Flashlog 8

PC-FLS8
Flashlog 8 Audio Logging
Software

Manufacturers of audio & video
products for radio & TV broadcasters

SONIFEX

This handbook is for use with the following product:
PC-FLS8 Flashlog 8 Audio Logging Software
Stock Code: 30-320
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Made in the UK by **SONIFEX**

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Flashlog 8 Introduction

General Description

Flashlog 8 is a 64-bit Windows application, taking advantage of today's powerful multi-core processors and growing storage capacities to push back the barriers on traditional line and radio capture logging. Included is the ability to record up to sixty-four stereo line channels, thirty-two stereo FM stations, thirty-two AM stations, four DAB / DAB+ digital radio ensembles and up to 32 internet radio streams. For the latter, Shoutcast, Icecast, Flash (RTMP) and HLS (HTTP Live Streaming) protocols are currently supported, with HE-AAC and MP3 audio encoding. Artist / title metadata is stored and displayed along with the audio. Axia, Wheatnet IP and Dante-based line inputs are also supported.

Windows Media 10 Professional audio compression provides near-CD quality recording of line and analog radio inputs for the entire logging period, while DAB/DAB+ transmissions and internet streams are recorded as raw data streams for decoding as audio, text and images on playback. Flashlog 8 also records and displays RDS programme information and RadioText on FM transmissions.

The number of recording days can be independently changed at any time on each line/AM/FM channel and DAB ensemble.

SNMP status monitoring and alarm traps are provided as standard on Flashlog 8.

Recorded audio can be played back locally and via a network connection using our Flashback application. Windows 7 / 8 /10 imposes a limit of twenty simultaneous connections, however this restriction is lifted in server versions of Windows, subject to CAL licences.

As well as normal stereo playback, a mode having mono programme on one channel and date and time announcements on the other can be selected. In addition, live monitoring of each of the inputs is available on the Flashlog PC.

Specifications

Recording time	7, 14, 28, 42, 90, 120, 180 days, 1 year or 2 years Independently field-adjustable on each channel or DAB ensemble Dependent on hard disc capacity
Maximum number of channels*	Analog or AES3: 64 stereo or 128 mono Analog radio capture: Up to 32 AM and/or 32 FM stations Digital radio capture: Up to 4 DAB/DAB+ ensembles Internet streams: Up to 32
Audio compression	Line inputs: 80kbps, 128kbps, 256kbps or lossless AM radio: 32kbps FM radio: 64kbps
Audio sampling rate	Line inputs: 48kHz AM radio: 22.05kHz FM radio: 48kHz
FM RDS logging	Programme service name and RadioText
Internet stream formats	Shoutcast, Icecast, Flash (RTMP), HLS MP3 or HE-AAC audio encoding
SNMP	Monitoring of input status and RDS/DLS/ internet text
Daylight saving adjustment Automatic (configurable in Windows)	

*Input combinations may be limited by the number of available PCIe slots on the motherboard.

System Requirements	
CPU	Intel Core 2 Quad-core or better
Memory	4GB minimum, 8GB recommended
Hard drive	500GB minimum, dependent on audio storage requirements
Video resolution	800x480 or better
Operating system	64-bit Windows 7 / 10 / Server 2008 R2 / Server 2012 R2

Optional Recording Requirements

Line Capture	Audio input device supporting 48kHz 16-bit stereo
AM Radio Capture	Sonifex PC-AM6-32
FM Radio Capture	Sonifex PC-FM6-32
DAB/DAB+ Capture	Sonifex PC-DAB1-4
Axia Livewire	Axia multichannel driver and licence
Wheatnet IP	Wheatnet PC driver and licence
Dante	Dante driver and licence
Skimming	Sealevel 8006e isolated digital input card

Installation

> **Important**
>
> **Flashlog should be the ONLY application installed on the PC. In order to perform real-time recording of multiple audio channels, it needs constant access to CPU resources and the hard drive storage.**
>
> **If anti-virus software is required, ensure that it NEVER scans the c:\ audio folder or performs periodic system-wide scans which throttle the PC. The Flashlog recorder is constantly writing to its audio files and cannot do this if they're being scanned.**

Setup Requirements for Storage Greater Than 2TB

1. If using a RAID card, create two logical drives, one of 200GB for the operating system (which must be set as bootable) and the other spanning the remainder of the drive space. Leave the latter unpartitioned as it will be set up later in the process.
2. If not using a RAID card, **you must use a motherboard that supports UEFI**. On the Boot Settings page of the BIOS, set the boot options to UEFI only and make sure your boot medium (DVD drive) and the hard drive are showing. Install Windows as normal, making sure that any existing partitions are deleted and then choosing the entire drive to install on.

Operating System Installation

Windows 7

1. Boot from the Windows DVD and begin the installation process.
2. Set the locality as appropriate for your location.
3. If using a RAID array with a separate 200GB logical drive for the operating system, install Windows on that.
4. Set the user name to "Flashlog" and the computer name to something appropriate for your network.
5. Set the password as required (don't leave it blank as this will disable networking).

6. Enter the Product Key.
7. Open Control Panel – Hardware and Sound – Power Options and set the Preferred Plan to "High Performance". It is important that Windows not be allowed to sleep when left unattended.
8. If there are separate logical drives for the operating system and audio data:
    a. Go to Administrative Tools – Computer Management – Disk Management and initialise Disk 1, selecting GPT.
    b. Right-click on the empty space on Disk 1 and create New Simple Volume.
    c. Select "Mount in the following empty NTFS folder", then click on Browse and create a new folder c:\Audio.
    d. Format this volume with the volume name set to "Audio".
9. Open Control Panel, go to Network and Sharing Center, click on Change Advanced Sharing Settings in the left-hand panel, turn on Network Discovery and File Sharing and turn off Password Protected Sharing.
10. Open Control Panel, go to Programs and select Turn Windows Features On or Off. Scroll down to Simple Network Management Protocol (SNMP) and enable it. Click on OK and wait for the option to be installed. Refer to the later sections in this manual for further information on configuring SNMP.
11. Close down the machine and install any recording cards.

Windows 10

1. Boot from the Windows DVD and begin the installation process.
2. Set the language and time/currency format as appropriate for your location.
3. Click on Install Now, enter the Product Key and accept the licence agreement.
4. Choose Custom – Install Windows Only (Advanced).
5. If using a RAID array with a separate 200GB logical drive for the operating system, install Windows on that.
6. Under Get Going Fast, select Customise Settings and turn everything off.

If your network has a domain controller, you'll be asked "Who owns this PC?" If this is the case, proceed as follows:

7. Select My Organisation and click Next.
8. Select Join a Domain (note that you don't actually join a domain here as this step only creates a local account).
9. Set the local account user name to **Flashlog** and add an appropriate password.

If you weren't asked "Who owns this PC?" follow these steps instead:

7. When asked for your Microsoft account details, click on Skip This Step at the bottom of the screen.

8. Set the user name to **Flashlog** and add an appropriate password.

Windows will now complete its installation and present you with the desktop.

10. Click on Start, Settings then System.
   a. Select Power and Sleep.
      i.   Set Screen to Never.
      ii.   Set Sleep to Never.
      iii. Click on Additional Power Settings, select High Performance and set Turn off display to **Never.**
      iv.   Click on Choose What the Power Button Does, click on Change Settings that are Currently Unavailable then **untick** Turn on Fast Startup.
   b. Select Offline Maps and turn off Map Updates.

11. Click on Start, Settings then Privacy.
   a. Go to Feedback & Diagnostics and set Feedback to **Never** and Diagnostics to **Basic.**
   b. Go to Speech, Inking and Typing and turn Getting to know me off if it's enabled.

   c. Go to Background Apps and turn them all off.
12. Click on Start – All Apps – Windows System – Control Panel.
   a. If there are separate logical drives for the operating system and audio data:
      i.   Go to System and Security – Administrative Tools – Computer Management – Disk Management and initialise Disk 1, selecting GPT.
      ii.   Right-click on the empty space on Disk 1 and create New Simple Volume.
      iii. Select "Mount in the following empty NTFS folder", then click on Browse and create a new folder c:\Audio.
      iv.   Format this volume with the volume name set to "Audio".
   b. Go to Network and Sharing Center, click on Change Advanced Sharing Settings in the left-hand panel, turn on **Network Discovery** and **File Sharing** and, under All Networks, turn off **Password Protected Sharing**. If any Flashback clients will be running on Windows XP, also Enable File Sharing for devices that use 40- or 56-bit encryption.
   c. Go to Programs and select Turn Windows Features On or Off. Scroll down to Simple Network Management Protocol (SNMP) and enable it. Click on OK and wait for the option to be installed. Refer to the later sections in this manual for further information on configuring SNMP.
13. Close down the machine and install any recording cards.

Server 2008-R2 Additional Steps

1. Install Features – Desktop Experience.
2. Open Service Manager, right-click on Windows Audio, select Properties and set Startup to Automatic.
3. Repeat for the Windows Audio Endpoint Builder service.

Server 2012-R2 Additional Steps

4. Enable the following features on the server before installing Flashlog:
- Media Foundation
- SNMP Service
- Remote Server Administrative Tools –
  - Feature Administration Tools
  - SNMP Tools (**NOT** SNMP Server Tools!)
5. Open Service Manager, right-click on Windows Audio, select Properties and set Startup to Automatic.
6. Repeat for the Windows Audio Enpoint Builder service.

Driver Installation

1. After logging on, install the drivers for the audio input devices.
2. For Sonifex cards (Auricon, Digitorc or Radcap), cancel any "driver not found" messages, right-click on each new device and select Update Driver Software, pointing it to the appropriate driver location.
   a. Check the Configuration tab on each driver Properties page, and make sure any Auricon, Digitorc and FM Radcap cards are set to Stereo and AM Radcap cards are set to Single. Set each ensemble channel on the DAB Radcap card. More information on input card configuration is in Sections 4 and 5 of this manual.
   b. The AM, FM and/or DAB+ radio capture cards, if fitted, each require an external antenna. A standard 50-ohm BNC connector is provided on the cards for this. If the antennas are mounted in an elevated position, it is recommended that external lightning protection be installed. Do not place the receiving antennas close to any computer, telecommunications or electrical equipment that may cause interference to reception.
3. For other manufacturers' input devices, follow their instructions for installing the drivers.
4. Right-click on the loudspeaker symbol in the bottom right-hand corner of the screen, select Recording Devices and, on those line input devices you want to record from, click on the Advanced tab and set the Default

Format to 2 channel 16 bit 48000 Hz. Disable any devices that you don't want to record from. The Flashog recorder will ignore any devices set to 44.1kHz sampling (or any rate other than 48kHz).
5. Right-click on the loudspeaker symbol in the bottom right-hand corner of the screen, select Playback Devices and set the default playback device to the required output.

Flashlog Software Installation

1. Run Install8.exe to install Flashlog 8, setting the default number of logging days and default line compression bit rate. Enter the activation key obtained from Sonifex or your distributor after quoting the Hardware ID, then click on Install.
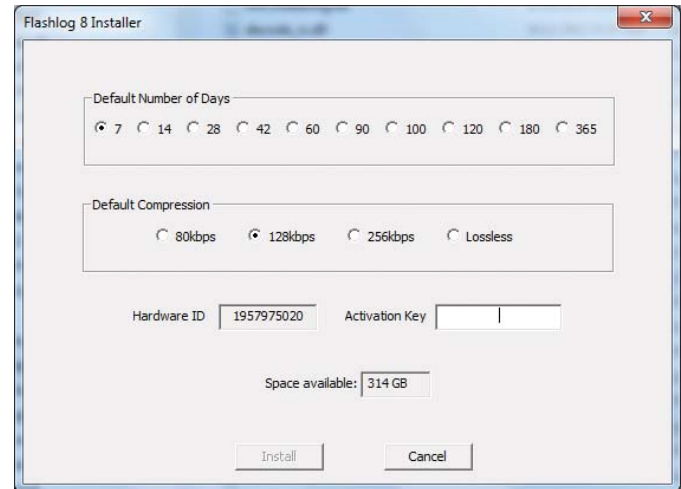

Fig 2-1: Flashlog Installation Page

2. After the installation has completed, reboot the system. Once logged in, the Flashlog 8 application should start. If at any future time the activation key needs to be changed, close the Flashlog application and then run c:\logger\Flashlog8.exe /a which will force it to prompt for a new key.

