

XStudio Recorder

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XStudio Recorder

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Welcome

Part



XStudio Recorder is an easy-to-use, powerful audio auto-recording system used to capture program content for use with XStudio, DCS and Maestro radio automation systems.

Automatic recordings can be initiated by a relay received from the program service or they can be scheduled using XStudio Recorder's built-in event scheduling system.

XStudio Recorder supports multiple concurrent recordings. You can record more than one item simultaneously so long as you have sufficient available audio recording inputs on the sound card you are using and have a way to route the audio to the correct recording input. Typically, an audio switcher is used for maximum flexibility. XStudio Recorder supports most Broadcast Tools audio switchers.

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Document Conventions

The following table describes important conventions used in the XStudio Recorder documentation

<u>Convention</u>	<u>Description</u>
menu menu command	Describes a menu item followed by a menu command.
[button or mouse]	Text between square brackets refers to a keystroke, i.e. [F10] , button, i.e. [Save] , or mouse click, i.e. [Left-Click] .
	Signifies important information that may have an impact on operation of the software.
	Signifies an informational note on using the software more efficiently or things that may affect operation of the software.
	Signifies a hint that may be useful when using or setting up the software.

1.1 Key Features

XStudio Recorder incorporates a number of innovative features to make automatic recording of audio simple, flexible and easy.

- Automatic recordings can be initiated via relays from the program service or as a scheduled, time-driven event.
- Recorded audio can be stored in .DAF, .DFF or .WAV file formats.
- Record more than one audio item simultaneously, up to the limit of available input (recording) channels on your sound card(s).
- .DAF audio files created with XStudio Recorder are compatible with XStudio, DCS, and Maestro.
- .WAV audio files created with XStudio Recorder are usable by any application that handles this file type, including players and multi-track editors.
- Completed recordings can be automatically copied to a secondary location. You can record to a local drive, for instance, and have the recording automatically copied to a server.
- The user interface is simple, easy to understand and customizable.
- The software can be used on a **standard PC** using a standard sound card. A multi-channel sound card is required if you desire more than one simultaneous recording.
- **Complete standalone application** – no dependency on the broadcast automation system resources.

1.2 What's New in this Release

Here are the latest changes, enhancements and corrections to XStudio Recorder by version number and date. For information on less-recent changes and enhancements, see the [Revision History](#) topic.

Version 1.4.0.210 - 02/13/2023

1. **Important Change.** The minimum operating system requirement for XStudio Recorder is now Windows 7. If you attempt to install XStudio Recorder on an older operating system, the installation program will advise you the OS is not supported.
2. **Important Change.** XStudio Recorder now requires the Microsoft Visual C++ 2015-2019 Redistributable software be installed. Previously, the redistributable software was the Microsoft Visual C++ 2008 Redistributable. During installation, this software will be installed automatically if not present or an older version is present on the system.
3. **Enhancement.** XStudio Recorder now detects Windows 11 and adjusts its display accordingly.
4. **Enhancement.** When installing XStudio Recorder and the audio engine service, a new beta option to use Audio Science ASIO drivers instead of the default WDM (WAVE) drivers has been added to the audio engine service installer. Note this option applies only to users who have a supported Audio Science audio card installed on the host system and have installed the ASI ASIO drivers.
5. **Change.** XStudio Recorder includes an updated audio engine service that includes minor bug fixes and improved debugging logs.
6. **Change.** The underlying database engine has been updated to NexusDB version 4.7001.
7. **Fix.** If there was only one scheduled event, XStudio Recorder would execute the event only one time and not execute it again until the system was restarted. This behavior has been corrected.
8. **Fix.** On some systems, communications with an attached audio switcher were garbled. This behavior has been corrected.

Version 1.3.0.195 - 10/10/2019

1. **Enhancement.** Previously, if the audio engine was not running when XStudio Recorder launched and XStudio Recorder could not start the engine, the list of available audio devices for playback and recording would be empty until XStudio Recorder was restarted. Now, if the audio engine is later started, XStudio Recorder will update the device list, eliminating the need to restart XStudio Recorder to populate the device lists.

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Installation & System Requirements

Part



In order to use XStudio Recorder successfully, certain hardware and Windows operating system requirements must be met. You must also install the XStudio Recorder software on the PC, using an installation program.

This section documents the system requirements for XStudio Recorder and covers the process of installing, updating and removing the XStudio Recorder software.

2.1 System Requirements

Here are the base hardware and operating system requirements to run XStudio Recorder:

Operating System	Windows 7 Pro or later.
CPU Speed	1 GHz or greater.
RAM Memory	4 GB RAM minimum, 8GB recommended).
Display	A minimum of 800 x 600 resolution, 1024 x 768 or greater is highly recommended.
Audio Card	An audio card supported by the operating system - at least one recording input available to XStudio Recorder. If you wish to make more than one recording simultaneously, a multichannel sound card is required.
Default Print Device	You must have a default print device assigned. XStudio Recorder can produce printed reports and lists and expects to have an available default printer. If you do not have a printer, you can use one of the available non-printing devices like the Microsoft XPS Document Writer.
Hard Disk Space	At least 45 MB free disk space for XStudio Recorder, audio engine, documentation and the Microsoft Visual C++ 2015-2019 Redistributable software. Database may consume 20MB or more, depending on the number of Tasks, Actions and Scheduled Events. Additionally, you must have sufficient available disk space to accommodate carts (audio files) that are stored locally.
A LAN card (NIC)	The OS' TCP/IP client must be installed on the PC. XStudio Recorder uses networking to communicate with the host audio engine.

To use XStudio Recorder, you need access to your automation system's audio files (.DAF files). This means you need to be connected to the network (LAN) in which the automation

system is running. Be sure that your system administrator has provided you the necessary access rights to these file locations. For audio files, you will need both read and write access.



XStudio Recorder requires the Microsoft Visual C++ 2015-2019 Redistributable Package (x86). If this package is not present on the host system, it will be installed automatically.

2.2 Installing or Removing XStudio Recorder

The XStudio Recorder installation program provides step-by-step instructions on every screen displayed during the installation. Follow the instructions on each screen to install XStudio Recorder.

Before you install

1. Close all other programs, including any anti-virus programs.
2. Log on to your computer with administrator privileges.



You must have administrator privileges to perform an installation or a software update when running on any of the supported Windows operating systems.

Installing XStudio Recorder

XStudio Recorder is distributed as a downloadable installation program. The latest version of the software is always available on our [web site](#) on the XStudio Recorder product home page and the general downloads page.

1. After you have downloaded the installation program to your computer, locate the setup program, **xsRecorderSetup.exe**, in the folder to which you downloaded the file. [**Double-click**] on the setup program to begin installation.
2. Follow the instructions on each screen to install the software.

Updating XStudio Recorder

1. If you have downloaded or otherwise received a revision for XStudio Recorder, the process for updating the software is virtually identical to the initial installation. However, the installation dialogs may be a bit different. When updating, you are not typically given an opportunity to select the target folder for installation, as that choice has already been made in a previous installation.

2. You may be prompted that an old version of XStudio Recorder has been found and that it must be uninstalled (removed) before continuing with the update. If you see this prompt when updating XStudio Recorder, you should answer "Yes" to remove the old version, and if prompted to confirm the removal of the old version, again answer "Yes".
3. On occasion, updating XStudio Recorder may require some additional tasks be performed during the update. Such tasks might include validating and/or updating your registration and making adjustments to your preferences settings. If these tasks are needed, you will be prompted for any input required and notified if the update task could not be completed successfully.



You must have administrator privileges to perform an update on all supported operating systems.

To Uninstall XStudio Recorder

To remove XStudio Recorder from your PC, select the Control Panel applet Add/Remove Programs (or equivalent). Select XStudio Recorder and click on the **[Remove]** or **[Uninstall]** button. Follow the prompts to uninstall the software. If you wish to uninstall the audio engine service as well, select the ***dcTools Audio Engine*** item and click on the **[Remove]** or **[Uninstall]** button. If the audio engine service is running, it will be stopped and the removed from the system.



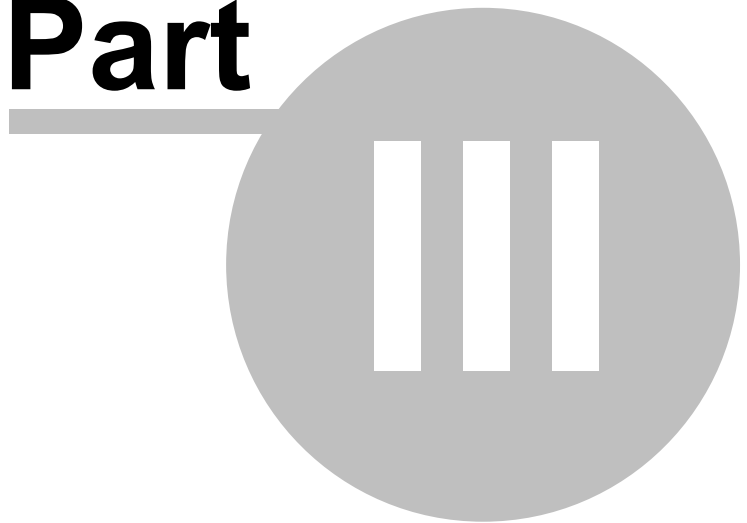
The XStudio Recorder installer uninstalls the main application only.

To remove the audio engine, you must uninstall it separately. It is listed as "***dcTools Audio Engine***" in the installed software list.

Only files originally installed are removed. Your preferences files are not removed. See the topic on [application-created files](#) for more information on files that are installed or created by XStudio Recorder.

Configuring XStudio Recorder

Part



In order to use XStudio Recorder, the application needs to know about the location of the audio files used by your automation system and which available record audio channels (audio input) will be used as a default, among other things.

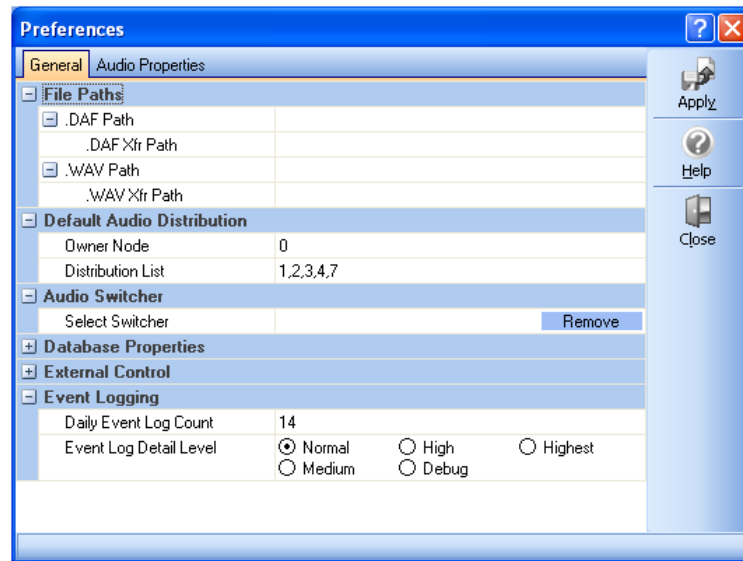
There are a number of preference settings that enable or disable certain features within XStudio Recorder and other settings that affect the behavior of XStudio Recorder at run-time.

When changes are made and "applied" (saved), XStudio Recorder automatically updates its behavior to match the new settings, with just a few exceptions - notably, any changes to the [database location](#).

This section provides details on each of the available preference settings, organized as they are displayed.

3.1 General Settings

The **General** tab contains several groups of properties that control XStudio Recorder start-up behavior, identify external devices that may be connected, adjust certain automation database settings and configure the application event logging. Most property settings on this page have default settings, so you need change only those settings that are applicable to your use of XStudio Recorder and can leave the balance of the properties as-is.



XStudio Recorder General Properties

File Paths

This group of properties defines where recordings made by XStudio Recorder will be placed for .DAF and .WAV files and optionally, a file transfer path for each. Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ</u> <u>Description</u>
.DAF Path	✓ The fully-qualified path where audio recorded as .DAF or .DFF formats will be stored. This path is viewed from the perspective of the audio engine service.



