains supply voltage	
(auto-ranging)	100 – 120 V ac (±10%) 50 – 60 Hz 200 – 240 V ac (±10%) 50 – 60 Hz

SNEAKY MUSIC DS

INSTALLATION AND SETUP

10 TECHNICAL SPECIFICATIONS (continued...)

Fuse	250 V, T1.6 A (not user replaceable)
Dimensions	345 mm (w) x 44.5 mm (h) x 274 mm (d) 13.6" (w) x 1.8" (h) x 10.8" (d)
Shipping dimensions	440 mm (w) x 115 mm (h) x 380 mm (d) 17.3" (w) x 4.5" (h) x 15.0" (d)
Weight	2.7 kg 6 lb
Shipping weight	3.4 kg 7.5 lb
Control	Remote controllable (handset not supplied)