3. Click on the Sources tab and configure the recording sources as required.

4. If you need to customise the number of logging days on any of the sources or ensembles, close the Flashlog 8 application and restart it using Run As Administrator.

5. Allow the system to run for at least two minutes before testing the Playback functions.

6. Create a share on the c:\audio folder and add the user Everyone with Permission set to Reader. Click on Share to apply the change.

7. If a separate volume for the audio data was created in the operating system installation (for a drive size greater than 2TB), open Administrative Tools – Services and stop the Flashlog 8 Recorder service. Open Computer Management – Disk Management and right-click on the Audio volume in the upper window. Select Properties, click on the Security tab and edit the permissions to give "Everyone" Read & Execute, List Folder Contents and Read access to the volume.

8. Test that the system can be accessed from Flashback 8 if this will be used on your network (note that any earlier Flashback installations on your network will need to be updated to Flashback 8)

Notes

1. Each DAB+ ensemble must be set to the required channel from Device Manager. The card is listed under Sound, Video and Game Controllers, and the selection is made from the drop-down list of channel numbers under each ensemble on the card's Configuration tab. **Do not set multiple ensembles to the same channel!**

2. When Flashlog 8 first receives a previously unseen DAB ensemble, it will set the number of logging days to the default value if there's sufficient hard drive space, otherwise it will be set to zero. To change the number of days, close the Flashlog 8 application, go to Start – All Programs – Startup, right-click on Flashlog8 and select Run as administrator. Set the required logging days on each ensemble, click on Apply and wait for the system to reboot.

3. The Flashlog playback software always uses Windows' default audio output device, which may be set by right-clicking on the loudspeaker symbol in the bottom right-hand corner of the screen, selecting Playback Devices, clicking on the desired device and then clicking Set Default.

4. The Flashlog 8 recording software runs as a service and will operate without any user logged on. The local playback and configuration software will automatically start when the "Flashlog" user is logged in. This account name and/or password can be changed, or additional accounts created, without impacting on the operation of Flashlog.

5. The free Flashback 8 application can be installed on other workstations on your network to allow access to the Flashlog's recordings. **Note that only Flashback 8** (or later versions) can be used with Flashlog 8 – don't try to use earlier versions of Flashback! Flashback 8, however, is backwards compatible with Flashlog 5, 6 and 7, and so can be used on networks having a mixture of Flashlog models.

6. When Flashlog is operating with a Trial activation key, a message will appear for ten seconds every half hour advising of the number of days remaining. Click on the Activate Now button to permanently activate the software. If, after the fourteen day trial period has expired, the software hasn't been permanently activated, all recordings will be erased and all sources and ensembles will be set to zero days.

Setting the Date and Time

Flashlog 8 uses UTC for its internal time-stamping, so it's important that the time zone, daylight saving options and the current date and time are set correctly. To make these adjustments, right-click on the clock display at the bottom right-hand corner of the Windows desktop and select **Adjust Date/ Time.**

For areas where daylight saving is used, this will normally have been set up by Windows. Daylight saving time adjustment is automatic and is based on the **Timezone** settings in the Windows **Date/Time** setting. This setting can be altered if required.

Should it be necessary to alter the start and/or end dates for daylight saving, a utility called **Tzedit** is supplied. This may be found by clicking on **Start – Programs – Utilities**. **Please note** that after changing the timezone parameters it is essential to then go back to the **Date/Time** setting, click on a different **Timezone**, then go back to intended **Timezone** setting and click on **Apply**. This is because Windows stores the parameters for the current time zone separately in the Registry from the list of timezones that **TzEdit** works with, and this is not automatically updated by **Tzedit**.

Note that promulgated changes to daylight saving are normally included as part of Microsoft's critical updates, so as long as these updates are regularly applied, it should not be necessary to manually alter the daylight saving settings.

Synchronising the Date and Time from the Internet

When a computer running Windows 7 is a member of a domain, its clock is automatically synchronised to the domain's file server if the server supports this. For information on setting up a domain time service, refer to Microsoft Knowledge Base articles Q216734 and Q314054. By default, synchronisation occurs on boot-up and then once every eight hours.

If the machine has access to the Internet and is not a member of a domain, the time synchronisation can be set up by right-clicking on the clock display at the bottom right hand corner of the screen, selecting **Adjust Date/Time** and then clicking on the **Internet Time** tab. The default time server is time.windows.com, but many others are available. We recommend pool.ntp.org which is a dynamic pool of registered NTP servers. Further information can be found at www.ntp.org.

The protocol used for time-setting is User Datagram Protocol (UDP) and the port number is 123. If there's a proxy server between the Flashlog machine and the internet then it will probably be necessary to set up specific access for this on the proxy server.

Shutdowns

It is not advisable to remove power from the machine while it is running as doing so may corrupt the hard drive. Pressing the front panel power switch or selecting Shut Down from the Windows Start menu will initiate an orderly closedown of both the operating system and the Flashlog 8 Recorder service.

Maintenance

The software has been extensively tested and should be reliable and capable of running indefinitely without intervention. If a problem does occur and it is necessary to reboot the system, use the above shutdown procedure.

Other possible causes of malfunction are power interruptions and disturbances. **We strongly recommend that a UPS be fitted to the machine. These are not very expensive and provide a high degree of insurance against loss of data.**

From time to time software upgrades may be released. Instructions for installing such upgrades will be supplied with the upgrade. Check the Sonifex website (www.sonifex.co.uk) for the latest upgrade and documentation. Check also for updated drivers for the Auricon, Digitorc and Radcap cards.

Alarm Monitor

Alarm conditions, as selected in the Sources window, cause a yellow dialog box to appear when triggered, along with an alarm sound played through the default audio output device. Clicking on OK masks the alarm until its cause has been rectified.

The SNMP extension agent in Flashlog 8 provides remote monitoring of the Flashlog input status and any DLS / RDS / internet text. See the SNMP section of this manual for more information.

Operation

Flashlog 8 consists of two components: Recorder8.exe which runs as a service under Windows' LocalSystem account, and Flashlog8.exe which provides local playback and configuration for the logged-in user. Because the recorder runs as a service, recording will continue even if no user is logged on.

Across the top of the Flashlog 8 window are three tabs: **Player, Sources** and **About**. The About tab displays version and copyright information, while the other two will now be described in detail.

Sources

The Sources tab shows the audio inputs to the system, these being line inputs (physical and/or IP-based), radio capture inputs (AM, FM and DAB/DAB+) and internet streams. The inputs are always sorted to show the line inputs first (in socket order), followed by the AM capture channels, FM capture channels, DAB/DAB+ ensembles and finally internet streams.

When making any changes to the source settings (other than the Alarm checkbox), it is necessary to click on the **Apply** button at the bottom of the window before the changes take effect. Pending changes are shown in red until either the **Apply** button is pressed or they are discarded by clicking the **Cancel** button.

To guard against inadvertent erasures, changing the number of logging days requires the Flashlog application to be run with Administrator privileges. Close the player if it's currently open (this doesn't stop the recorder), then go to Start – All Programs – Startup, right-click Flashlog 8 and select Run as administrator. Don't forget to close it again after you've finished!

When changing the number of logging days on any channel or ensemble, it is necessary for the system to perform a Windows restart, as the required renaming of folders can't take place if any of the contained files are open. There will be a delay of up to one minute before the restart occurs as the renaming takes place at the transition between the one-minute audio files.

When reducing the number of days on a channel or ensemble, be aware that this will cause those recordings beyond the end of the new range of days to be permanently erased. A warning message will be displayed when this is attempted.

Setting the number of days to zero will erase all recordings for that source or ensemble and hide it from the player. This is the recommended way to prevent logging of unwanted inputs. Setting a line source to Hidden or setting the frequency of an AM or FM station to zero will hide that source from the player, but audio data will continue to be recorded and take up drive space.

The following table shows the effect of hiding, zero-daying, removing hardware (physical inputs) or deletion (internet streams):

	Line	AM	FM	DAB	Internet
Hide / Zero Frequency	Continues to record but does not appear in player	Continues to record but does not appear in player	Continues to record but does not appear in player	N/A	N/A
Zero Days	Deletes all recordings but still in Sources window	Deletes all recordings but still in Sources window	Deletes all recordings but still in Sources window	Deletes all recordings but still in Sources window	Deletes all recordings but still in Sources window
Remove Hardware	Recording stops but existing audio remains indefinitely	Recording stops but existing audio remains indefinitely	Recording stops but existing audio remains indefinitely	Recording stops but existing audio remains indefinitely	Recording stops but existing audio remains indefinitely
Delete	N/A Set to zero days then remove hardware	N/A Set to zero days then remove hardware	N/A Set to zero days then remove hardware	N/A Set to zero days then remove hardware	Removed from Sources window and registry

Line Sources

Setting up line sources is the same for all types of line input, be it analogue, AES-3 or any of the IP-based systems (Axia, Wheatnet, Dante, etc.), with the exception that, for Axia inputs, GPIO is used in place of the optional hardware skimming contact closure inputs.

The line sources can each be configured as **Stereo**, **2 x Mono**, **1 x Mono** or **Hidden**. In **2 x Mono** mode, the left and right input connections (or channels in an AES3 or IP stream) are treated as two separate mono sources, each defining its own individual recording channel. In 1 x Mono mode, only the left input connection or channel is used. A **Hidden** input does not appear at all in the list of recording channels but is still recorded on the hard drives. Click on **Apply** to commit any changes.

The number of recording days for each input can be independently set from the dropdown list. The available options are adjusted according to the amount of space on the hard drive, including any other changes that might be currently selected. Setting the number of days to zero will remove all existing recordings for that channel and stop any further recording.

Up to four subcategories can be optionally created for line channels (see below for details on how to do this). The subcategory for each input is selected from the drop-down list.

Each recording channel can be given a descriptive name of up to twelve characters, and this name appears on the playback channel selection button on both the local playback screen and through Flashback. Enter the new name in place of the default "Line x" description and click on **Apply** to commit the change.

Line recording channels can be associated with "skimming" contact closure connections if the optional closure input card is fitted, or, in the case of Axia IP-based inputs, GPIO is enabled. This is typically used to indicate when the studio microphone is active, allowing live content to be quickly found on playback. There are sixteen closure inputs, labelled **A0..A7** and **B0.. B7** (corresponding to the pin-out of the contact closure card shown in the Appendix). A dropdown list on each channel allows it to be associated with a closure connection, and a single connection may be associated with more than one audio channel if need be. Once a skimming input has been set (and the **Apply** button clicked), the **Skimming** indicator will light whenever the closure input is activated, and the closure events will be logged along with the audio.

The recording level of each line source can be adjusted using the fader control below the level meter. The level should be set to keep the peaks reasonably high without reaching full scale.

The audio compression rate can be selected from the radio buttons along the bottom of each source window. The available rates are 80kbps, 128kbps, 256kbps and Lossless, however, should there be insufficient hard disc capacity, some of the higher rates may be greyed out.

Audio failure alarms can be enabled by setting the Alarm checkbox. The alarm is triggered if audio is continuously absent for a period set by the audio timeout slider in the SNMP setup dialog box.

Fig 3-1: Line Sources Page

Line Channel Subcategories

Up to four subcategories for line channels can be created, allowing channels to be grouped or to support configurations requiring more than 32 playback channels. Click on the Configure button at the bottom of the Sources window to open the Source Configuration dialog box.

In the Line Input Subcategories section, click on **Insert** to create a new category and type its name into the list box. Click twice on an entry to edit its name, pressing the **Enter** key to conclude the editing. To remove an entry, click on the name and then the **Delete** button.