The XStudio Recorder audio engine runs as a service application and as such, has no knowledge of any "mapped" drives – a drive letter assigned to a folder on a PC other than the one the audio engine is running on. Therefore, in order for the audio engine to be able to play or record files that are located on another PC, the paths to those folders must be entered using UNC notations. As an example, instead of using "**P:\Audio**" as the path, use the UNC notation: **\Remote_PC_Name\Share_Name\Audio** in the path property field.

└ .DAF Xfr Path	Use of this property is optional. If you enter or select a path for this property, a copy of each newly-created .DAF or .DFF cart (audio file) is placed in the specified folder. This path is viewed from the perspective of the main XStudio Recorder application.
.WAV Path	✓ The fully-qualified path where audio recorded as a .WAV format will be stored. This path is viewed from the perspective of the audio engine service.



The XStudio Recorder audio engine runs as a service application and as such, has no knowledge of any "mapped" drives – a drive letter assigned to a folder on a PC other than the one the audio engine is running on. Therefore, in order for the audio engine to be able to play or record files that are located on another PC, the paths to those folders must be entered using UNC notations. As an example, instead of using "**P:\Audio**" as the path, use the UNC notation: **\Remote_PC_Name\Share_Name\Audio** in the path property field.

└ .WAV Xfr Path	Use of this property is optional. If you enter or select a path for this property, a copy of each newly-created .WAV audio file is placed in the specified folder. This path is viewed from the perspective of the main XStudio Recorder application.
-----------------	---



User rights in the target paths must include both read and write privileges. Be sure that the audio engine service logon account has the appropriate privileges for both the .DAF and .WAV path entries. Similarly, the logged on user (running the XStudio Recorder application) must have appropriate privileges for the .DAF and .WAV Xfr Path entries.

Default Audio Distribution

The Audio Distribution properties are used when recordings created with XStudio Recorder are targeted to DCS or Maestro systems. This group of properties establishes default values that can be overridden in each recording.

<u>Property</u>	<u>Description</u>
Owner Node	This property is used to identify the work station that "owns" an audio recording. It is applicable for "distributed audio" systems – sites that do not have either a Maestro or DCS system with ACP (Audio Central Plus) or XStudio. The default value is zero (0) – if you have an ACP system or are using XStudio, you can leave this value at the default. To change the value, either enter the zero-based node number or use the spin controls adjacent to the field. The maximum value that can be entered is 63.
Distribution List	On entering this field a pop-up panel is displayed. The Edit Distribution Panel is used to make selecting the audio work stations in the facility that need to receive recordings created for this station easier and more understandable. In short, check the stations that should be able to play recordings created for this station. The list of stations can be customized for ease in identifying work stations - for more detailed information, see the Using the Edit Cart Distribution Panel topic.

Audio Switcher

If you will be using an audio switcher with XStudio Recorder, you select the device in this section. At present, XStudio Recorder supports just one switcher at a time and does not support "ganging" audio switchers together, a feature is available on some Broadcast Tools audio switchers.

<u>Property</u>	<u>Description</u>
Select Switcher	Select the audio switcher to be used from the drop-down list. Use the adjacent [Remove] button to clear the field. See the External Resources topic for more information on creating a switcher resource.

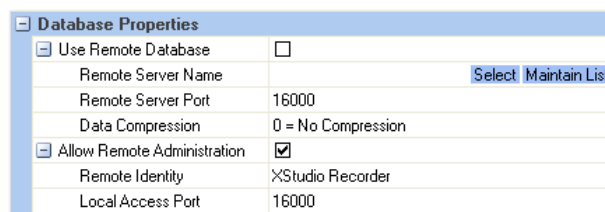


If you change the selected audio switcher and apply (save) the settings, XStudio Recorder will update when the Preferences dialog is closed. This includes changing to the COM port that is used by the new switcher and retrieving the input relay map. If you change switchers, be sure the newly-selected device is connected to the PC on the correct COM port.

Database Properties

By default, XStudio Recorder automatically creates and maintains a set of tables that contain automation data - resources, tasks, actions, and scheduled events - along with some of other tables not important to know about in your usage of XStudio Recorder. Under normal circumstances, no adjustments to the default database properties are needed to operate XStudio Recorder. See the [Database Reference](#) for more information.

However, XStudio Recorder offers some flexibilities that you may find useful, including the ability to allow remote access to the XStudio Recorder local database or to access a centralized database which may be physically located on another PC.



Database properties (expanded view)

There are two sets of properties in the database group, one for implementing connection to a remote database server and one for enabling access to the default local database controlled by XStudio Recorder. By nature, these two sets of properties are mutually exclusive - if you are using a remote database, local administration properties are ignored and vice versa.



If you make changes to the database properties, the changes will not take effect until XStudio Recorder is restarted.

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ Description</u>
Use Remote Database	If checked, XStudio Recorder will use a remote database instead of the default local database. In order to use a remote database running as a stand-alone database server, you must have a database server application installed, configured and running. As a default, this option is disabled.



Do not check the Use Remote Database item unless you are sure you have a remote database server installed and operating properly! If selected, XStudio Recorder will not use the default local database and will try to find a remote database.

└ Remote Server Name	✓ If you are using a remote database server, the correct name and address of the server are entered in this field. Use the adjacent [Select] and [Maintain List] buttons to select a defined database server or create a list of available servers respectively. See the topic on Database Server List Maintenance for more information.
└ Remote Server Port	✓ If you are using a remote database server, the port number must match the one the server is using. The default value is 16000.
└ Data Compression	As a default, when using a remote database server, data is transferred between the database server and XStudio Recorder uncompressed. If your LAN performance is slow, you can implement varying degrees of data compression, which causes the database server to compress the data before sending it to XStudio Recorder, thus reducing the required LAN bandwidth. However, this is at some cost as the database server must go through the extra step of compressing before sending the information and XStudio Recorder must decompress the data when it is received.

<u>Property</u>	<u>REQ Description</u>
Allow Remote Administration	<i>If you wish to implement data compression, select one of the compression options from the drop-down list that appears when editing the property.</i> See the topic on Implementing Data Compression for further information on data compression settings.
└ Remote Identity	✓ If remote administration of the automation database is enabled, the identity entered here is how this instance of XStudio Recorder will be identified to remote users. The default value is "XStudio Recorder".
└ Local Access Port	✓ The port number to use when remote administration is allowed. The default value is 16000.



The necessary stand-alone database server software for implementing a centralized database is not included in the XStudio Recorder installation package. If you wish to use a centralized database, contact your vendor for information on obtaining the database server software, along with its requirements for use.

External Control

If you need to control an external device with serial data, you can optionally enable this feature set. This set of properties enables external control usage and allows you to assign a COM port and baud rate to be used. The External Control Port is used in conjunction with the [Send Control Command](#) task.

External Control	
Enable External Control Port	<input type="checkbox"/>
COM Port	1 Select COM Port
Baud Rate	9600

External Control properties (expanded view)

<u>Property</u>	<u>Description</u>
Enable External Control Port	If checked, processing of Send Control Command tasks is enabled.
COM Port	Select the COM port to be used for Send Control Command tasks. Valid port numbers are 1-8. Use the [Select COM Port] button to select the COM port from a list of ports available on the host PC. The default port number is 1. Note: If you are also using an audio switcher, the external control COM port must be a different port number.
Baud Rate	Select the baud rate to be used from the drop-down list of available speeds. The default baud rate is 9600.



COM port settings other than the port number and baud rate are not user-adjustable. Standard settings are used for parity, data bits and stop bits. These settings are:

Parity: None

Data Bits: 8

Stop Bits: 1

Event Logging Properties

As XStudio Recorder runs, information relating to its performance and problems encountered is written to a group of application event logs. The event logs are text files maintained automatically by XStudio Recorder in the form of event logs for each day, with a default of 14 days (14 daily files) being available for review at all times. Event logs are generally used in troubleshooting problems or determining why XStudio Recorder behaved in a certain way. Review the topic on [using application event logs](#) for additional information.

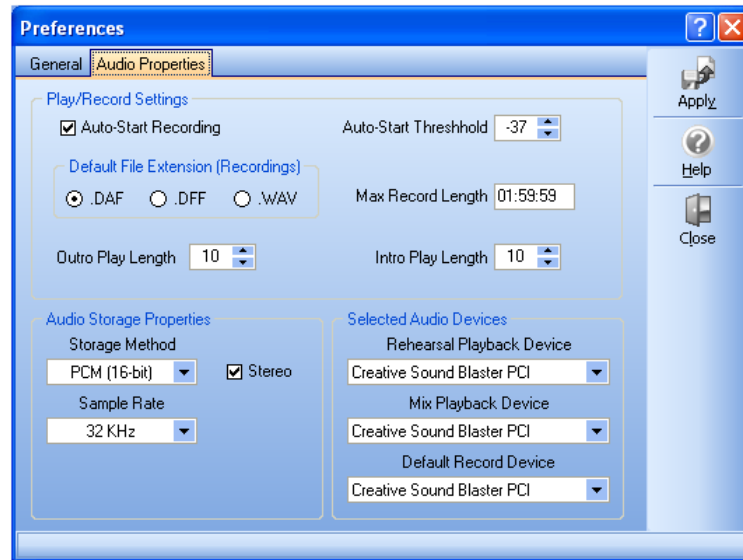
This group of properties provides the means to control the number of days XStudio Recorder will retain daily event log files, and to adjust the amount of information that is stored to the file as XStudio Recorder runs - the so-called "detail level".

<u>Property</u>	<u>Description</u>
Daily Event Log Count	The default is to keep daily event logs around for 14 days. Use the spin-edit control that appears when you begin editing the property to increase or decrease the number of days you wish to keep daily event logs. The minimum number of days is 7, the maximum number is 62.

<u>Property</u>	<u>Description</u>
Event Log Detail Level	The default detail level is " Normal ". As you change the detail level to Medium, High, Debug, and Highest, XStudio Recorder logs more and more information to the daily event log. The higher the detail level, the larger the daily event log file size will be. For troubleshooting, you should set the detail level to " Debug " as a minimum.

3.2 Audio Properties

The Audio Properties tab is used to create default settings for audio recordings. These default values are used when setting up a new [Start Record](#) task. Most settings can be customized within the Start Record task if needed.




XStudio Recorder Audio Properties

Play/Record Settings

In this section, you set default properties that will be used for recording audio.

<u>Property</u>	<u>Description</u>
Auto-Start Recording	If checked, the system will wait for first audio (based on the audio threshold you set). If not checked, recording will begin immediately and may include some "dead air" at the beginning for the recording. This setting can be overridden in each recording.
Auto-Start Threshold	The level at which auto-recording will begin, if enabled for a given recording. The available range is -1 to -100.
Default File Extension	The type of audio file that will be created when recording. Use the .WAV option to store the recording as a standard wave file for post-recording editing, etc. This setting can be overridden in each recording.
Max Record Length	The maximum length that will be allowed for a recording, entered as hours, minutes, and seconds. The default value is one hour (01:00:00). The value must be greater than zero

<u>Property</u>	<u>Description</u>
	(00:00:00) and has a maximum of 23:59:59 (23 hours, 59 minutes, 59 seconds). If the maximum length entered here is reached during a recording, the recording is stopped automatically.



If XStudio Recorder is not registered, the maximum record length entered here is overridden and set to ~45 seconds for prospective customer evaluation purposes. When XStudio Recorder is registered, this limitation is removed.

Outro Play Length	<Reserved for future use>
Intro Play Length	<Reserved for future use>

Audio Storage Properties

This panel displays either two or three drop-down lists, depending on the type of audio storage method selected, along with a check box to select whether or not the recordings will be monaural or stereo. These settings are the default values used when setting up a new recording and can be overridden in the Start Record task dialog.

<u>Property</u>	<u>Description</u>
Storage Method	Choose the base storage method for audio files that will be recorded using XStudio Recorder. Available options are PCM (16-bit linear), MPEG 2, and apt-X. apt-X storage requires additional licensing of the apt-X encoding software, which is not a part of the standard XStudio Recorder software package.
Stereo	The default recording method is stereo audio, but you can change it mono (monaural) audio by unchecking this item.
Sample Rate	Select the desired sample from the drop-down list. Sample rate options vary, based on the Storage Method selected. If in doubt, select the 32 KHz option.
Bit Rate	This option is visible and available only when the MPEG 2 Storage Method is selected. For stereo, 256 Kbps is the most widely-used.