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Once all the categories have been created, click **OK** and then, in the Sources window, use the Subcategory drop-down list on each line channel to assign its subcategory. Any unassigned sources will be placed in the first subcategory by default.
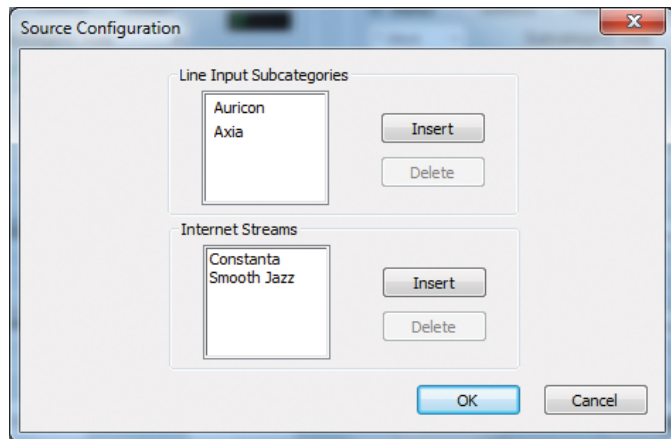

Fig 3-2: Source Configuration Page

Axia GPIO

For the special case where line inputs are Axia Livewire sources, the skimming option is replaced with a similar function using GPIO. Clicking on the GPIO button opens a configuration dialog box where GPIO event logging is set up. The source address can either be the IP-address/Port combination of a GPIO source when operating in snake mode, or a Livewire channel number when operating in multicast mode.
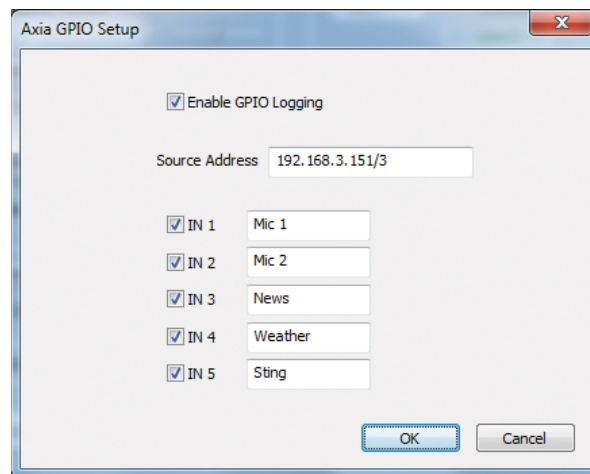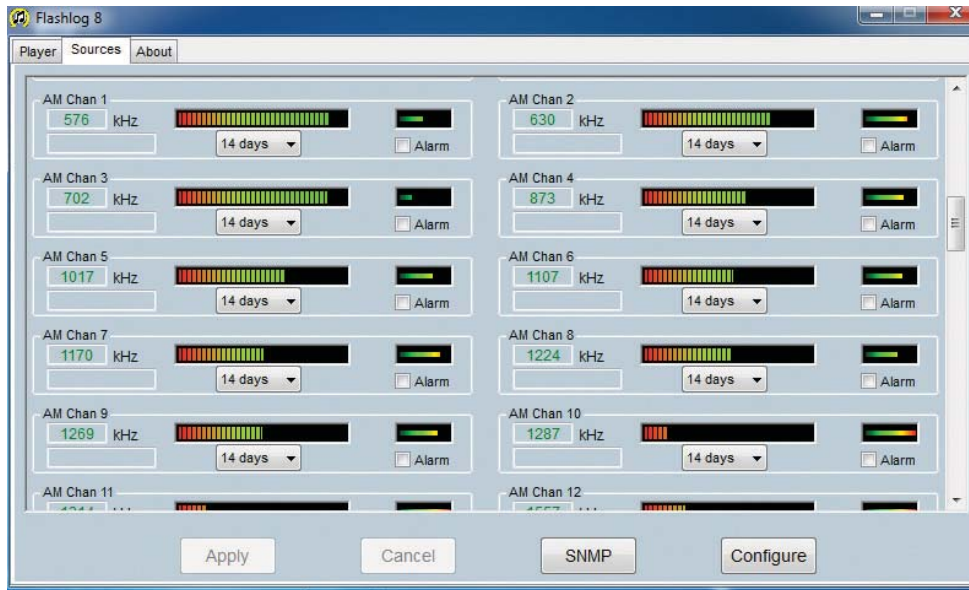

Fig 3-3: Axia GPIO Setup Page

Fig 3-4: AM Radio Capture Sources Page

AM Radio Capture Sources

The configuration panel for each AM radio capture source includes a frequency edit box and a received signal strength indicator, the latter being useful when orientating the receiving antenna. The frequency is entered in kilohertz and must lie within the range 500kHz to 1710kHz. Changes to frequencies do not take effect until the Apply button is clicked.

A frequency of zero can also be entered, having the effect of hiding the channel from the playback screen, but be aware that this channel will still consume space on the hard drives. To completely disable a channel, set the logging days to zero. A descriptive name or call sign can be added to each station in the field below the frequency, which is used to identify the station on the playback screen. If no name is entered, the radio capture channels are identified with a prefix of **AM** followed by the frequency.

The number of logging days for each AM station can be selected from the drop-down list. The available options are adjusted according to the amount of hard drive space, taking into account any other changes that may be being made.

Audio failure alarms can be enabled by setting the Alarm checkbox. The alarm is triggered if carrier or audio is continuously absent for the period set in the SNMP configuration dialog box.
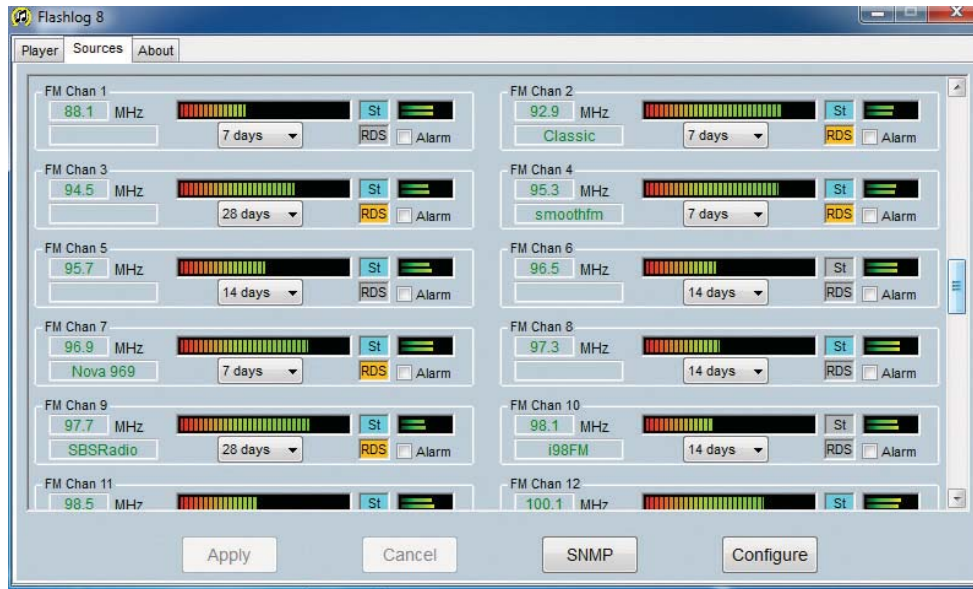
FM Radio Capture Sources

Fig 3-5: FM Radio Capture Sources Page

The configuration panel for each FM radio capture source includes a frequency edit box, a stereo pilot indicator, an RDS indicator and a received signal strength indicator, the latter being useful when orientating the receiving antenna. The frequency is in megahertz with a range of 87.5MHz to 108.5MHz. Changes to frequencies do not take effect until the **Apply** button is clicked.

A frequency of zero can also be entered, having the effect of removing the channel from the playback screen, but be aware that the channel still consumes hard drive space. To completely disable a channel, set its logging days to zero.

A descriptive name or call sign can be added to each station in the field below the frequency, which is used to identify the station on the playback screen. If no name is entered, the radio capture channels are identified with a prefix of **FM** followed by the frequency.

If RDS is present, the transmitted programme name is used in place of the default "FM <frequency>" channel name on the Player buttons. This name can be overridden if need be by typing in a new name and clicking Apply, while deleting the name and clicking Apply will reactivate the RDS-derived name.

Audio failure alarms can be enabled by setting the Alarm checkbox. The alarm is triggered if carrier or audio is continuously absent for the period set in the SNMP configuration dialog box.

The number of logging days for each FM station can be selected from the drop-down list. The available options are adjusted according to the amount of hard drive space, taking into account any other changes that may be being made.

DAB/DAB+ Radio Capture Sources

Each DAB/DAB+ ensemble displays the spectrum, RF signal level, phase reference correlator level and uncorrected error count. The spectrum ideally should have a flat top with a single null point at the centre, although in practice there may be some ripple across the top due to multipath reception. The DAB signal is designed to tolerate multiple reception paths up to the period of the guard interval (246μs), so error-free reception can still be readily achieved even under conditions of quite severe multipath distortion. The receiving antenna should be adjusted for maximum phase reference correlator level as well as minimum ripple and noise on the spectrum. Make sure the antenna is oriented correctly (vertically or horizontally) according to the polarisation of the transmitter.

The number of logging days for each DAB ensemble can be selected from the drop-down list. The available options are adjusted according to the
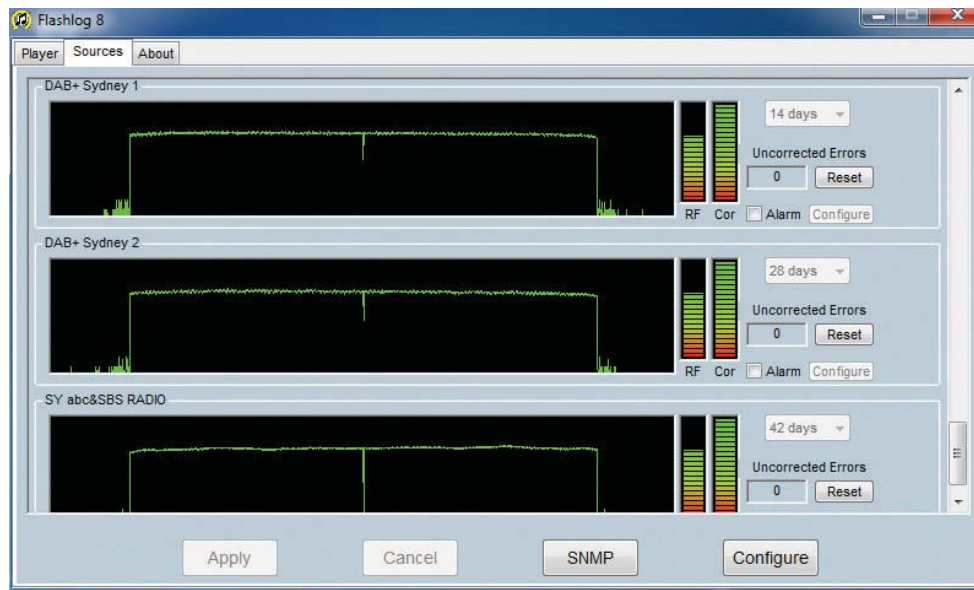

Fig 3-6: DAB/DAB+ Radio Capture Sources Page

amount of hard drive space, taking into account any other changes that may be being made. Note that the logging days can only be set on an ensemble-wide basis and not for individual services, due to the way the ensemble data stream is recorded. Setting the number of days to zero will erase all existing recordings for that ensemble and stop any further recording of it.

The uncorrected error counter should ideally remain at zero, although the occasional error can be expected in practice. An excessive error rate is indicative of poor reception, and a better antenna location or masthead amplifier may be required. The error counter can be set back to zero by clicking on the Reset button.

Failure alarms can be enabled by setting the Alarm checkbox. The alarm is triggered if DAB synchronisation is lost, or if an active sub-channel does not contain a valid data stream. Click on the Configure button to enable sub-channel alarms on all services or just specific ones.

Additionally, loss and recovery of DAB synchronisation events are recorded in daily log files in the c:\audio\alarms folder (part of the "Audio" read-only network share).

Fig 3-7: DAB Alarm Configuration Page

Internet Stream Sources

Flashlog 8 currently supports the logging of internet radio streams using Shoutcast, Icecast, Flash (RTMP) or HLS protocols with either HE-AAC or MP3 audio encoding. Additional protocols may be supported in future releases.

Each stream shows the stream name, URL, status, bit rate, encoding and audio level, with a drop-down list box for setting the number of logging days (requires Administrator rights to access) and an Alarm checkbox.

To create a stream recorder, click on the Configure button at the bottom of the Sources window.

Click on the Insert button to create a new stream, then enter the stream name (maximum twelve characters), which will appear on the player button, and the stream's URL. For Flash streams, the rtmp:// prefix must be used, but for Shoutcast / Icecast / HLS streams, the http:// prefix is optional. The default port is 1935 for RTMP or 80 for Shoutcast / Icecast / HLS; if a different port is used it must be included in the URL.

On version 8.03 and later, the time zone can also be set for a stream if it differs from that of the logger. On playback, the date and time will be displayed in that time zone.

A stream's name or URL can be edited by double-clicking on the stream in the Source Configuration dialog box, or stream can be deleted by selecting the stream in the list and clicking on the Delete button. **Note that a stream must be set for zero recording days before it can be deleted, otherwise the Delete button is greyed out.**

Once a stream is created and OK is clicked, the stream will appear at the bottom of the Sources window (it may be necessary to scroll down to see it). The Recording Days dropdown list will be empty until the stream connects and the data rate can be determined, at which point the list will be populated depending on available hard drive space, while the stream will disconnect and show its status as IDLE. **The number of days is initially**
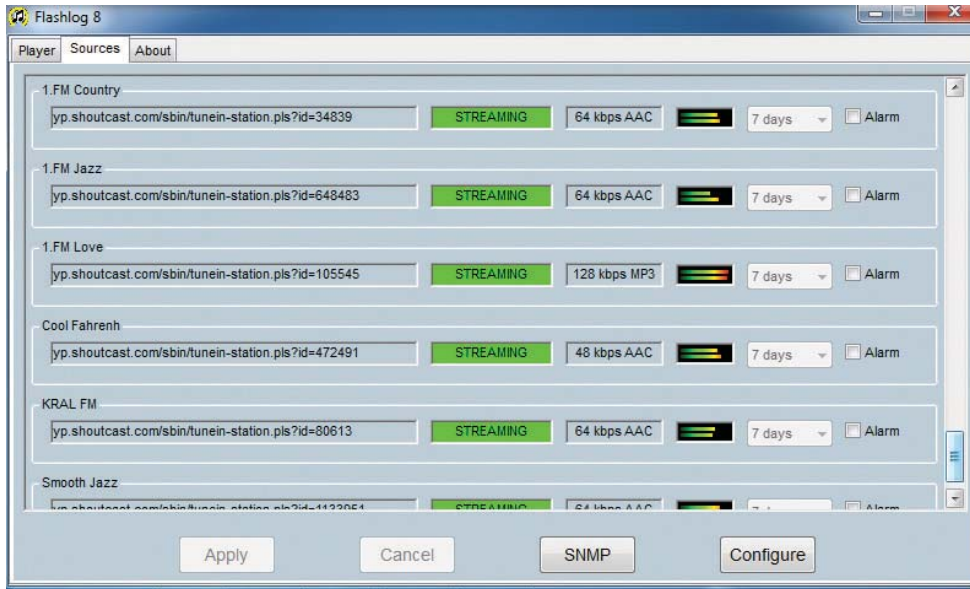
Fig 3-8: Internet Stream Sources Page

set to zero and must be manually set to a non-zero value before any logging will begin (you will need to run the Flashlog application with Administrator rights to do this).

In the case of an HLS stream carrying multiple bit rates, a dropdown list of the rates will appear. It is necessary to select a rate before the available range of logging days can be determined. If you need to log more than one rate, create multiple instances of the stream, each set to a different rate.

Warning: Even low bit-rate streams download a substantial amount of data when continuously logging. For example, a 48 kbps stream will download approximately 518 MB per day, or 16 GB per month. Make sure your internet access plan can support the amount of downloading required.

To stop a stream from recording while preserving the audio that's previously been recorded, click on the Configure button, double-click on the

stream name in the list and set the URL field to blank. After clicking on OK, the stream will disconnect and remain in the disconnected state. If at a later date the stream audio can be deleted, set the days to zero and then, after the reboot, delete the stream from the Configure dialog box.

To avoid unnecessary CPU overhead, stream audio isn't fully decoded in the recorder, instead the audio level indication is derived directly from the compressed frames. Due to limitations with this technique, streams using parametric stereo in AAC or joint stereo in MP3 will show the same level on left and right even if the actual audio levels on each side are different. Full stereo decoding is, however, implemented in the Flashlog player and in Flashback.
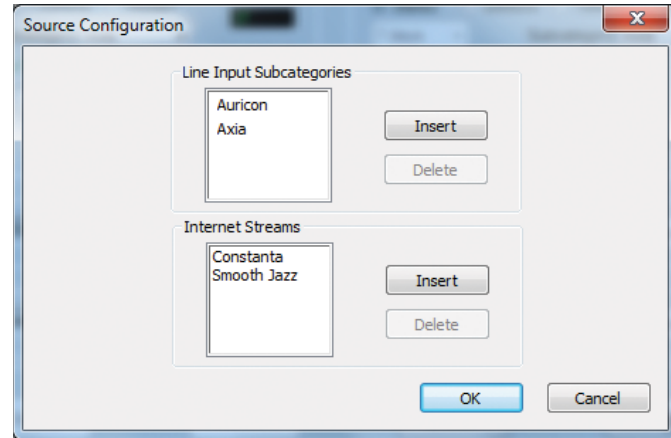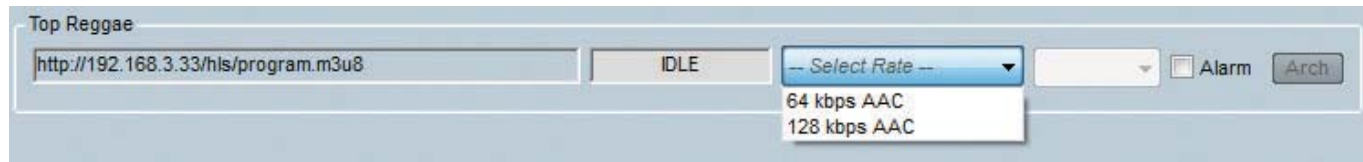

Fig 3-9: Source Configuration Page

Fig 3-10: Multi-rate HLS Streams

SNMP

Flashlog 8 provides SNMP monitoring of line input, AM station, FM station, DAB and internet services. Traps can also be selectively enabled, mirroring and extending the existing alarm functions. An SMIv2 MIB file is provided for integration with your SNMP management software.

The hierarchy is illustrated below (the full tree is shown in Appendix B).
innescorp (1.3.6.1.4.1.38558)
  products (2)
    flashlog8 (2)
      flashlog8LineStatus (1)
      flashlog8AmStatus (2)
      flashlog8FmStatus (3)
      flashlog8DabStatus (4)
        flashlog8EnsembleTable (1)
        flashlog8BroadcasterTable (2)
        flashlog8BroadcasterServicesTable (3)
        flashlog8EnsembleServicesTable (4)
      flashlog8InternetStatus (5)

The **flashlog8LineStatus** table contains rows showing the subcategory name, channel name and audio status for each channel.

Channel No.	Subcategory Name	Channel Name	Audio Status
1			
2			
3			
..			

The **flashlog8AmStatus** table contains rows showing the name, frequency, carrier presence and audio presence for each station.

Station No.	Name	Frequency	Carrier Status	Audio Status
1				
2				
3				
..				

The **flashlog8FmStatus** table contains rows showing the name, frequency, carrier presence, audio presence, pilot presence, RDS presence and RDS Radiotext for each station.

Station No.	Name	Frequency	Carrier Status	Audio Status	Pilot Status	RDS Status	RDS Text
1							
2							
3							
..							

For DAB, the **flashlog8EnsembleTable** contains rows showing the name, ID number, summary status, phase correlator status and time-of-day clock status. The phase correlator status indicates that the receiver is locked to the ensemble, while the clock status checks that the local and UTC times being broadcast are within five minutes of the system's clock (which should be synchronised to an NTP time server if this function is to be used).

Card no.	Ensemble Name	Ensemble ID	Summary Status	Correlator Status	Clock Status
1					
2					
3					
4					

The **flashlog8BroadcasterTable** groups services by broadcaster and contains rows showing the name, summary status, AAC/MP2 stream status and audio status for each broadcaster. The stream status is set to false if there is an invalid header or the stream is null, while the audio status goes false if the nominal audio level (derived from the Global Gain parameter in the header as described below) remains below the threshold for longer than the timeout period.

Broadcaster No.	Name	Summary Status	Stream Status	Audio Status
1				
2				
3				
..				

The **flashlog8BroadcasterServices** table lists the individual services within each broadcaster, indexed by the broadcaster and the Service Identifier number (SId), with rows showing the service name, whether it is active, the summary status, AAC/MP2 stream status, audio status, DLS presence, MOT presence and DLS text for each service. A service is considered active if it's currently listed in its ensemble's Fast Information Channel (FIC) and has an audio sub-channel associated with it.

Broadcaster No.	SId	Name	Active	Summary Status	Stream Status	Audio Status	DLS Status	MOT Status	DLS Text
1	11b0								
2	11b2								
3	11b7								
..	..								

The **flashlog8EnsembleService** table shows all the services within each ensemble, indexed by the card number and each service's SId, with rows showing the service name, whether it is active, the summary status, AAC/MP2 stream status, audio status. DLS presence, MOT presence and DLS text.

Card No.		SId	Name	Active	Summary Status	Stream Status	Audio Status	DLS Status	MOT Status	DLS Text
1		11b0								
2		11b2								
3		11b7								
4		..								

The **flashlog8InternetStatus** table contains rows showing the name, URL, bit rate, audio encoding, connection status, audio presence and artist/title metadata for each stream.

Stream No.	Name	URL	Bit Rate	Encoding	Connection Status	Audio Status	Metadata
1							
2							
3							
..							

In all cases, the normal status is indicated by the value true (1) while an abnormal status is indicated by false (2). When traps are enabled, a trap is sent whenever the status changes from one state to the other. The summary status values in the tables are set to false if any of the other specific status indicators are false.

SNMP is configured by clicking on the SNMP button at the bottom of the Sources window. Clicking on it brings up the following dialog box.

The top table optionally groups DAB SIds by broadcaster. The SIds string for each broadcaster consists of a comma-separated list of either individual 4-character hexadecimal values, or hyphen-separated start and end values for a range of SIds (the range is inclusive and the end SId must be numerically greater than the start SId). This table can be left empty if broadcaster-grouping of services isn't needed.

The audio fail threshold and timeout are set using the sliders. Note that, because the Flashlog recorder service doesn't decode the audio in each DAB stream (that's done in the player and Flashback), an approximation to the audio level is obtained from the RMS value of the AAC spectral components, which is compared to the threshold value.

The AM and FM carrier fail thresholds are set with the corresponding faders. The colour bar beneath each fader corresponds to the signal strength indicator bar shown for each station on the Sources page.

Traps can be selectively enabled for line, AM, FM and DAB ensembles, broadcasters and individual services. For a trap to be issued, the alarm for that particular audio source must also be enabled in the Sources window, with DAB service alarms further configurable to apply to selected services within each ensemble (refer to DAB Alarm Configuration section).
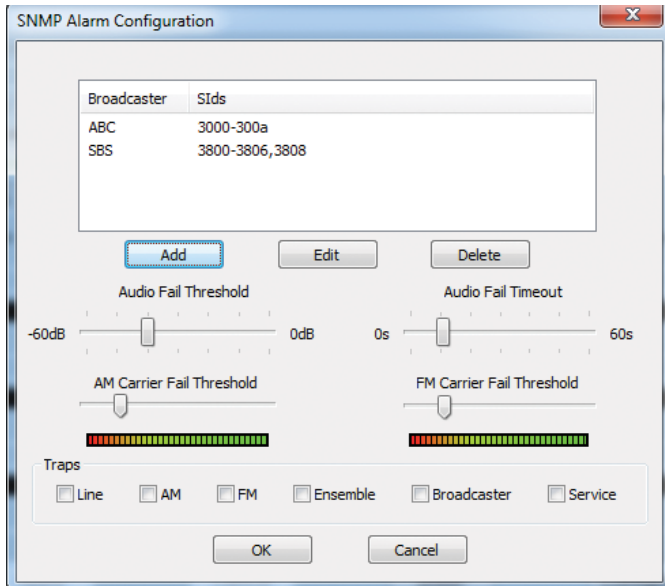
Fig 4-1: SNMP Alarm Configuration Page

Fig 4-2: SNMP Configuration Page

SNMP Configuration

The Windows SNMP service is not installed by default. To install it, go to Control Panel – Programs – Programs and Features – Turn Windows Features On or Off. In the displayed list, enable Simple Network Management Protocol (SNMP). The WMI SNMP Provider option is not required.
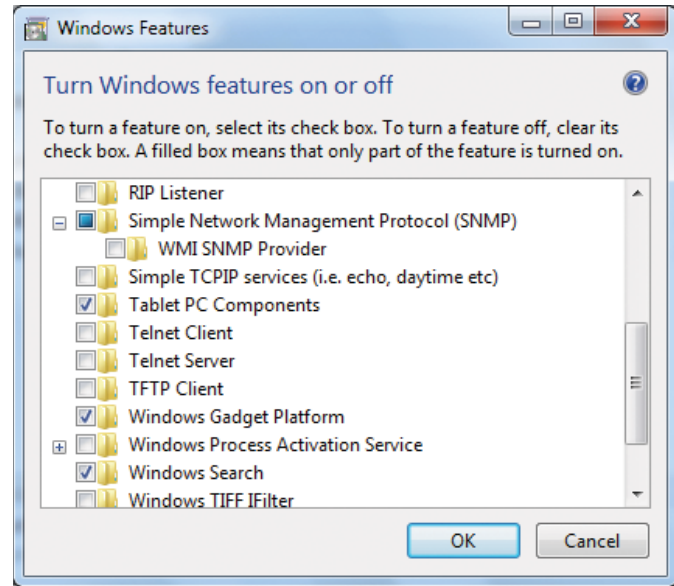
After rebooting, the SNMP Service can be configured from the Windows Control Panel Services applet. The recommended settings are as follows:

Fig 4-3: SNMP Service properties Page

Note: The Send authentication trap option is enabled by default but can be disabled unless your network management software expects this. The Community name can be set according to requirements, or public can be used to grant everyone access. The other pages in the SNMP Service Properties can be left at their default settings.