Selected Audio Devices

In this section, you select the audio devices (channels) that will be used for recording and playback. Each selection is made from a drop-down list of available devices.

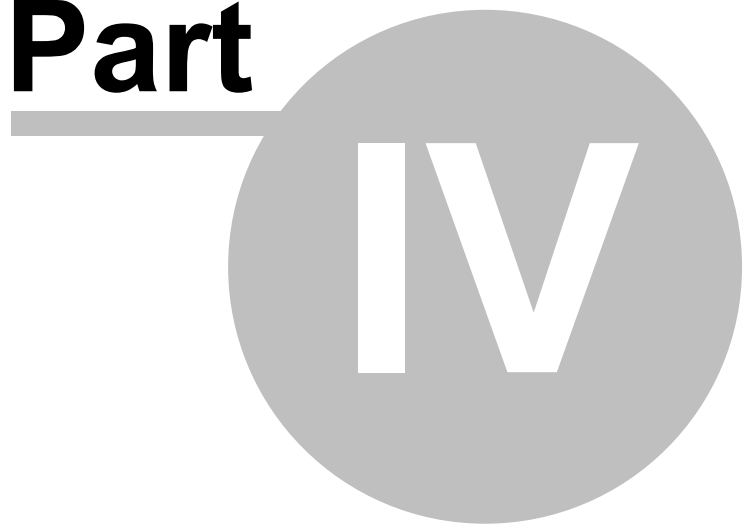


If the drop-down lists are empty, the usual cause is that the audio engine service is not running. The XStudio Recorder audio engine generates a list of devices at start-up. These lists are retrieved for display when setting your preferences. If the lists are empty and you make other changes to your settings and save them, **device selection settings are not changed**. See the [Troubleshooting](#) topics for possible causes and solutions.

<u>Property</u>	<u>Description</u>
Rehearsal Playback Device	<Reserved for future use>
Mix Playback Device	<Reserved for future use>
Record Device	The default audio recording channel that will be used. The default value is the first available audio recording device. This setting can be overridden in each recording if you have more than one record device in your system.

Operation - Using XStudio Recorder

Part

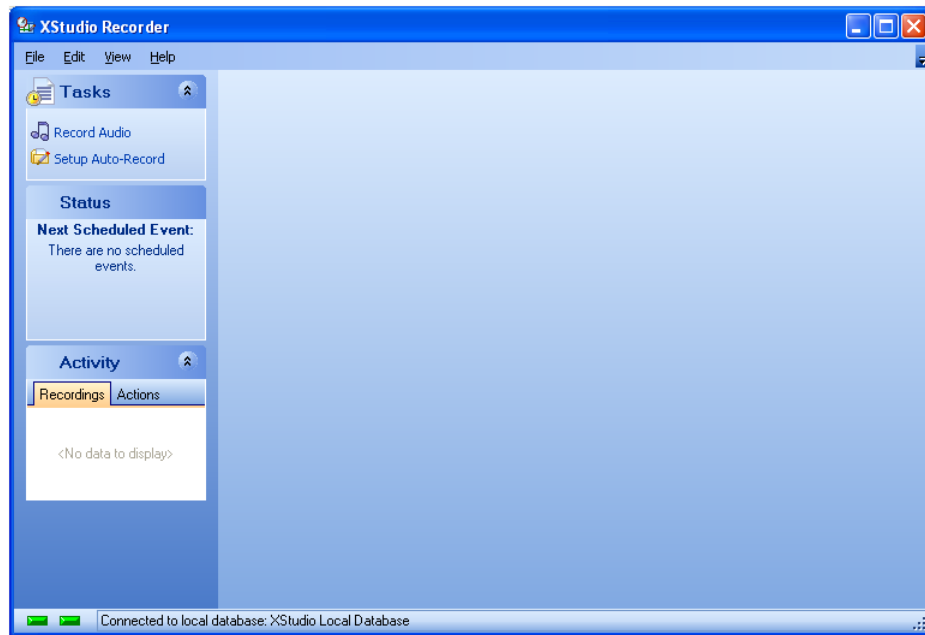


Most usage of XStudio Recorder involves setting up and maintaining recordings. After recordings are set up and tested, XStudio Recorder will generally be running unattended.



XStudio Recorder must be launched and running for automatic recordings to occur. You may wish to add XStudio Recorder to your Windows **Startup** folder so that XStudio Recorder automatically launches whenever a user login occurs on the host PC.

To launch XStudio Recorder, [**Double-Click**] on the XStudio Recorder desktop icon (if you created it during installation) or select the menu item item **Launch XStudio Recorder** from your programs menu. As XStudio Recorder is starting, its registration status is checked, a check is made to see if the audio engine is installed and running (XStudio Recorder will attempt to start the audio engine service if it's not running) and the XStudio Recorder database is started.



XStudio Recorder Main Display

The example screen above shows the default appearance of XStudio Recorder after it is started. The display consists of a set of panels along the left side that provide access to the [automated recordings setup area](#), the next pending scheduled recording and current recording activity. Additionally, a traditional Windows application menu is available.

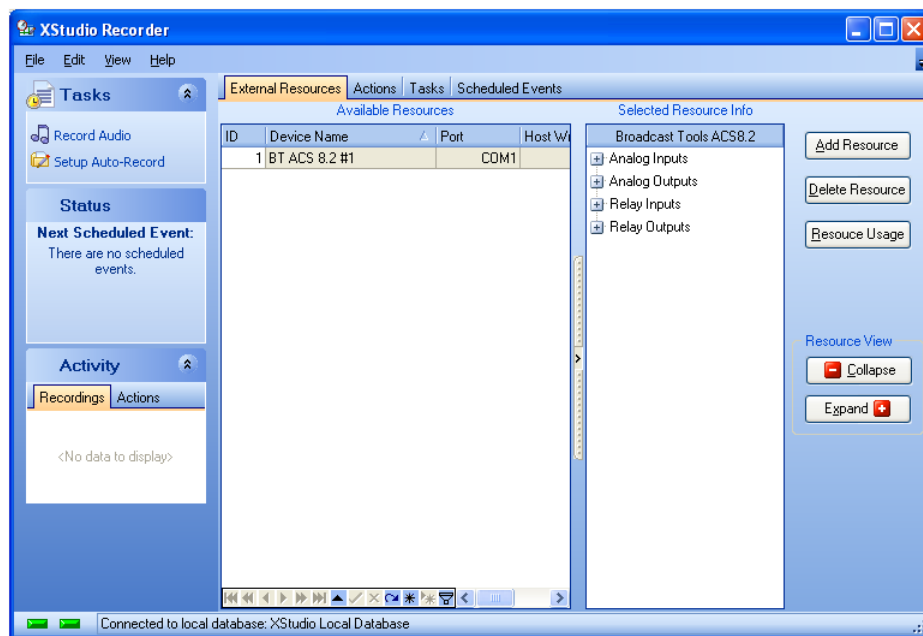


Before you can use XStudio Recorder, you must at a minimum define folder locations for recordings and a default recording device. Select the main menu item **Edit | Preferences** to configure these items. See the topic on [Configuring XStudio Recorder](#) for additional information.

The main display can be customized to suit your preferences - you can position and re-size the display and adjust the general appearance (using the menu item **View | Appearance**). When you close XStudio Recorder, these settings are saved and subsequently restored the next time XStudio Recorder is started.

4.1 Setting Up and Maintaining Automated Recordings

Most of your interaction with XStudio Recorder will be setting up automatic recordings. In the main display's **Tasks** panel, click on the item **Setup Auto-Record**. The XStudio Recorder display will change to show a group of tabs for selecting each of the components used to set up recordings. In this area, you are accessing the XStudio Recorder database, which is a set of tables that store tasks, actions, external resources and schedule information.



XStudio Recorder Recordings Setup Area

Basic Steps to Create an Automatic Recording

There are just a few basic steps to create an automatic recording. Depending on the type of recording (relay-driven or schedule-driven), some steps are optional.

1. If your recording will be initiated by an input relay or if you will be using an audio switcher to route audio to your recording input channels, you must define an audio switcher that will be used. When the switcher has been defined, open [Preferences](#) and make it the default audio switcher. For additional information on creating an audio switcher resource, see the topic on [External Resources](#).

2. Create a [Start Record Task](#). If you are using an audio switcher to select the audio to be recorded, you will also create an [Update Switcher Task](#). There may be other XStudio Recorder tasks that you wish to execute in conjunction with the recording - if so, review the [Task Reference](#) topic for information on available tasks and what they do.
3. When you have completed creation of the needed tasks, create an [XStudio Recorder Action](#) and assign the tasks to the action in the order in which you want them executed.
4. If you are using the built-in XStudio Recorder scheduling system to execute the recording, create a [Scheduled Event](#). If an input relay on your switcher will be used to execute the recording, assign the Action you created for it to the correct input relay in the [External Resources](#) area.

4.1.1 Common Table Display Functionality

Each of the automation database table maintenance areas shares some characteristics and interface controls, which are documented in this topic. Some functionality discussed in this section may not be available in some maintenance displays because the functionality is not applicable for that maintenance area.

Data Display

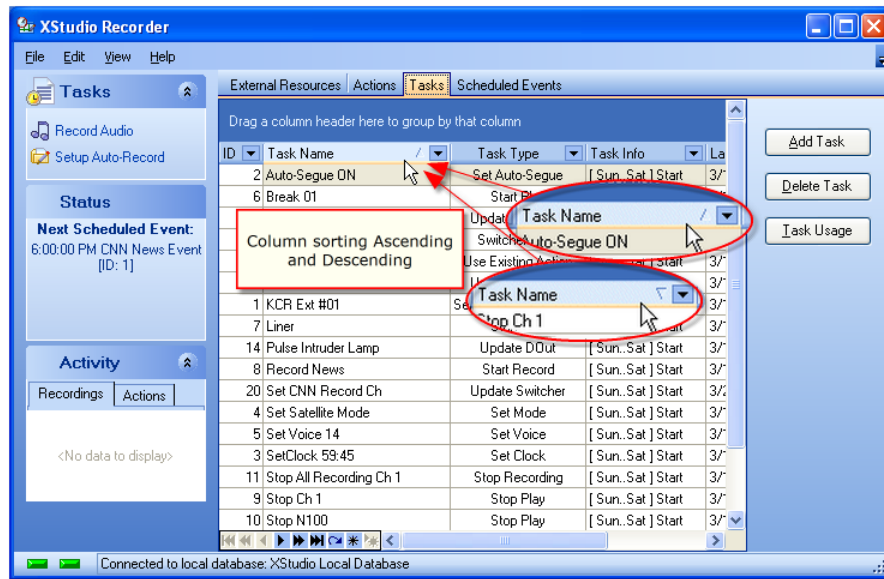
All database tables are displayed in tabular format - rows of information, each containing columns of individual record field information (properties). The display of records for a given table can be manipulated in a number of different ways to organize or limit information that is shown. Information can be sorted, grouped and filtered for ease of working with specific data records. Additionally, individual columns in the table can be moved and resized to suit your needs.



XStudio Recorder does not "remember" data display layout settings from one session to the next. When re-opened, tables will display the information in the application default sort order and column layout.

Sorting Data

As a default, most database tables are shown in what's known as "sorted order". This means that the data is organized, generally alphabetically, based on a particular column (field). The sort order, ascending or descending, can be modified on demand. Columns that are a part of the current sort order contain a small triangular mark pointing either up or down to indicate the column's sort direction.



Sorting Data

To sort displayed information on a particular column, click on the column's header text. Initially, the data is sorted ascending. To sort the data descending, click on the column's header text a second time.

You can also sort on multiple columns where applicable. After setting the sort order on the first column, hold down the [**Shift**] key and click on a second column's heading text. Both columns are now included in the sorting, first by the original column, then for equal values in the first column, by the second column.