If you will be using traps, the Traps page will also need to be filled in.
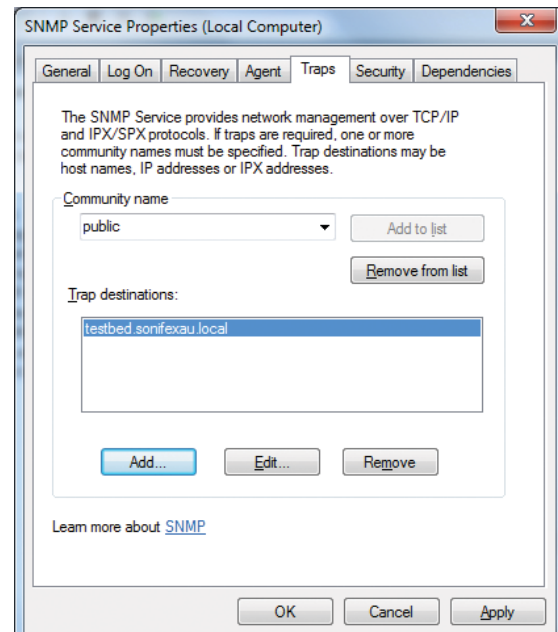

Fig 4-4: SNMP Service Properties Page

Set the community name as required and add the network address of the computer running your network management software as the trap destination. Multiple destinations can be installed if required.

Extension Agent Registry Settings

These are automatically set by the installer but are included here as a reference.

HKEY_LOCAL_MACHINE\SOFTWARE\Innescorp\Flashlog8\SNMPAgent

Create a REG_SZ value called "Pathname" and set it to "c:\logger\FL8SNMP.dll".

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SNMP\Parameters\ExtensionAgents

Create a REG_SZ value called "1" (or any unique name if there are other extension agents present) and set it to "SOFTWARE\Innescorp\Flashlog8\SNMPAgent".

Archiving

Flashlog 8 provides optional parallel recording of selected channels to a permanent archive location on the network, either continuously or on selected days and time ranges.

Because the Flashlog recorder runs as a service and services use the computer's credentials when accessing the network, archiving can only be used when the Flashlog PC and the archive storage location are members of a Windows domain. Computer credentials don't exist outside a domain environment.

Setting up the archive store

The remote network location where the permanent archive is to be stored has to be configured to allow Flashlog to write to it.

On the target machine, open Explorer and go to the top-level folder where the archives are to be written, right-click on it, select Properties and click on the Sharing tab.
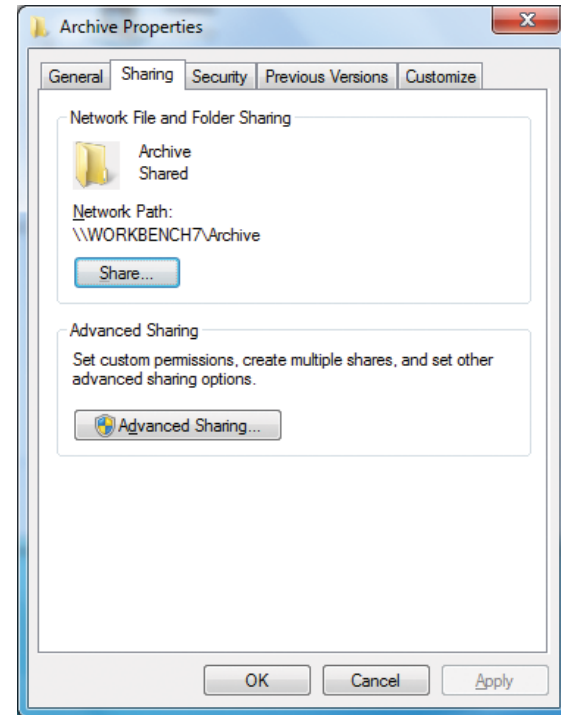

Fig 5-1: Archive Properties Page

Click on the Advanced Sharing button, check Share this folder and click on the Permissions button.
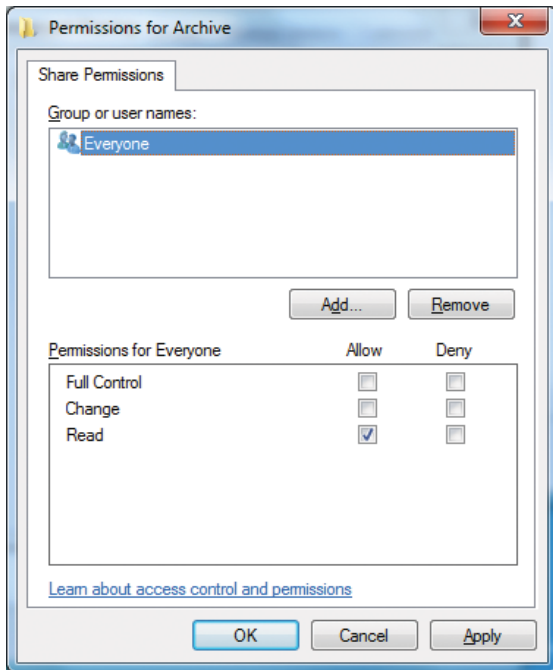
Fig 5-2: Permissions For Archive Page

Under Share Permissions, click on Add... then click on Object Types. Check the box marked Computers and click OK.
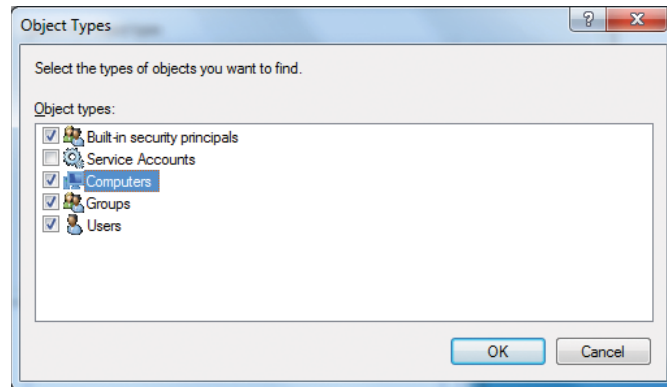
Fig 5-3: Object Types Page

Under Enter the object names to select, type in the network name of the Flashlog machine and click on Check Names. If the name is correctly registered in the domain, it will appear with an underline under it.
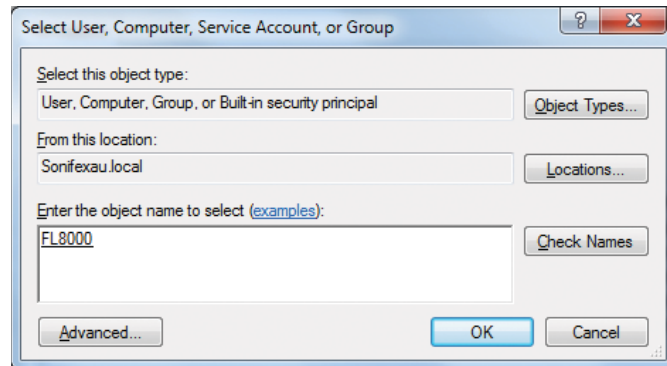
Fig 5-4: Select Users Page

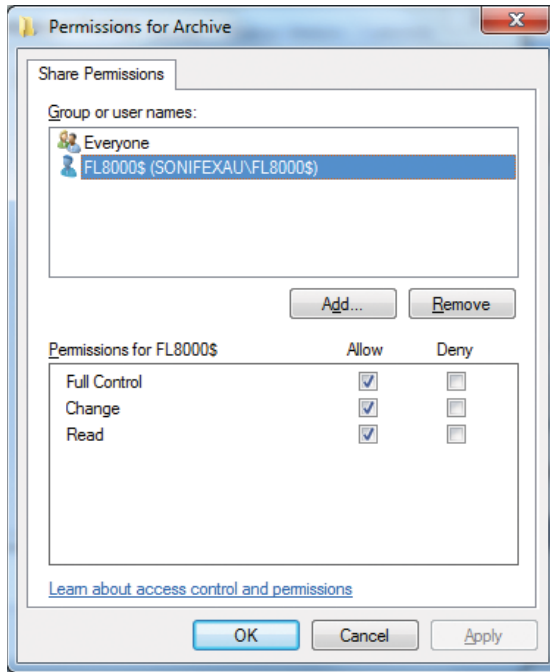Set the Permissions to Full Control then click on OK.

Fig 5-5: Share Permissions For Archive Page

Finally, depending on the operating system, it may be necessary to repeat the same process under the Security tab of the folder's Properties to give the Flashlog computer full access.
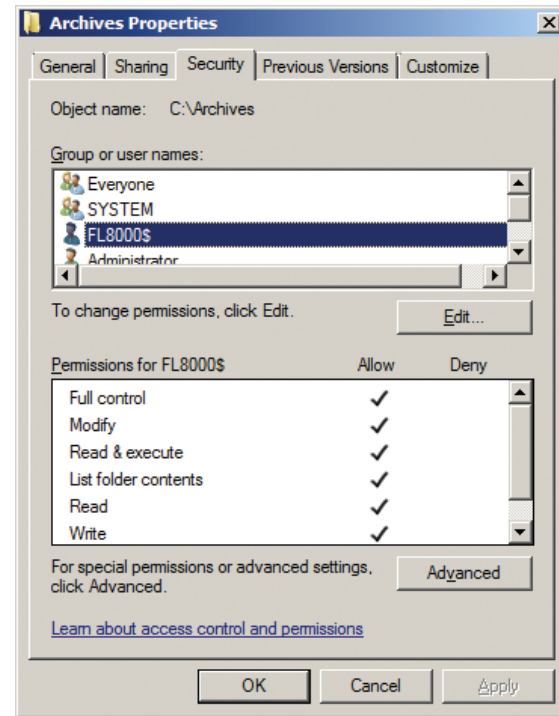

Fig 5-6: Archive Properties Page

Archive events

Each **archive event** is created on an audio source, be it a line input, received AM or FM station, DAB service or internet stream. The event specifies its active days, start and end times, and network destination folder. Up to 256 events can be created on each audio source.

To create or edit archive events, click on the **Arch** button on the required source. For DAB services, clicking on the Arch button on an ensemble will bring up a table of buttons for each active audio service on that ensemble.

The **Archival Events** dialog box contains a list of existing events for the source. Double-click on an event to edit it, select an event and click on the **Delete** button to remove it, or click on **Insert** to create a new event.
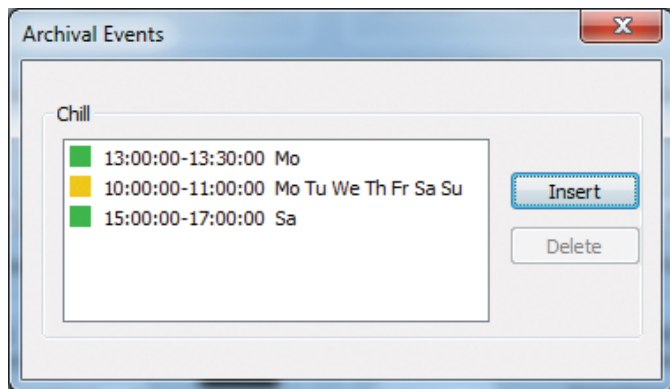

Fig 5-7: Archival Events Page

To set up an event, select the days on which it is to operate, or check the Every Day box to select all days. Likewise, either check the Whole Day box to archive the entire day or enter a start time and end time for the event. Finally, set the top-level directory for the archive to be stored in. This location must already exist, as Flashlog won't attempt to create it. Clicking on Browse will allow you to browse your network, but this can be a slow process.
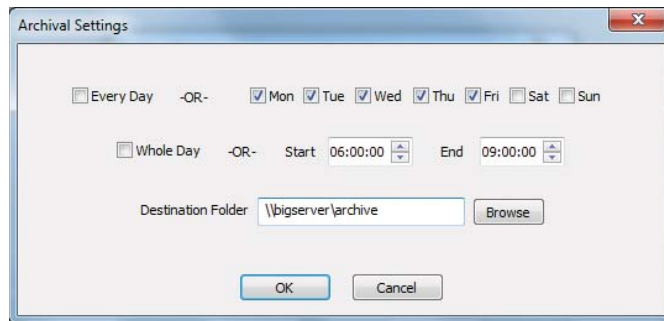
Fig 5-8: Archival Settings Page

When OK is clicked, the logger will attempt to create a temporary file in the destination folder. The Arch button will illuminate green if this succeeds or red if there's an error. In the latter case, hovering the mouse over the button will show the error message.

When an event begins, a day folder is created beneath the event's top-level folder, named **yyyy-mm-dd** to represent the date, with the actual archived audio stored within that folder. The audio file's name will be

SourceName [Category] yyyy-mm-dd hh-mm hh-mm

Where the first **hh-mm** is the start time and the second one is the end time.

All archived audio is stored in the native format in which it's logged. For line, AM and FM sources, Windows Media Audio is used, with the same bit-rate as the logger (selectable for lines, 32kbps for AM and 64kbps for FM). Internet streams are stored as .aac or .mp3 depending on the incoming stream format, while legacy DAB services are stored as .mp2 and DAB+ services as .mp4.

Be aware that the DAB+ AAC encoding uses 960-sample frames, as opposed to the more common 1024-sample frames. Many of the

common audio player applications, including Windows Media Player and QuickTime, do not support 960-sample frame format. The inability to play these .mp4 files is not a fault of the Flashlog software. The free VLC media player will play these files.

The archives are stored in real time, operating in parallel with the normal Flashlog recording process. This avoids the need to merge compressed files or to decode and re-encode compressed audio. While some file formats allow playback while the recording is in progress, this is not recommended as the file length information and possibly other header information will be invalid.

It is your responsibility to make sure there is sufficient space in the storage location. Flashlog considers the archives to be permanent and will not delete older ones to make room for newer ones.

Archive Status

The current status of a source's archiving is indicated by the colour of its **Arch** button. Grey indicates that no archive events are set up on that source, green shows that the last event completed successfully (or none of the events have yet started), yellow indicates that an event is currently in progress, and red indicates a problem has occurred. When the button is red, hovering the mouse over it will show a tool tip containing the Windows error message. An entry is also written to the Flashlog fault log (c:\logger\fault.log) whenever a problem occurs.

Within the **Archival Events** dialog box for each channel, the status of each event is shown with a coloured box next to the event entry. When a failure has occurred, as indicated by a red box, hovering the mouse over the event will show a tool tip containing the Windows error text.
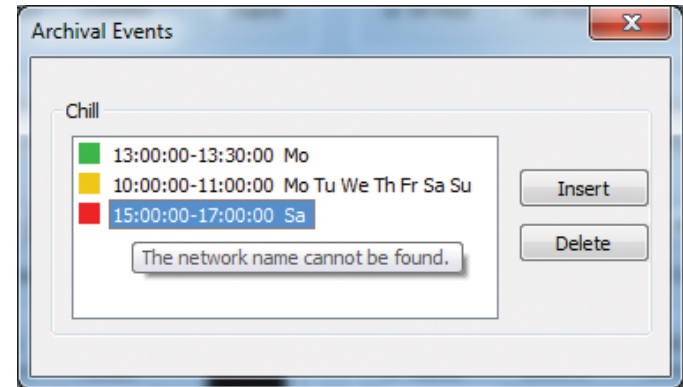

Fig 5-9: Archival Events (Status) Page

If recording is interrupted because of a network fault or any other condition, the event will attempt to resume after an interval of about five minutes. If an archive is partially completed, the start and end times in the file name are changed to reflect the actual interval recorded, and multiple files may be produced if there are interruptions during the event period.

A global SNMP archive status indication (flashlog8ArchiveStatus) is provided, showing false if any channels are showing an error status.

Player

Fig 6-1: The Player Page

The player window provides local playback controls for the system, and is similar in layout and functionality to the Flashback remote playback screen. Playback audio is directed to the Windows default audio output device. This can be changed by right-clicking on the loudspeaker symbol at the bottom right-hand corner of the Windows desktop, selecting Playback Devices, choosing the desired device and clicking on Make Default.

Across the top of the window are tabs for selecting the source group (Line, AM, FM, the DAB ensembles or Internet). If line channel subcategories have been created, these are shown instead of a single Line tab. Within the tab window are the channel selection buttons associated with that group. Each button illuminates when selected. Clicking again on a lit button will deselect it, while clicking on another button will engage playback on the new channel while preserving the current playback time.

The DAB ensemble tabs and channel selection buttons are dynamic. If a new service or ensemble starts, the corresponding button or tab will appear as soon as the first full minute of recording has been made. When a service or ensemble is discontinued, however, it remains visible for the duration of Flashlog 8's recording time so that older recordings can still be replayed, but is deleted once that time has passed. The names of such discontinued services are displayed with a greyed text.

Below the channel buttons is the waveform display window, where the yellow cursor shows the current playback position relative to the audio waveform. Clicking anywhere within the display will move the cursor to that position. The waveform can also be moved underneath the cursor by holding down the left mouse button and dragging the ruler bar at the bottom of the display.

The span of the waveform display can be set to one minute, ten minutes, one hour or one day, and the cursor can be moved forward or backward one span width using the left and right arrow buttons located either side of the span selection buttons.

The cursor position can also be moved using the up/down buttons on the time display window. Holding these buttons down will progressively scroll through the log. The time can also be set from the keyboard by clicking in the hour, minute or second window and keying in a number. When entering a time in this manner, the tab key moves the focus from hour to minute to second, the Enter key applies the new time and the Escape key cancels the entry. If the Enter key is not pressed within five seconds of the last keystroke, the editing is cancelled and the time reverts to its previous value.

The playback date is selected from the calendar panel. If the chosen date is outside the range of the recorded audio, it moves to the nearest valid date. The left and right arrow buttons in the calendar panel move back or forward one month. For reference, the current date is marked with a red circle.

The transport controls (stop and play) are located below and to the left of the waveform display window. When the time-call button (with its clock-face icon) is activated, time call announcements are made each minute on the right channel while the logged audio is played out of the left (mixed to mono if the original was stereo).

When the Play button is clicked, the yellow cursor begins moving across the waveform display, while a red cursor marks the original starting point. Clicking the Stop button once will halt playback at its current position, while clicking Stop a second time will move it back to the starting point. The starting point is changed whenever the cursor is forcibly moved, either by clicking within the waveform window, using the up/down controls on the time display or dragging the ruler bar.

Playback can also be started and stopped by pressing the spacebar on the keyboard. Each press toggles between Play and Stop.

If the playback starting point is within the most recent minute recorded, playback is disabled until such time as it will be safe to start playing without running into the end of the log. The danger zone is shown with a darker green on the waveform display, and moving into this zone while playing will cause playback to pause until such time as it's safe to resume.

A section of log can be marked for copying to a file or the Windows clipboard. This is done by moving the cursor to the start position, clicking the Mark button, then moving to the end position and clicking the Mark button again. Alternatively, the start and end points can be set by clicking in the waveform display window while holding down the Shift key on the keyboard. Furthermore, a section can be marked by holding down the Shift key and left mouse button while dragging the mouse pointer across the waveform display window. The marked region, once set, can be adjusted by clicking or dragging in the waveform display window while holding down the Shift key. The start or end point closest to the mouse pointer is moved to the new position. The start and end markers can be cleared by clicking the Unmark button.

Double-clicking in the waveform window will mark the current span of that window (one minute, ten minutes, one hour or one day as selected by the span buttons). Double-clicking on a day in the calendar will mark that whole day from midnight to midnight. This can be useful if archiving days to wma files.

The playback cursor can be moved to the start or end marker by clicking on the Move-to-start and Move-to-end buttons located to the left and right of the transport buttons respectively.

If the playback starting point lies within the selected range, playback will stop at the end of the range and the cursor will return to the starting point. However, if the starting point is set outside the selected range, playback will run continuously. In this mode, the highlighting of the selected range is dulled to grey.

The marked section can be copied to a file or the Windows clipboard by clicking on the respective buttons located to the right of the transport buttons. When copying to a file, either wav, MP3[1], wma or low bit-rate (16kbps) wma format can be selected from the Save as type dropdown list. Additionally, for DAB services, the selection can be saved in AVI format which includes a video stream showing the DLS text and images along with the audio associated with the service. If a blank CD or DVD is inserted in the drive, files can be directly saved to that medium, although the final write-to-disc must be activated externally from the Windows Explorer window. We recommend that log extracts not be left on the Flashlog's hard drives as doing so may cause it to run out of space for itself.

The slider control below the transport buttons sets the playback volume. This affects only the audio level from the Flashlog player and doesn't interfere with other applications or change the sound card mixer settings.

DAB/DAB+ channels display any transmitted DLS text and images as well as the audio. Where multiple image types are transmitted, a selection can be made from the radio buttons below the calendar. Note that the text and

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[1] Save as MP3 not available in the USA until 2018.

image displays are cleared whenever the playback start time is changed, and won't update until the next complete text frame or image is decoded.

When a DAB service is selected, leaving the mouse pointer hovering on that channel button for more than five seconds will display a tool tip balloon showing the full service name, service identifier (SId), sub-channel number (SubChId), audio sampling rate and type of encoding, the stream bit-rate and the PAD bit-rate.
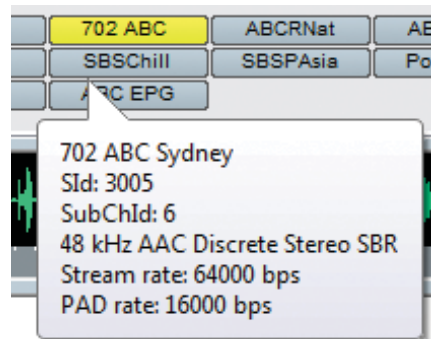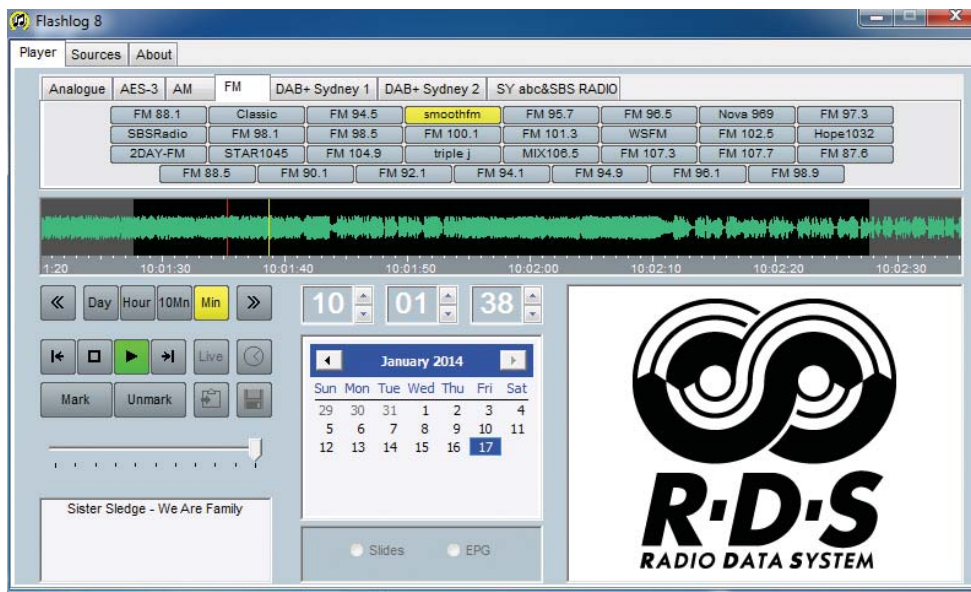

Fig 6-2: Channel Button

If FM RDS is enabled in the driver, the transmitted programme name is shown on the channel button (unless overridden by a name entered on the Sources page). An RDS logo also appears in the slideshow box and any RadioText information is displayed in the DLS box.