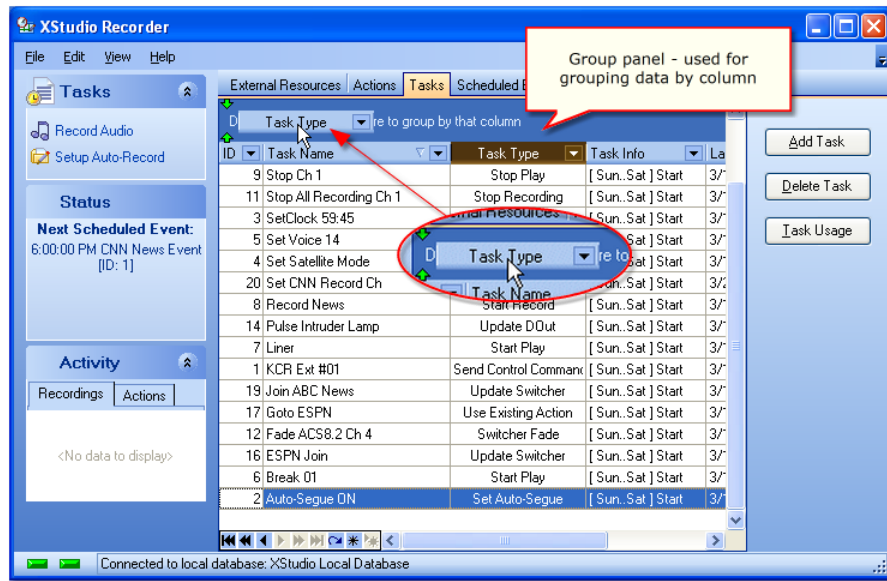
To remove a column from a group of columns used for sorting, hold down the [**Ctrl**] key and click on the column's header text. The selected column will no longer be included in data sorting.



Not all columns in some data table displays have sorting available. If you attempt to sort on a column that does not have sorting enabled, nothing happens.

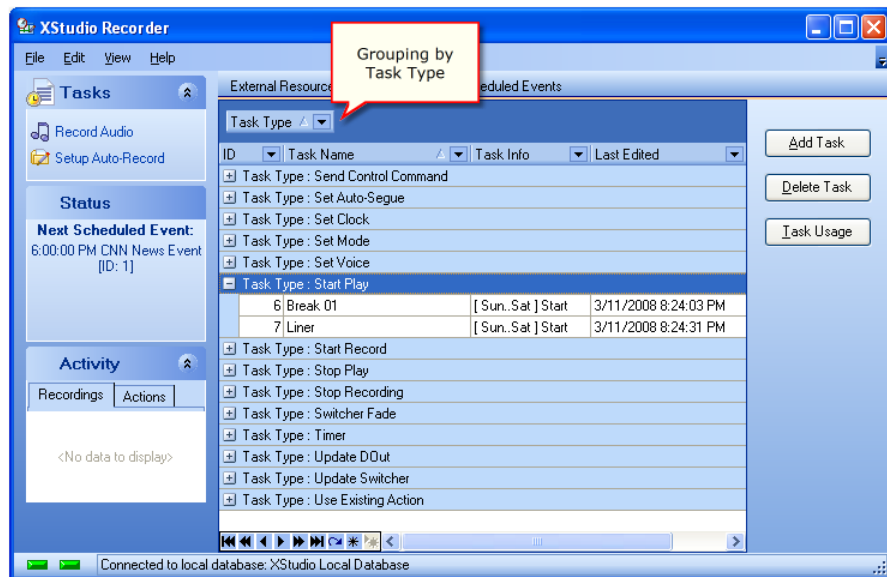
Grouping Data

Another way to organize displayed data is to group the information based on like data. For instance, you may wish organize the display so that all Tasks of the same kind are together. When grouping is available for a displayed table, a group panel, as shown, is visible. To group information based on a given column, press and hold the left mouse button down on the column header text, drag the column into the group panel and drop it.



Grouping Data

When grouping of data is applied, the resulting display is similar in appearance to the example shown below.



Data grouped by Task Type

You can group on multiple columns where applicable. The effect is to have groups within groups, also known as sub-groups. To add a column to the current grouping, drag another column into the group panel as you did with the original column.



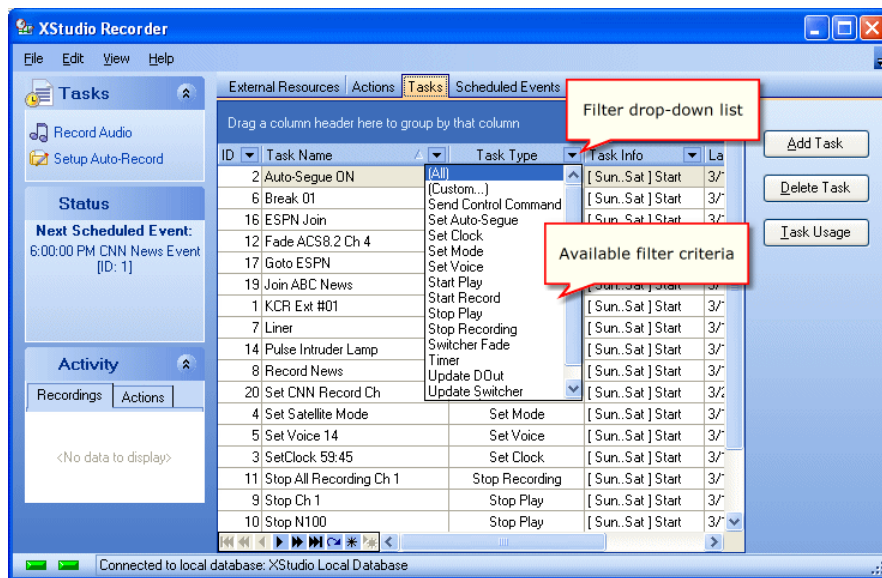
Grouping is not available for all columns in some data tables. If you attempt to drag a column into the group panel that is not allowed, the

mouse cursor changes to indicate dropping the column in the group panel is not allowed.

Filtering Data

Displayed records can be reduced to just those items you wish to view using data filters. There are two ways to filter data - by using the dropdown list of filters for a given column of data, and by creating your own custom filters.

To use the built-in column filtering, click on the filter access button for a given column.



Drop-down filter list

Select an item from the list of available filter criteria to display only selected records.



Data filtering active

Data filtering can be temporarily disabled, if desired. Uncheck the filter in the active filter panel and all data will again be displayed. To re-enable the filter, check the filter item in the active filter panel.



Filtering is not available for all columns in some data tables. In a given table display, columns that can be filtered display a dropdown list graphic. Columns that do not support filtering do not contain the filter graphic.

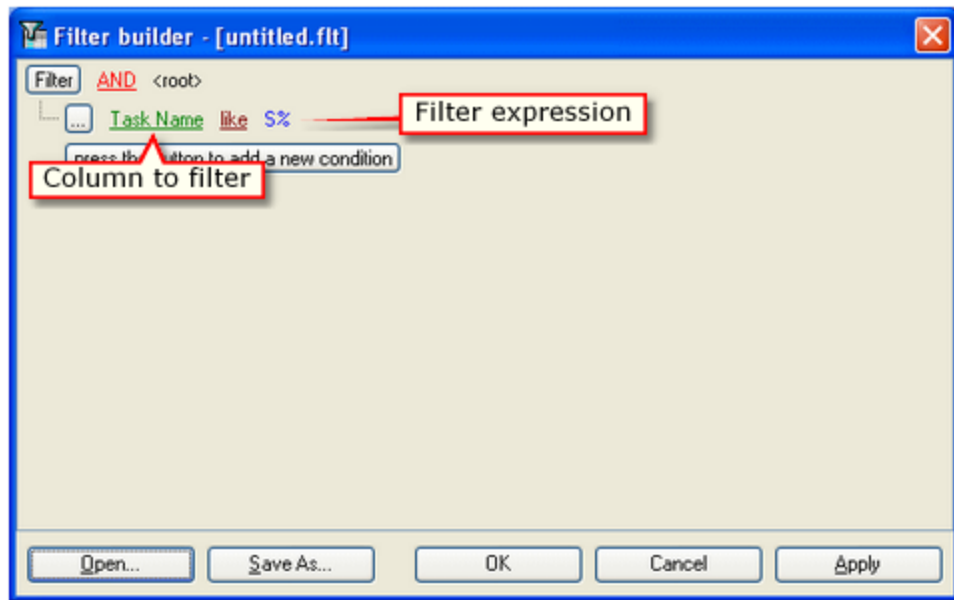
Custom Data Filters

In addition to standard filtering using the dropdown lists for columns, you can also create more complex filtering using custom data filters. To display the custom filter builder dialog, click on the **[Customize]** button in the filter panel.



Launch filter builder dialog

The custom filter builder dialog allows you to modify current filter parameters and to add fields (columns) to the data filter, creating complex filters.



Filter builder dialog

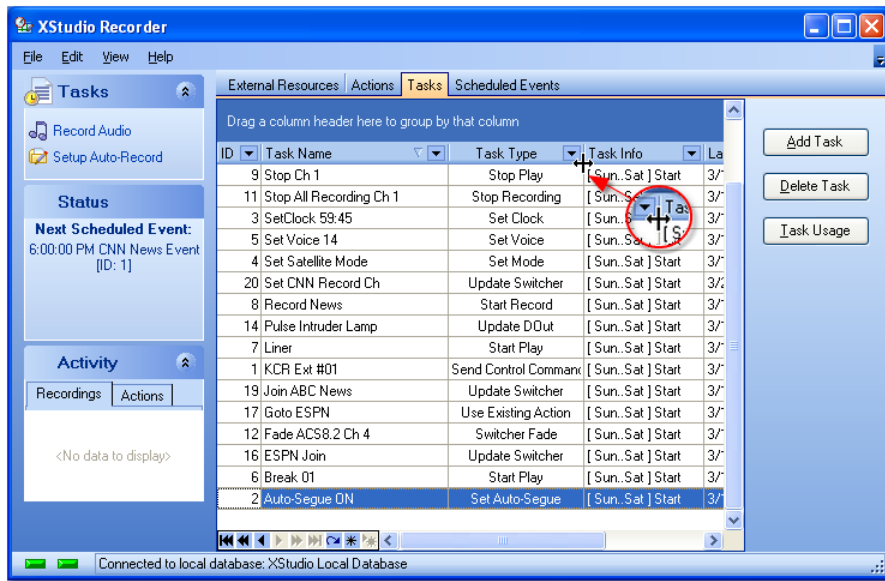
Filters you create can be saved using the **[Save As]** button and later reloaded using the **[Open]** button.



You can use wild-card characters in filters. The "_" (underscore) character is used for single-character wildcards, the "%" (percent) symbol is used for multi-character wild-cards.

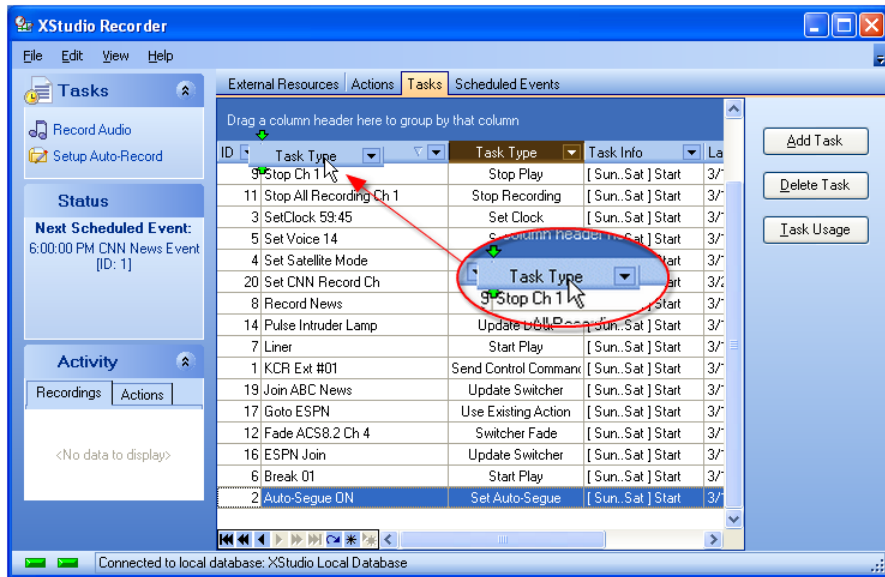
Adjusting Column Size and Position

Data display columns can be both moved and resized to accommodate your needs. To change the width of a column, move the mouse over the end of the column you wish to resize. The mouse cursor shape changes as shown. Press and hold the left mouse button down, then move left or right to decrease or increase the width of the selected column.



Resizing a column

You can reorder columns by moving a column to a different location. To move a column, press and hold the left mouse button down on the column header text. Drag the column header to another location and drop it. As shown, a pair of arrows appears as you are dragging the column header, indicating the new position of the column if you drop it.



Moving a column

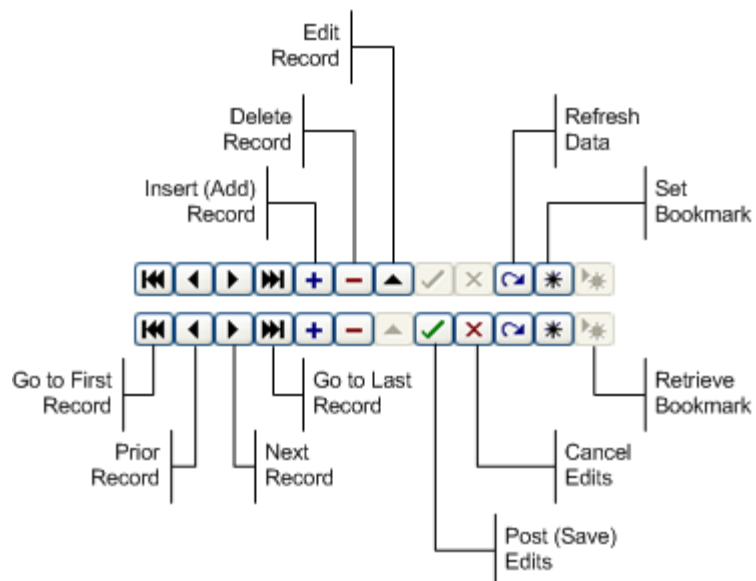
Resizing or moving column display information has no effect on the data - the changes made are cosmetic and are available for users to customize the display for ease of use.

Data Navigators

Several areas in XStudio Recorder make use of so-called "data navigators." Essentially, a data navigator is an organized set of buttons that provides an easy-to-use interface for navigating around in displayed data like the log, station definitions, cart masks, and music databases. In addition to navigation, some of the navigators include buttons to add (insert), edit, & delete items.

Two example navigators are shown here – there are two because the "state" (availability) of buttons will vary depending on the current task. For instance, if you are at the beginning of a log, the navigator buttons for moving backwards through the log are disabled – at least, until you move away from the beginning of the log.

Data Navigator Button Map



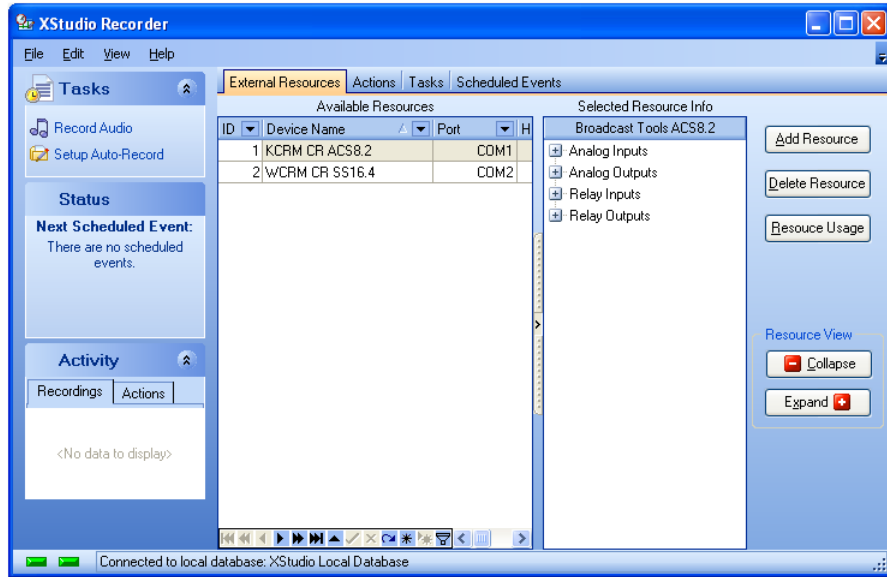
Depending upon the area of XStudio Recorder in which you're working, some of the navigator buttons depicted are not visible because the functionality they provide is not allowed.

Printing Lists

Most of the maintenance areas provide an option to print selected information, such as external resource maps and action task lists, for reference purposes. Typically, the print option is a part of pop-up context menus. The printer used is the operating system's default printer.

4.1.2 External Resources

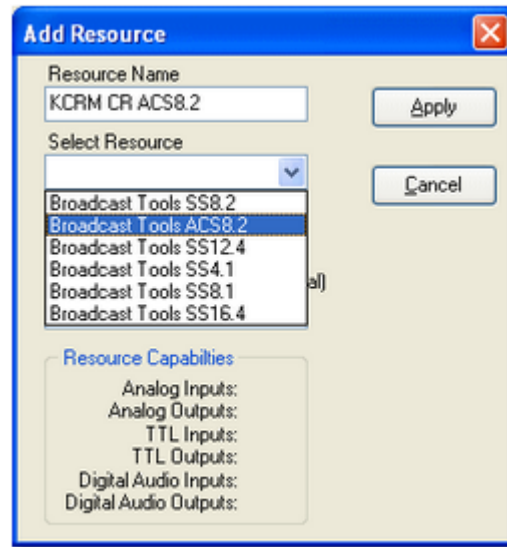
A significant part of handling automated task performance is the need to respond to or control devices connected to the PC running XStudio Recorder. This topic covers creating, editing and configuring these resources.



External Resource Display

Adding a New Resource

To create a new resource, click on the **[Add Resource]** button. A dialog appears, allowing you to enter a user-friendly name for the new resource, select the resource type from a list of supported devices, and select the COM port to which the resource is connected on the host PC.



Selecting the Resource Type

Add Resource Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ</u>	<u>Description</u>
Resource Name	✓	The user-friendly name of the resource. Maximum length is 30 characters.
Resource Type	✓	Select the resource type from the dropdown list. All supported resources are listed.
COM Port		Select the COM port to which the device is connected from the dropdown list. COM ports 1 through 8 are supported.
Host Work Station		Not used. For future expansion.

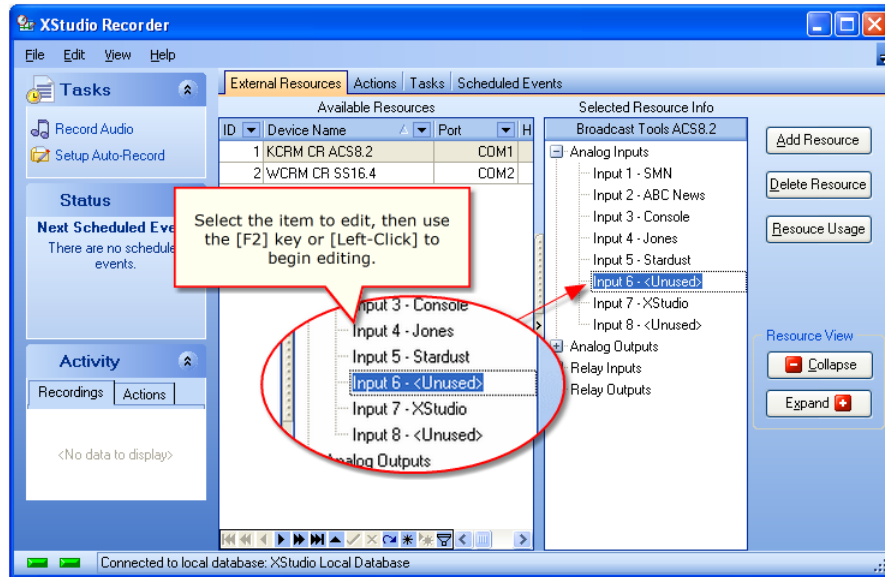
When you have completed setting the properties for the new resource, click on the [**Apply**] button. The database record for this resource is created, along with a device map that displays available input channels, output channels, TTL Inputs, TTL Outputs, Digital Audio Inputs and Digital Audio Outputs, as applicable.

Resource Labeling

Each resource has some combination of audio input channels, audio output channels, relay inputs and relay outputs. Not all resources have all of these features, but all have at least some of them.

When a resource is first created, a default set of labels is applied to all items available in the resource as a starting point. For ease in identification as you are using the resource, it's a good idea to label them to better identify each item's purpose.

To edit a resource label, select the item you wish to edit, then either use the **[F2]** key or **[Left-Click]** to begin editing, as shown.



Editing Resource Labels

When you have completed the label edits, press the **[Enter]** key or select another label to edit. All label edits are automatically saved when you move to a new resource record or use the **[Post]** button on the resources [data navigator](#).

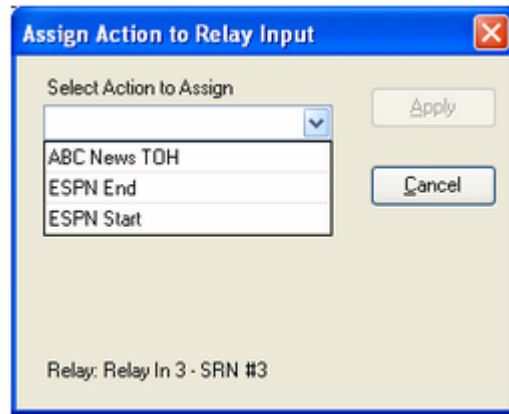
Attaching Actions to Relay Inputs

If a selected resource has relay inputs, you can associate an [Action](#) with an input. When XStudio Recorder receives a message from the resource that the input relay has been triggered, XStudio Recorder executes the assigned action.



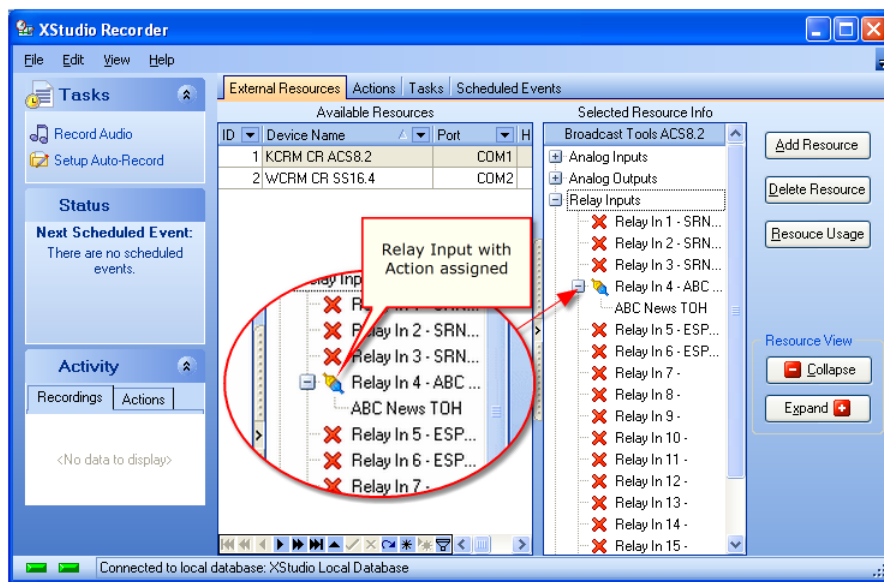
You must have created at least one Action in order to be able to assign an Action to a Relay Input. See the [Actions](#) topic for information on creating actions.

To assign an Action to an input relay, **[Right-Click]** on the relay input label to display a pop-up context menu of options. Select the item **Assign Action to Relay Input...** A dialog appears, containing a dropdown list of all available Actions.



Assign Action to Input Relay Dialog

When you have selected the Action you want associated with the Input Relay, click on the **[Apply]** button to save your selection. The selected resource label will be updated to reflect the assignment.



Action Assigned to Relay Input

Actions assigned to input relays here are considered the "default" input relay mapping (the connection of an Action to an Input Relay). During XStudio Recorder program execution, these input relay connections can be overridden using the [Remap Input Relays Task](#). The same task type can also be used to restore the default input relay mapping assigned here. This type of functionality is particularly useful when executed special programming like sports broadcasts or music specials delivered by a satellite programming service.