For internet streams, the static metadata from the stream's header is displayed in the slideshow box, with Title and Artist metadata, if present, being shown in the DLS box.

A selected channel can be monitored in real time (less any buffering delay) by clicking on the Live button. All other playback controls are disabled in this mode. Note that live monitoring is currently not supported for internet streams.

Keyboard Operation

Some of the playback buttons can be activated directly from the keyboard.

- Function keys F1 to F8 toggle the first eight channel selection buttons, while holding down the Shift key gives the second block of eight, holding down the Control key gives the third block of eight, and holding down the Alt key gives the fourth block of eight.
- The + and – keys move forward and backward by one second respectively.
- The Right and Left arrow keys move forward and backward by ten seconds respectively.
- Holding down the Shift key while pressing the Right or Left arrow key moves in one minute steps.

- Holding down the Control key while pressing the Right or Left arrow key moves in one hour steps.
- The Up and Down arrow keys move forward and backward one day respectively.
- The space bar toggles between Play and Stop.
- The playback time can be entered from the keyboard as described in the overview.
- Pressing Alt-M sets a marker position (equivalent to clicking the Mark button).
- Pressing Alt-U unmarks all selections (equivalent to clicking the Unmark button).

- Pressing Ctrl-S opens the Save As dialog box if a selection has been marked.
- Pressing Ctrl-C copies the current selection to the Windows clipboard.

Skimming

When skimming is enabled on a line input channel, the times when the contact closure was activated are listed in the box to the right of the calendar window. Clicking on any of these will mark that section of audio in the waveform display window and the playback cursor will move to the beginning of the section. The list of events is confined to a single calendar day, and will change when the playback starting point is moved to another day.

Multiple skimming events, or a range of events, may be selected by holding the Control or Shift key down respectively while clicking in the list. Each event is highlighted in the waveform display window, and clicking on Play will play them through sequentially. The Move-to-start and Move-to-end buttons step forwards and backwards respectively through the selected events. When copying multiple events to the clipboard or a file, a half-second gap is inserted between them.

When using GPIO skimming with Axia Livewire sources, multiple closures can be logged on each channel, with a treeview-style subheading for each closure.
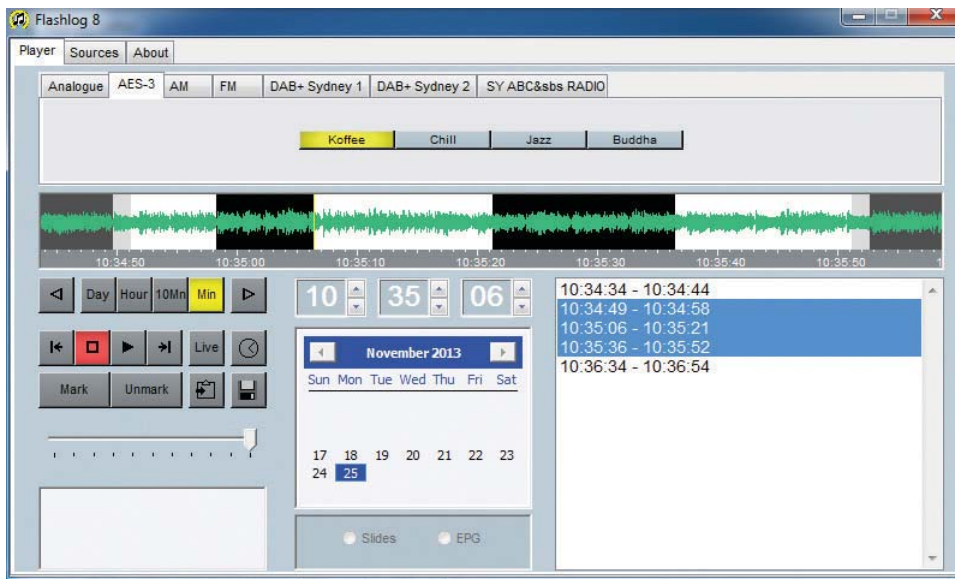

Fig 6-3: Skimming Page

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Skimming events can be individually deselected by holding down the Control key while clicking on the event, or they can all be deselected at once by clicking on the Unmark button.

Example: to copy all the skimming content during the breakfast session to a file, find the first event in the session and click on it, then scroll down to the last event and, while holding down the Shift key, click on that. Then click on the Copy-to-file button, choose a name and file type, and click on Save.

Electronic Programme Guide

When a DAB EPG service is selected, click on Play and allow it to run for a few minutes until the complete programme guide is decoded, at which point it will be displayed in tree-view form. At the top level is the ensemble name, then below that the service names and within each service the guide itself.

When the cursor hovers over a programme entry, an info-tip box appears displaying any descriptive text associated with that programme.

The tree display will be destroyed and rebuilt whenever an updated EPG is decoded, so while exploring the guide it may be useful to pause the playback by clicking on Stop.
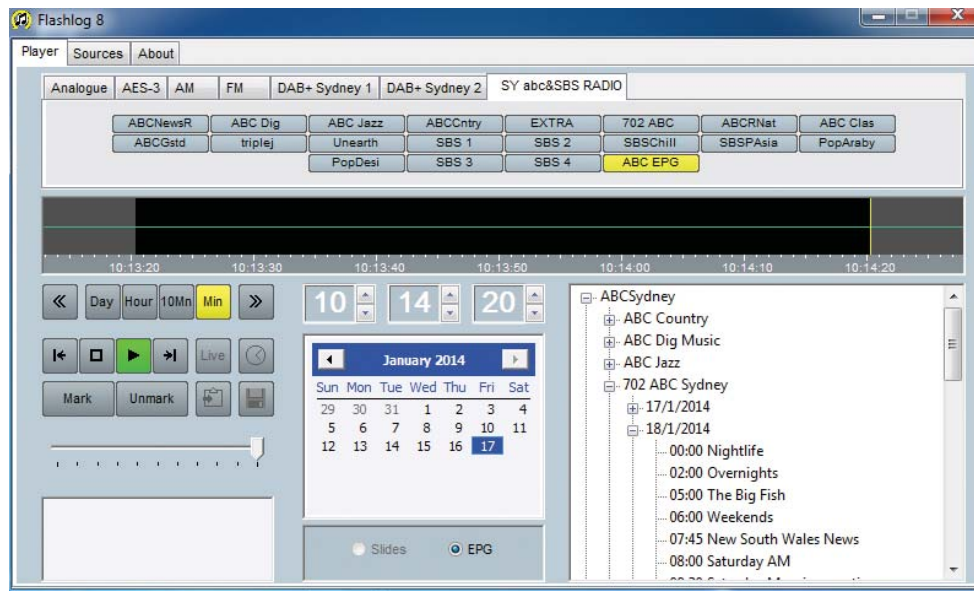

Fig 6-4: Electronic Programme Guide Page

Settings for Sonifex Audio Capture Cards

These card settings are accessed by clicking on Start, right-clicking on Computer, selecting Properties and then clicking on Device Manager. The cards are listed under Sound, video and game controllers.
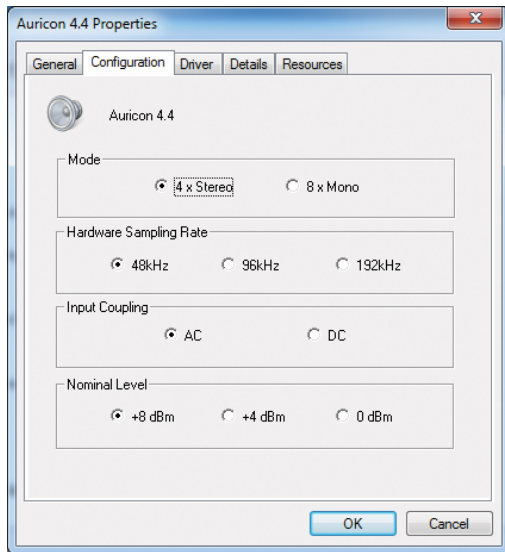
Auricon

Fig 7-1: Auricon Page

Stereo mode must always be selected – mono sources are configured in the **Flashlog 8** software.

Hardware Sampling Rate must be set to 48 kHz.

Nominal Level may be changed to suit your requirements.

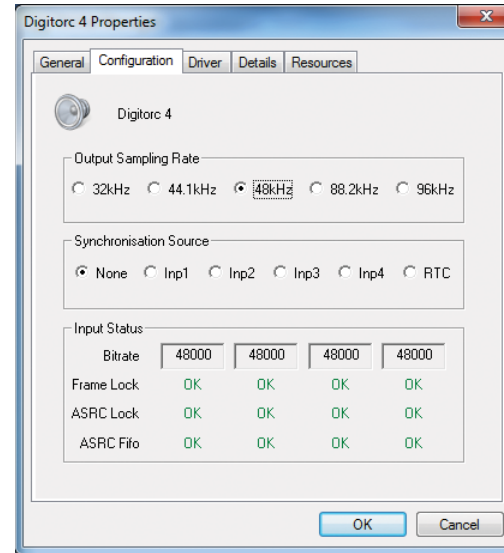Input Coupling should normally be set to AC.

Digitorc

Fig 7-2: Digitorc Page

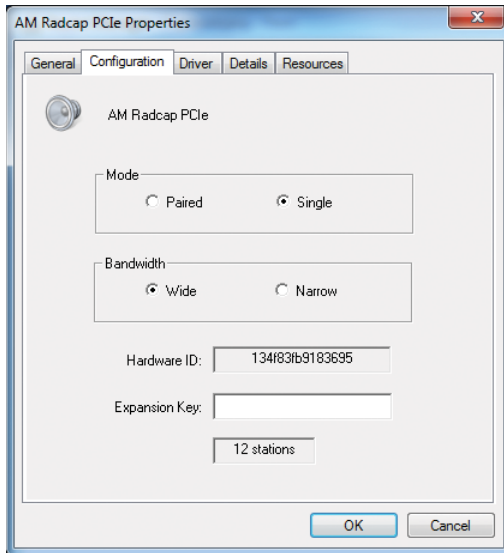Output Sampling Rate must be set to 48 kHz.

AM Radcap

Fig 7-3: AM Radcap Page

Mode must be set to Single.

Bandwidth may be set to Narrow to reduce noise and interference if AM reception is poor.

FM Radcap

Fig 7-4: FM Radcap Page

Mode should be normally set to Stereo unless reception is poor, in which case Mono mode may be used to reduce noise. Do not select Paired Mono mode as this is not compatible with **Flashlog 8**.

Set the De-emphasis according to the standard used in your region (typically 75us in North America and 50us elsewhere).

Select RDS Decoding if you want to log RDS information.

The Number of Stations can be reduced if not all are required. This must be set to an even number.

DAB+ Radcap

Fig 7-5: DAB+ Radcap Page

Set each ensemble from the drop-down list of channel numbers. The European standard channel numbering scheme for Band III is used.

Dynamic Device Mapping must be selected.

Windows Recording Device Settings

Windows maintains audio engine settings for each recording device. These settings can be accessed by right-clicking on the loudspeaker symbol at the bottom right-hand corner of the screen, selecting Recording Devices and then choosing Properties for each device. Of particular concern for Flashlog 8 is the Default Format setting under the Advanced tab, which must be set as follows for each line input device.

Fig 8-1: Windows Recording Device Settings Page

2 channel, 24 bit, 48000 Hz must be selected for each line input.

The AM, FM and DAB+ Radcap inputs operate at a fixed sampling rate and require no adjustment.

Disc Layout

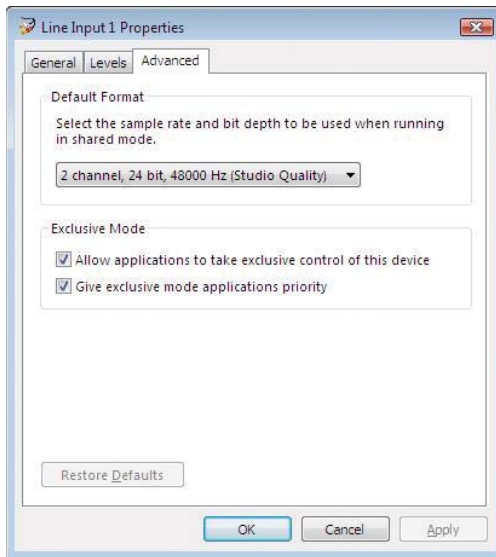The Flashlog executables are installed in c:\logger while the audio and associated data is in c:\audio. A share called "Audio" is created on the latter folder with "Everyone" granted read-only permission.