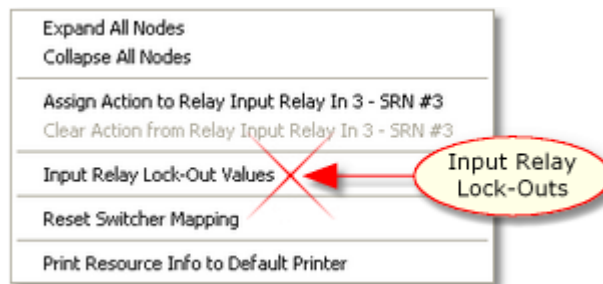
Remove (Clear) an Action from an Input Relay

To remove or "unhook" an Action from an Input Relay, [**Right-Click**] on the relay input label and select the menu item **Clear Action from Relay Input ...**. The attached Action is cleared and Input Relay graphic changes to a red "X" to reflect that it no longer has an Action assigned to it.

Adjusting Input Relay Lock-Out Values

If a selected resource has input relays, you can "lock out" the relay for a specified period of time after it is initially triggered. The effect is to ignore any further trigger messages from the device until the "lock-out" time has elapsed. The idea is to prevent multiple Input Relay triggers, either as a result of erroneous multiple relay assertions by the device signaling the Input Relay or so-called "relay bounce." Adjusting relay lock-out values is also sometimes referred to as "setting relay de-bounce."

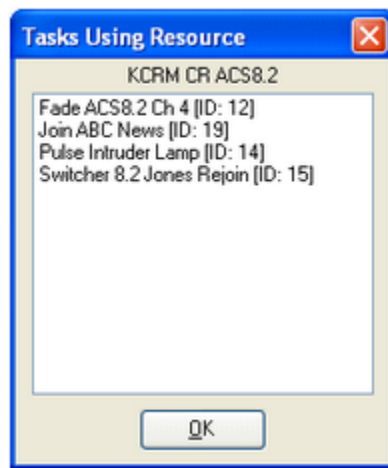
To adjust lock-out values, [**Right-Click**] anywhere on the resource map (the list of resource labels). A context menu appears, similar to the example shown.



Select the **Input Relay Lock-Out Values** menu item to display the [Modify Device Input Relay Lock-Out](#) dialog. When edits are complete and applied, the dialog closes and resource record is updated.

Resource Usage

Several types of automation [Tasks](#) are resource-specific, such as tasks that update switcher channels, fade an audio channel on the switcher, or pulse a DOut (Relay Output). You can see which tasks are using a resource by selecting the resource and clicking on the [**Resource Usage**] button. All tasks are scanned to see which of them use the selected resource and when the scan is complete, a dialog is displayed containing a list of the tasks that use the resource you selected.



The displayed list includes the task name and its unique ID number. This list can be printed, if desired. [Right-Click] on the list of tasks and select the **Print List to Default Printer** menu item. See the [Printing Lists](#) topic for more information on printing.

Deleting a Resource

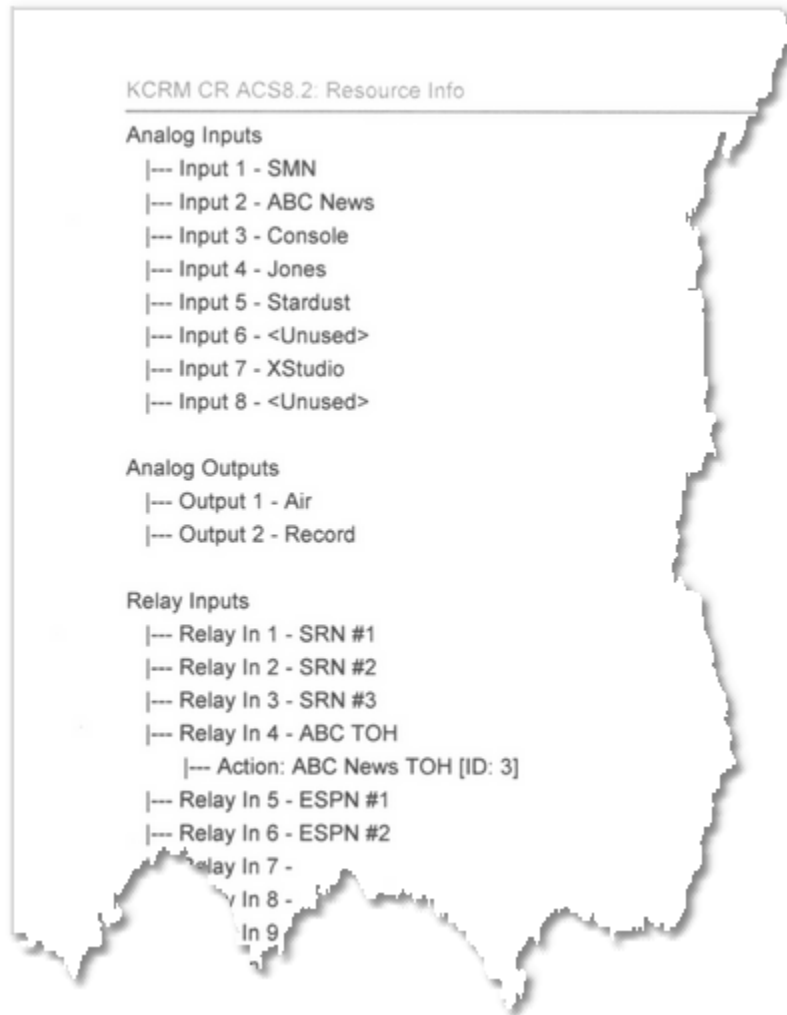
When you no longer need a resource, you can remove it from the database with the [Delete Resource] button. If the resource is used by any tasks, a message will appear, identifying how many tasks use the resource and asking you to confirm that the resource is to be deleted.



Deleting a resource is permanent and cannot be undone! It is highly recommended that **before** you delete a resource, you create a [resource usage report](#) so that you know which tasks, if any, will need to be modified or removed.

Printing Resource Information

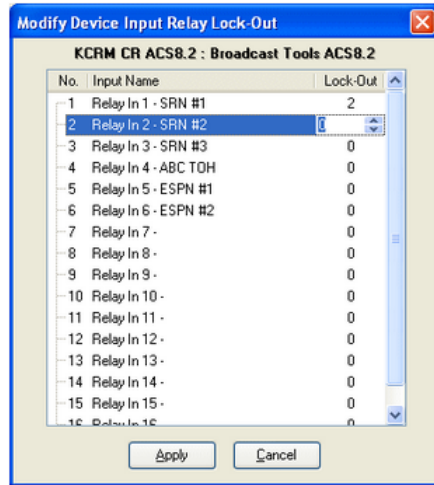
Resource information can be printed for reference, if desired. [Right-Click] on the resource map display and select the menu item **Print Resource Info to Default Printer**. The selected resource information will be printed, similar to the example shown. For more information on printing, see the [Print Lists](#) topic.



Sample Resource Report

4.1.2.1 Input Relay Lock-Out Dialog

The Input Relay Lock-Out dialog is used to set the "lock-out" time of each Input Relay for an external device that includes input relays. The display identifies the selected resource name and type, along with displaying a list of input relays, their labels and current lock-out values.



*Input Relay Lock-Out Properties
Dialog*

Lock-out values are expressed in seconds, in a range of 0..59 seconds. Setting a non-zero value instructs XStudio Recorder to ignore any additional Input Relay signals received for the number of seconds specified.

Setting All Lock-Out Values at Once

You can set all lock-out values for the resource at once, if desired. To do so, [**Right-Click**] on an input name, which displays a context menu. Select the menu item **Set All Values to ..** and enter the value to set for all Input Relays.

Printing Lock-Out Settings

If desired, you can print the lock-out values you have assigned to the resource for reference. [**Right-Click**] on an input name and select the menu item **Print Lock-Out Information**. See the [Printing Lists](#) topic for more information.

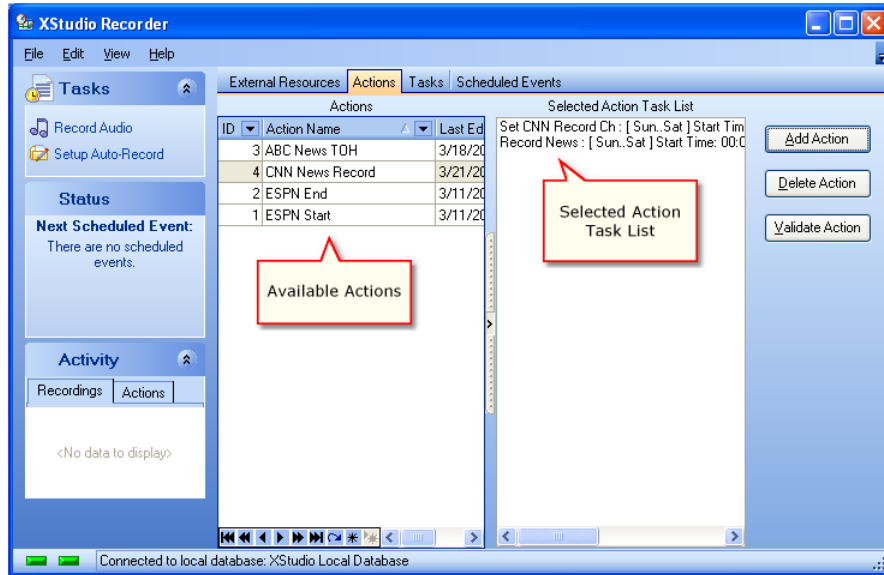
Input Relay Lock-Outs - KCRM CR ACS8.2 : Broadcast Tools ACS8.2

01	:	Relay In 1 - SRN #1	[6 Seconds]
02	:	Relay In 2 - SRN #2	[0 Seconds]
03	:	Relay In 3 - SRN #3	[2 Seconds]
04	:	Relay In 4 - ABC TOH	[0 Seconds]
05	:	Relay In 5 - ESPN #1	[0 Seconds]
06	:	Relay In 6 - ESPN #2	[0 Seconds]
07	:	Relay In 7 -	[1 Seconds]
08	:	Relay In 8 -	[0 Seconds]
09	:	Relay In 9 -	[0 Seconds]
10	:	Relay In 10 -	[0 Seconds]
11	:	Relay In 11 -	[20 Seconds]
12	:	Relay In 12 -	[0 Seconds]
13	:	Relay In 13 -	[0 Seconds]
14	:	Relay In 14 -	[0 Seconds]
15	:	Relay In 15 -	[0 Seconds]
16	:	Relay In 16 -	[0 Seconds]

Sample Relay Lock-Out Report

4.1.3 Actions

An Action is a set of instructions you create (and name) to perform one or more [Tasks](#). Actions are a powerful key component of XStudio Recorder program execution. Actions execute as a result of some sort of stimulus or "trigger," which can be as a response to an [Input Relay](#) or a [scheduled event](#).



Action Maintenance Display

Actions are essentially ordered lists of [Tasks](#) to perform. By design, Tasks are reusable - once a Task is created, you can use it in multiple Actions, as needed. When creating new Actions or editing them, you work with the [Action Edit Dialog](#).

Adding a New Action



In order to create a new action, at least one [Task](#) must be defined. If you attempt to create a new Action and there are no Tasks defined, you will be prompted to first create a Task.

To create a new Action, click on the **[Add Action]** button. The [Action edit dialog](#) is displayed. Refer to the [Action edit dialog topic](#) for details on naming the Action and creating the the list of Tasks to perform. When you have completed creation of the new Action and applied the changes, the Action appears in the actions table display and its tasks are displayed in the Action Task List.

Editing an Action

To edit an Action, select the action you wish to change and [**Double-Click**] on it. The [Action edit dialog](#) is displayed, as it is when creating a new Action. Edit the Action name or add, remove and reorder Tasks in the action task list and click on the [**Apply**] button to save your changes.



You can also begin editing an Action by double-clicking on the selected Action's **task list display**.

Deleting an Action

To delete an existing Action that is no longer needed, select the Action you wish to delete and click on the [**Delete Action**] button.



Deleting an Action is permanent and cannot be undone! When an Action is deleted, its unique ID number is also removed and is not automatically used again until such time as the maximum ID number (~4 billion) is reached. If you wish to retain the Action ID number for future usage, you may wish to edit the Action instead, changing the name to something like "Unused Action # 12" and modifying the task list to be a single task like a 5-second timer. This will preserve the Action ID without creating any problems should the Action inadvertently be executed. We used a Timer task in our example because such a task does nothing but wait around for the prescribed amount of time and then exits.

Validating an Action

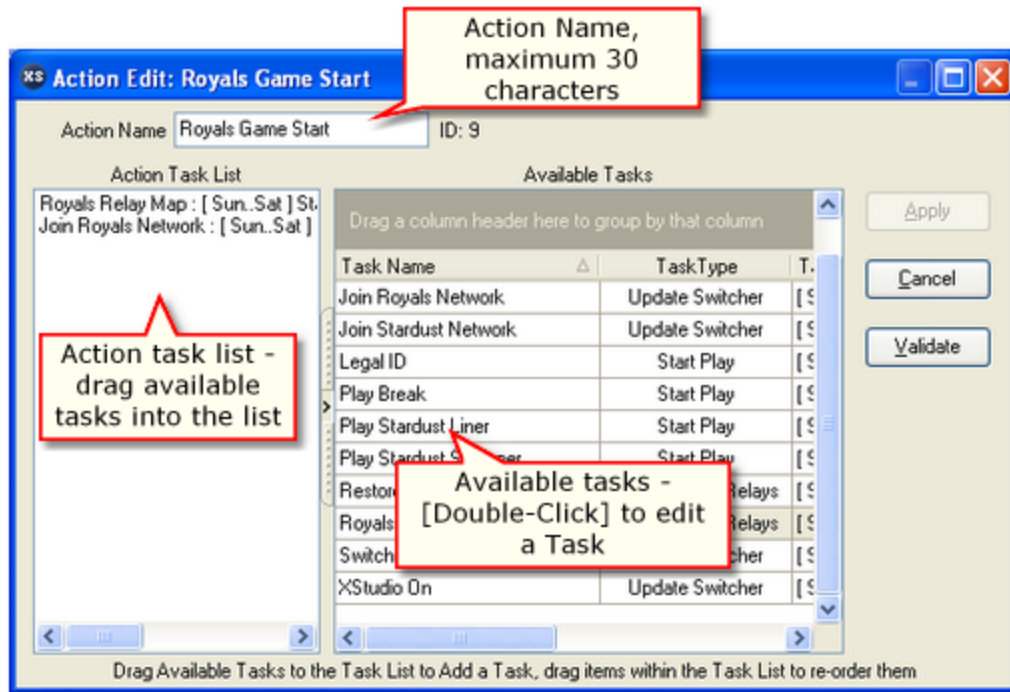
Tasks are global in nature and can be used (shared) by any number of Actions, so it is a possibility that you might inadvertently delete a Task that is still in use as a part of an Action. Action validation checks all Tasks that are a part of the Action to ensure that they exist in the Tasks table.

How Actions are Referenced

Actions are referenced by their unique Action ID number, which is assigned by XStudio Recorder when created. Under normal circumstances, you will not need to know the Action ID value when assigning the Action to an [input relay](#) or a [scheduled event](#), as XStudio Recorder presents the Actions in a list for selection by their user-friendly name.

4.1.3.1 Action Edit Dialog

Creating new Actions and editing an Action are performed with the Action edit dialog, shown here. Using this dialog, you can rename the Action to be more meaningful; add, remove and reorder Tasks that are a part of the Action task list; and add or edit Tasks that you might wish to include in the Action.



Action Edit Dialog

Action Edit Dialog Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ</u>	<u>Description</u>
Action ID		A unique ID number is automatically generated for each new Action. The ID number is in a range of 1 to ~4 billion and auto-generation starts at 1 and counts up. When editing a Action, the Action ID is displayed for reference. When creating a new Action, the Action ID is not displayed as it is not assigned until the Action is saved using the [Apply] button.
Action Name	✓	The user-friendly name of the Action. Maximum length is 30 characters.

<i>Property</i>	<i>REQ Description</i>
Action Task List	✓ The Action task list is as implied - an ordered list of Tasks to be performed as a part of the Action. Task properties related to operating mode, day of week and time of day control whether or not a specific task is actually executed at Action run-time.

Adding Tasks to the Action Task List

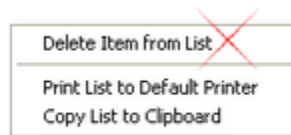
To add a Task to the Action task list, select the Task from the table of available tasks. Hold the [**Left**] mouse button down and drag the Task into task list box, then drop it (release the [**Left**] mouse button). When dragging the item, you can determine its position in the list by hovering the mouse in the exact position you want the Task before releasing the mouse button to drop it.

Moving a Task within the Action Task List

To move a Task up or down in the list, select the item you wish to move, hold down the [**Left**] mouse button, drag the item to its new position and release the mouse button.

Deleting a Task from the Action Task List

To delete a Task from the Action task list, select the item and either; 1) Press the [**Delete**] key; or 2) [**Right-Click**] and select the **Delete Item from List** menu option.



*Action Task List Context
Menu*

Editing a Task in the Action Edit Dialog

Tasks can be edited while working in the Action Edit dialog. [**Double-Click**] on the Task you wish to edit to display the selected task's properties edit dialog. Make the desired changes and click on the task properties [**Apply**] button to save the changes.



Keep in mind that Tasks are **global** in nature and may be used in other Actions. Any changes you make to a Task will also be in effect when other Actions using the task are executed.

Adding a New Task in the Action Edit Dialog

If you find yourself in need of a new Task when editing an Action, **[Right-Click]** on any Task in the Available Tasks table. Select the **Create New Task** menu item from the menu, as shown.



*Available Tasks
Context Menu*

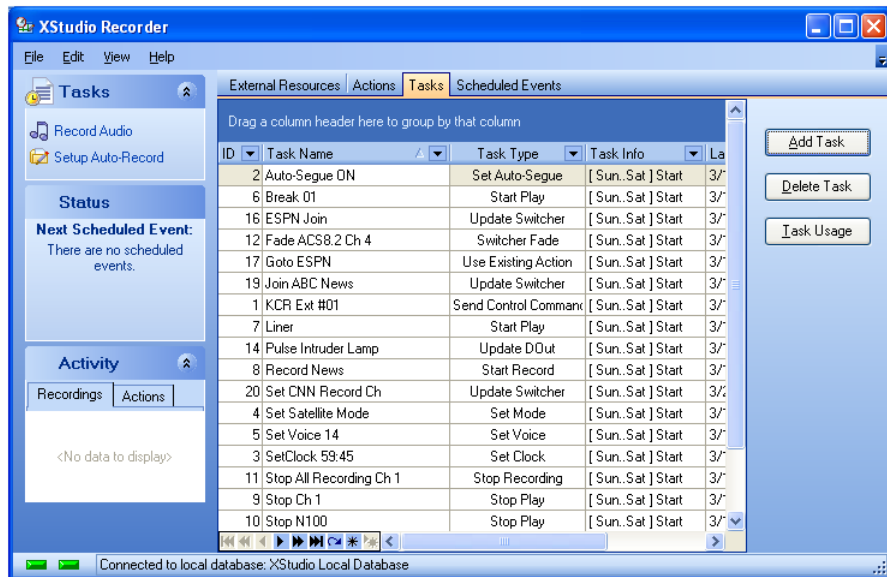
[Create the new task](#) as normal. After saving the Task, it will be available for selection and use in the Action Task List.

4.1.4 Tasks

Tasks are the basis of automated task processing. Tasks are ultimately made a part of an [Action](#), which is an ordered list of Tasks to perform. XStudio Recorder supports a number of task types, each with its own set of properties. In this area, you can create, edit and delete Tasks.



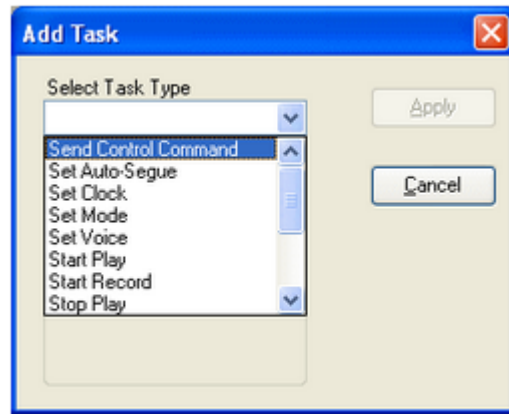
For more information about available task types and their properties, refer to the [Task Reference](#) topic.



Task Maintenance Display

Adding a New Task

To create a new Task, click on the **[Add Task]** button. A dialog is displayed, containing a list of available task types.



Add Task Dialog

Select the type of task you wish to create and click on the [**Apply**] button. The new task's properties dialog will be displayed. Edit the task properties as appropriate and save the Task by clicking on the [**Apply**] button. The new Task will appear in the tasks table.



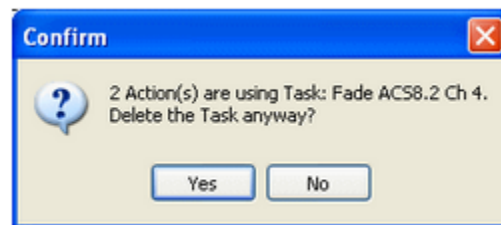
Some task types require an [external resource](#) in order for the task to be functional. If no external resources exist in the automation database, you will be prompted to [create a new resource](#) before trying to create the selected task type.

Editing a Task

To edit an existing Task, [**Double-Click**] on the task you wish to edit. The appropriate task properties dialog will be displayed. When edits are complete, click on the [**Apply**] button to save the changes.

Deleting a Task

To delete an existing Task, select the Task to be deleted and click on the [**Delete Task**] button. A check is made to see if the Task is used by any Actions. If so, you will be prompted to confirm the deletion.



Task Deletion Confirmation Prompt

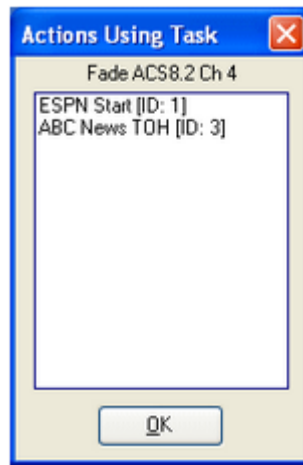


Deleting a Task is permanent and cannot be undone! It is highly recommended that **before** you delete a Task, you create a [task usage report](#) so that you know which Actions, if any, will need to be updated.

Task Usage Report

A task usage report produces a list of Actions that use a selected Task. This report is useful if you are planning to modify a Task and wish to know how many Actions will be affected, or if you believe the Task is no longer needed and are preparing to delete it.

To generate the report, select a Task and click on the **[Task Usage]** button. The Actions table is scanned and a list of all Actions that use the selected Task is displayed.

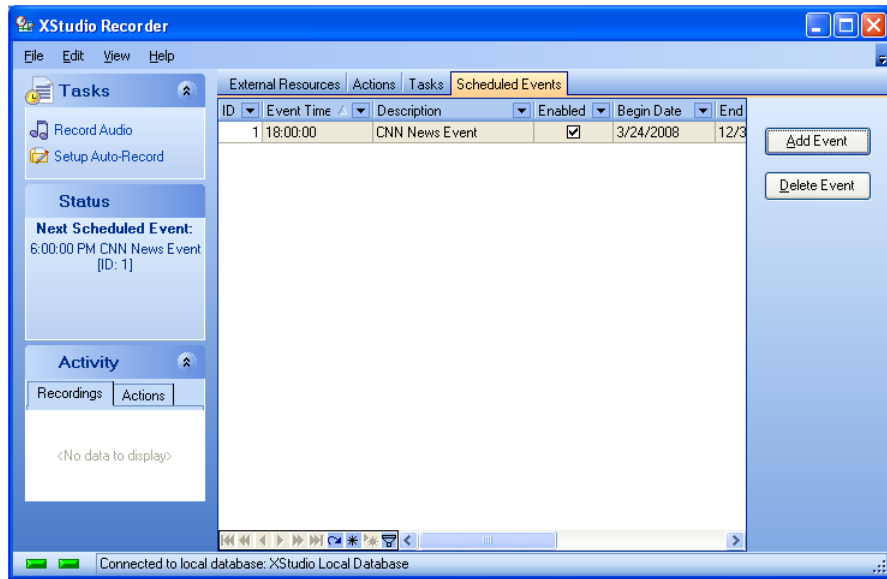


Task Usage Dialog

The list can be printed or saved to file if desired. For more information on printing, see the [Print Lists](#) topic.