Within the c:\audio folder, the Line, AM and FM radio sources are stored in separate folders, each with subfolders named logger1 through to loggerN. Within each of those are subfolders for each day and hour. Each .wma file within the hour folders contains one minute of audio.

The DAB\DAB+ ensemble streams are stored under c:\audio\DAB with a separate subfolder for each ensemble based on the transmitted ensemble ID number. Within those are day, hour and minute folders, with the latter containing .raw files storing one minute of each active sub-channel. Service information for each minute is stored in the services.bin files.

Internet streams are stored under c:\audio\Internet with a separate subfolder, identified by a unique 8-character code, for each stream. Within the streams are subfolders for each day and hour, with the one-minute audio files stored as .aac or .mp3 depending on the stream encoding.

In all cases, audio peak level information for the waveform display is stored in .pkm, .pkt, .pkh and .pkd files for the minute, ten-minute, hour and day spans respectively.

If anti-virus software is installed on the machine, it is essential to block any scanning of the c:\audio folder as this will interfere with Flashlog 8's recording process. **Installation of any third party software, including anti-virus programs, is entirely at your own risk, and Sonifex Ltd takes no responsibility for any interference such software may cause to the operation of the software.**

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Windows Media Audio

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Skimming Input Card Driver

Based in part on software Copyright 2004-2006 © OSR Open Systems Resources, Inc. Used with permission.

MP2 Audio Decoder

kjmp2 MP2 Decoder Copyright © 2006 Martin J. Fiedler, used with permission.

Reed-Solomon Error Correction

Reed-Solomon decoder Copyright © 2004 Phil Karn, KA9Q, used under the terms of the GNU LESSER GENERAL PUBLIC LICENSE Version 2.1, February 1999. The library source code and licence text is included on the Flashlog 8 distribution CD.

aacPlus-v2 Audio Decoder

FAAD2 aacPlus-v2 Decoder Copyright © 2003-2005 M. Bakker, Nero AG used under commercial licence.

MP3 Encoder

MP3 LAME encoding engine Copyright (c) 1999 Mark Taylor, used under the terms of version 2 of the GNU Library General Public License as published by the Free Software Foundation.

Appendix A

Skimming Contact Closure Inputs

Line	DB37 Pins
A0	18,37
A1	17,36
A2	16,35
A3	15,34
A4	14,33
A5	13,32
A6	12,31
A7	11,30
B0	10,29
B1	9,28
B2	8,27
B3	7,26
B4	6,25
B5	5,24
B6	4,23
B7	3,22
Ground	2,20,21
+12V	19
+5V	1

The inputs are optically isolated and may be connected with either polarity.

The input voltage should be in the range 3-13V.

Appendix B

```
# FLASHLOG8-MIB registration tree (generated by smidump 0.4.8)
--flashlog8(1.3.6.1.4.1.38558.2.2)
 |
 +--flashlog8LineStatus(1)
 | |
 | +--flashlog8LineTable(1)
 | |
 | +--flashlog8LineEntry(1)[flashlog8LineSubcategory,flashlog8LineChannel]
 | |
 | +-- --- Unsigned32     flashlog8LineSubcategory(1)
 | +-- --- Unsigned32     flashlog8LineChannel(2)
 | +-- r-n SnmpAdminString flashlog8LineSubcategoryName(3)
 | +-- r-n SnmpAdminString flashlog8LineChannelName(4)
 | +-- r-n TruthValue     flashlog8LineAudioStatus(5)
 |
 +--flashlog8AmStatus(2)
 | |
 | +--flashlog8AmTable(1)
 | |
 | +--flashlog8AmEntry(1) [flashlog8AmStation]
 | |
 | +-- --- Unsigned32     flashlog8AmStation(1)
 | +-- r-n SnmpAdminString flashlog8AmName(2)
 | +-- r-n Unsigned32     flashlog8AmFrequency(3)
 | +-- r-n TruthValue     flashlog8AmCarrierStatus(4)
 | +-- r-n TruthValue     flashlog8AmAudioStatus(5)
 |
 +--flashlog8FmStatus(3)
 | |
 | +--flashlog8FmTable(1)
 | |
 | +--flashlog8FmEntry(1) [flashlog8FmStation]
 |     |
 |     +-- --- Unsigned32     flashlog8FmStation(1)
 |     +-- r-n SnmpAdminString flashlog8FmName(2)
 |     +-- r-n Unsigned32     flashlog8FmFrequency(3)
 |     +-- r-n TruthValue     flashlog8FmCarrierStatus(4)
 |     +-- r-n TruthValue     flashlog8FmAudioStatus(5)
 |     +-- r-n TruthValue     flashlog8FmPilotStatus(6)
 |     +-- r-n TruthValue     flashlog8FmRdsStatus(7)
 |     +-- r-n SnmpAdminString flashlog8FmRdsText(8)
 |
 +--flashlog8DabStatus(4)
 | |
 | +--flashlog8EnsembleTable(1)
 | |
 | +--flashlog8EnsembleEntry(1) [flashlog8CardNbr]
 | |   |
 | |   +-- --- Unsigned32     flashlog8CardNbr(1)
 | |   +-- r-n SnmpAdminString flashlog8EnsembleName(2)
 | |   +-- r-n DABIdentifier   flashlog8EnsembleId(3)
 | |   +-- r-n TruthValue     flashlog8EnsembleSummaryStatus(4)
 | |   +-- r-n TruthValue     flashlog8PhaseCorrelatorStatus(5)
 | |   +-- r-n TruthValue     flashlog8ClockStatus(6)
 | |
 | +--flashlog8BroadcasterTable(2)
 | |
 | +--flashlog8BroadcasterEntry(1) [flashlog8BroadcasterNumber]
 | |   |
 | |   +-- --- Unsigned32     flashlog8BroadcasterNumber(1)
 | |   +-- r-n SnmpAdminString flashlog8BroadcasterName(2)
 | |   +-- r-n TruthValue     flashlog8BroadcasterSummaryStatus(3)
 | |   +-- r-n TruthValue     flashlog8BroadcasterStreamStatus(4)
 | |   +-- r-n TruthValue     flashlog8BroadcasterAudioStatus(5)
 | |
 | +--flashlog8BroadcasterServicesTable(3)
```

```
| | |
| | +--flashlog8BroadcasterServicesEntry(1)
[flashlog8BroadcasterNumber,flashlog8BroadcasterServiceId]
| | |
| | +-- --- DABIdentifier   flashlog8BroadcasterServiceId(1)
| | +-- r-n SnmpAdminString flashlog8BroadcasterServiceName(2)
| | +-- r-n TruthValue      flashlog8BroadcasterServiceActive(3)
| | +-- r-n TruthValue      flashlog8BroadcasterServiceSummaryStatus(4)
| | +-- r-n TruthValue      flashlog8BroadcasterServiceStreamStatus(5)
| | +-- r-n TruthValue      flashlog8BroadcasterServiceAudioStatus(6)
| | +-- r-n TruthValue      flashlog8BroadcasterServiceDLSStatus(7)
| | +-- r-n TruthValue      flashlog8BroadcasterServiceMOTStatus(8)
| | +-- r-n SnmpAdminString flashlog8BroadcasterServiceDLSText(9)
| |
| +--flashlog8EnsembleServicesTable(4)
|   |
|   +--flashlog8EnsembleServicesEntry(1)
[flashlog8CardNbr,flashlog8EnsembleServiceId]
|   |
|   +-- --- DABIdentifier   flashlog8EnsembleServiceId(1)
|   +-- r-n SnmpAdminString flashlog8EnsembleServiceName(2)
|   +-- r-n TruthValue      flashlog8EnsembleServiceActive(3)
|   +-- r-n TruthValue      flashlog8EnsembleServiceSummaryStatus(4)
|   +-- r-n TruthValue      flashlog8EnsembleServiceStreamStatus(5)
|   +-- r-n TruthValue      flashlog8EnsembleServiceAudioStatus(6)
|   +-- r-n TruthValue      flashlog8EnsembleServiceDLSStatus(7)
|   +-- r-n TruthValue      flashlog8EnsembleServiceMOTStatus(8)
|   +-- r-n SnmpAdminString flashlog8EnsembleServiceDLSText(9)
|
+--flashlog8InternetStatus(5)
| |
| +--flashlog8InternetTable(1)
|   |
|   +--flashlog8InternetEntry(1) [flashlog8InternetStream]
```

```
|   |
|   +-- --- Unsigned32     flashlog8InternetStream(1)
|   +-- r-n SnmpAdminString flashlog8InternetName(2)
|   +-- r-n SnmpAdminString flashlog8InternetUrl(3)
|   +-- r-n Unsigned32     flashlog8InternetBitRate(4)
|   +-- r-n SnmpAdminString flashlog8InternetEncoding(5)
|   +-- r-n TruthValue     flashlog8InternetConnectionStatus(6)
|   +-- r-n TruthValue     flashlog8InternetAudioStatus(7)
|   +-- r-n SnmpAdminString flashlog8InternetMetadata(8)
|
+--flashlog8Events(10)
| |
| +--flashlog8EventList(0)
| |
| +--flashlog8PhaseCorrelatorNotification(1)
[flashlog8EnsembleName,flashlog8PhaseCorrelatorStatus]
| |
| +--flashlog8BroadcasterStreamNotification(2)
[flashlog8BroadcasterName,flashlog8BroadcasterStreamStatus]
| |
| +--flashlog8BroadcasterAudioNotification(3)
[flashlog8BroadcasterName,flashlog8BroadcasterAudioStatus]
| |
| +--flashlog8ServiceStreamNotification(4)
[flashlog8EnsembleServiceName,flashlog8EnsembleServiceStreamStatus]
| |
| +--flashlog8ServiceAudioNotification(5)
[flashlog8EnsembleServiceName,flashlog8EnsembleServiceAudioStatus]
| |
| +--flashlog8ServiceStateNotification(6)
[flashlog8EnsembleServiceName,flashlog8EnsembleServiceActive]
| |
| +--flashlog8LineAudioNotification(7)
[flashlog8LineSubcategoryName,flashlog8LineChannelName,flashlog8LineAudioStatus]
```

```
  |   |
  |   +--flashlog8AmCarrierNotification(8)
[flashlog8AmName,flashlog8AmCarrierStatus]
  |   |
  |   +--flashlog8AmAudioNotification(9) [flashlog8AmName,flashlog8AmAudioStatus]
  |   |
  |   +--flashlog8FmCarrierNotification(10)
[flashlog8FmName,flashlog8FmCarrierStatus]
  |   |
  |   +--flashlog8FmAudioNotification(11) [flashlog8FmName,flashlog8FmAudioStatus]
  |   |
  |   +--flashlog8FmPilotNotification(12) [flashlog8FmName,flashlog8FmPilotStatus]
  |   |
  |   +--flashlog8FmRdsNotification(13) [flashlog8FmName,flashlog8FmRdsStatus]
  |   |
  |   +--flashlog8InternetConnectionNotification(14)
[flashlog8InternetName,flashlog8InternetConnectionStatus]
  |   |
  |   +--flashlog8InternetAudioNotification(15)
[flashlog8InternetName,flashlog8InternetAudioStatus]
  |
  +--flashlog8Conformance(20)
    |
    +--flashlog8ConformanceGroups(1)
    | |
    | +--flashlog8LineStatusGroup(1)
    | |
    | +--flashlog8AmStatusGroup(2)
    | |
    | +--flashlog8FmStatusGroup(3)
    | |
    | +--flashlog8EnsembleStatusGroup(4)
    | |
    | +--flashlog8BroadcasterStatusGroup(5)
```

```
  |   |
  |   +--flashlog8BroadcasterServicesStatusGroup(6)
  |   |
  |   +--flashlog8EnsembleServicesStatusGroup(7)
  |   |
  |   +--flashlog8InternetStatusGroup(8)
  |   |
  |   +--flashlog8NotificationsGroup(9)
  |
  +--flashlog8Compliance(2)
```

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