4.1.5 Scheduled Events

Scheduled events are a way of executing an Action (a group of Tasks) at a predetermined time of the day. You can control the execution of a scheduled event in several ways, including disabling the event altogether.



Scheduled Events Maintenance Display

Adding a New Scheduled Event

To create a new Scheduled Event, click on the **[Add Event]** button. The Scheduled Event [properties dialog](#) will be displayed. Select the Action to be performed and set other property settings as needed.



In order to create a scheduled event, at least one Action must exist in the automation database. If there are no Actions, you will be prompted to create one before adding a scheduled event.

Editing a Scheduled Event

To edit an existing event, **[Double-Click]** on the event you wish to edit. The Scheduled Event [properties dialog](#) will be displayed. Revise the event properties as desired and click on the **[Apply]** button to save the changes.

Temporarily Disable an Event

To temporarily disable a scheduled event, select the event you wish to disable and [**Double-Click**] on it to open the Scheduled Event [properties dialog](#). Uncheck the **Event Enabled** property and click on [**Apply**] to save the changes.

Deleting a Scheduled Event



Deleting a Scheduled Event is permanent and cannot be undone! If you are not sure you want to permanently remove an event, temporarily disable the event instead, as described above.

To permanently remove an event from the schedule, select the event and click on the [**Delete Event**] button.

4.1.5.1 Event Properties Dialog

When working with a Scheduled Event, the Event Properties dialog is used to name the event, select the Action to be performed, set the event execution time, and a date range for which the event will be valid.

Update Scheduled Event Properties

Event Name: CNN News Event

Select Action to Perform: CNN News

Event Properties

Event Enabled

Event Time (Time to Perform): 18:00:00

Start Date: 3/24/2008

End Date: 12/31/2099

Mode / Days Cancel Apply

Scheduled Event Properties Dialog

Scheduled Event Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ Description</i>
Event Name	✓ The user-friendly name of the event. Maximum length is 30 characters.
Action to Perform	✓ Select the Action to be executed from the dropdown list.
Event Enabled	Events are enabled (checked) as a default. Use this property to temporarily disable the event. If disabled, the event will not execute.
Event Time	✓ The time at which the event is to be executed. Enter the time as military time in the format hour, minute, seconds.
Start Date	The first date on which the event is valid for execution. The default value when creating a new event is today's date.
End Date	The last date on which the event is valid for execution. The default end date is December 31, 2099.

Advanced Event Properties

As with Tasks, there is a set of advanced execution control properties you can access with the **[Mode/Days]** button. These additional properties include the XStudio Recorder operating mode and days of the week. See the topic on [Advanced Task Properties](#) for details on how to use these properties.



The **Hours / Hour Parts** advanced property should be left at the default values with a starting time of midnight (00:00:00) and ending time of 23:59:59. Since a Scheduled Event is executed at a specific time, this property is not particularly meaningful, but **will be evaluated at run-time** to establish whether the event is valid. Using the default start and end times ensures that if you change the scheduled event execution time in the future, it will not inadvertently be invalidated when this property is checked.

Reference

Part



This section contains more detailed background information on a number of key subjects that will help you to gain a better understanding of how XStudio Recorder works.

Studying these sections is not absolutely essential but it will make it much easier for you to use XStudio Recorder more efficiently and effectively.

5.1 Database Reference

The **XStudio Recorder Database** is a collection of files called "tables" and is used to store components of automation operations, including tasks, actions, resources used by tasks, and scheduled events. This section documents the location of the database, the structure of the database tables and notes on sharing the database.

5.1.1 Database Files Location

As a default, XStudio Recorder database files are located in a folder immediately under the XStudio Recorder installation folder. The folder is named "**Data**" and is automatically created when XStudio Recorder is launched for the very first time.

A number of files are created in the **Data** folder when XStudio Recorder is first launched; these consist of the tables and support files that comprise the database.

Database files, referred to as the XStudio Recorder Database, are owned exclusively by XStudio Recorder as a default; when XStudio Recorder is running, no other application is allowed access to these files. Any attempts to open, copy or delete these files will be denied by the operating system, as they are already opened exclusively by XStudio Recorder.

You can make the data available to other applications by setting the Allow Remote Administration option in XStudio Recorder preferences. When Remote Administration is enabled, applications like XStudio Administration can be used to remotely update the database.



Files in the **Data** folder should never be deleted or otherwise modified, as loss of XStudio Recorder functionality or corrupted data will result, causing XStudio Recorder to behave unpredictably.

XStudio Recorder has a built-in method for backing up your data. See the topic [System Backup & Restore](#) for more information. When XStudio Recorder is not running, the database files can be copied, if desired, for archiving, cloning or backup purposes.

5.1.2 Database Tables

The XStudio Recorder database is a collection of tables, stored on-disk as one file per table. This section documents tables that are a part of the database, including technical information on fields contained in each table, their type and usage.

All tables are binary data files having a file extension of "**NX1**". Files are created and maintained using NexusDB, created by Nexus Database Systems Pty Ltd. NexusDB is a fast, flexible, reliable database engine embedded in XStudio Recorder and supplied royalty-free to the end-user. There's also the option to run NexusDB as a stand-alone server, implementing true multi-user, client/server database operations.

5.1.2.1 Actions Table

The Actions table contains information about all defined Actions. Its on-disk name is: **Actions.nx1**

Actions Table Field Definitions

The fields contained in the Actions table, including field type and size (if applicable).

<u>Field Name</u>	<u>Type</u>	<u>Size</u>	<u>Description</u>
ActionID	AutoInc		Each time an Action record is created, a unique ID value is automatically assigned by the system. This value is used to identify the Action and is not user-modifiable.
ActionName	String	30	The user-assigned name for the Action.
RelayNo	Integer		<Not used, for future expansion>
ListID	Integer		<Not used, for future expansion>
Data	BLOB		Contains the list of Tasks, in order, used in the Action.
RecCreateDate	Date/Time		The date and time the record was created.
RecEditDate	Date/Time		The date and time the record was last edited.
RecEditBy	String	30	The user who last edited the record.

5.1.2.2 Events Table

The Events table contains information about scheduled events. Its on-disk name is: **Events.nx1**

Events Table Field Definitions

The fields contained in the Events table, including field type and size (if applicable).



<i>Field Name</i>	<i>Type</i>	<i>Size</i>	<i>Description</i>
EventID	AutoInc		Each time an Event record is created, a unique ID value is automatically assigned by the system. This value is used to identify the Event and is not user-modifiable.
EventStation	Integer		If assigned, the work station to which this event is assigned.
EventTime	Time		The scheduled time to perform the Event.
EventDescription	String	30	The user-assigned description (name) of the event.
EventEnabled	Boolean		A True/False flag telling the host system whether or not the Event is enabled and can be run. The default value is <i>True</i> .
EventBegDate	Date		The first date on which the Event is valid to run.
EventEndDate	Date		The last date on which the Event is valid to run.
EventActionID	Integer		The ID number of the Action to perform when the Event is executed.
Data	BLOB		Contains information on valid modes, days and time ranges in which the event can be run. These values are in addition to the start and end dates.
RecCreateDate	Date/Time		The date and time the record was created.
RecEditDate	Date/Time		The date and time the record was last edited.
RecEditBy	String	30	The user who last edited the record.

5.1.2.3 External Devices Table

The External Devices table contains information about audio switchers used in the system. Its on-disk name is: **ExtDevices.nx1**

External Devices Table Field Definitions

The fields contained in the External Devices table, including field type and size (if applicable).


<u>Field Name</u>	<u>Type</u>	<u>Size</u>	<u>Description</u>
DeviceID	AutoInc		Each time an External Device record is created, a unique ID value is automatically assigned by the system. This value is used to identify the device and is not user-modifiable.
DevicePort	Integer		The COM port number assigned to the device, if applicable. Allowable values are 0..8. Zero means unassigned, the values 1 through 8 are the assigned COM port number.
<div style="border: 1px solid black; padding: 5px; background-color: #ffffcc;">  Device Port numbers are interpreted by the host application and displayed in a user-friendly way. </div>			
DeviceName	String	30	The user-assigned name for the device.
DeviceType	Integer		The device type, stored as a number.
<div style="border: 1px solid black; padding: 5px; background-color: #ffffcc;">  Device Type values are interpreted by the host application and displayed in a user-friendly way as a name identifying the manufacturer and model of the device. </div>			
Data	BLOB		Contains a map of the device resources, including channels, input relays, output relays, Actions assigned to input relays and labels for each of the device resources.
LockOut	Byte Array	32	Contains a list of input relay lock-out values in seconds, if applicable. The default value for each input relay is zero.
HostWrkStn	Integer		The ID of the work station to which the resource is assigned.
RecCreateDate	Date/Time		The date and time the record was created.
RecEditDate	Date/Time		The date and time the record was last edited.
RecEditBy	String	30	The user who last edited the record.

5.1.2.4 Tasks Table

The Tasks table contains information about Tasks. Its on-disk name is: **Tasks.nx1**

Tasks Table Field Definitions

The fields contained in the Tasks table, including field type and size (if applicable).

<i>Field Name</i>	<i>Type</i>	<i>Size</i>	<i>Description</i>
TaskID	AutoInc		Each time a Task record is created, a unique ID value is automatically assigned by the system. This value is used to identify the Task and is not user-modifiable.
TaskName	String	30	The user-assigned name of the Task.
TaskType	Integer		The type of task stored in the record, as an integer value.
<div style="border: 1px solid black; padding: 5px; display: inline-block;">  Task Type numbers are interpreted by the host application and displayed in a user-friendly way. </div>			
Data	BLOB		Contains the Task specifics, including valid modes, days and times along with Task-specific properties.
TaskInfo	BLOB Memo		Contains Task properties, expressed as text. This field is used by the host application when generating Task property reports.
RecCreateDate	Date/Time		The date and time the record was created.
RecEditDate	Date/Time		The date and time the record was last edited.
RecEditBy	String	30	The user who last edited the record.

5.1.3 Database Sharing

Database files, referred to as the XStudio Recorder Database, are owned exclusively by XStudio Recorder as a default; when XStudio Recorder is running, no other application is allowed access to these files. Any attempts to open, copy or delete these files will be denied by the operating system, as they are already opened exclusively by XStudio Recorder.

Making the database available to other applications, called "sharing," can be accomplished in two distinct ways. One method is to enable the XStudio Recorder Allow Remote

Administration property, which causes XStudio Recorder to function as a database server. The other method is to use a separate stand-alone database server application, which implements a client/server relationship between XStudio Recorder and the database and makes the database available to other utility applications as well.



If you set up XStudio Recorder to operate using a remote client/server database model, the local database is not used and any settings applicable to the local database, including allowing remote access, are disabled.

Database Sharing by Allowing Other Applications to Connect to XStudio Recorder

The easiest and most convenient method of sharing database information with another application is to enable the Allow Remote Administration property in XStudio Recorder. Essentially, XStudio Recorder becomes a database server in addition to its other duties.

When XStudio Recorder is functioning as a database server, other utility applications designed for use with XStudio Recorder can connect to and view or modify the database depending on the utility application. The utility might be run on the same PC or might be connecting from some other PC. Consult the utility application software documentation for details on how to access the database hosted by XStudio Recorder.

Database Sharing Using the Client/Server Model

To implement database sharing using the traditional client/server model, you need to install and configure a stand-alone database server application, typically on a PC other than the one running XStudio Recorder. Once the database server application is running successfully, you need to modify the XStudio Recorder database properties to have XStudio Recorder use the remote database server. For additional information on using the client/server model, see the topic on Using a Remote Database.



The necessary stand-alone database server software for implementing a centralized database is not included in the XStudio Recorder installation package. If you wish to use a centralized database, contact your vendor for information on obtaining the database server software, along with its requirements for use.

Effects of Database Sharing

Sharing of the XStudio Recorder database has minimal effects on the operation of XStudio Recorder and users need not change how they do things when working with XStudio Recorder. There are some possible side effects of database sharing to be aware of, though.

Performance

Performance of XStudio Recorder can be affected when the database is shared, in the following ways:

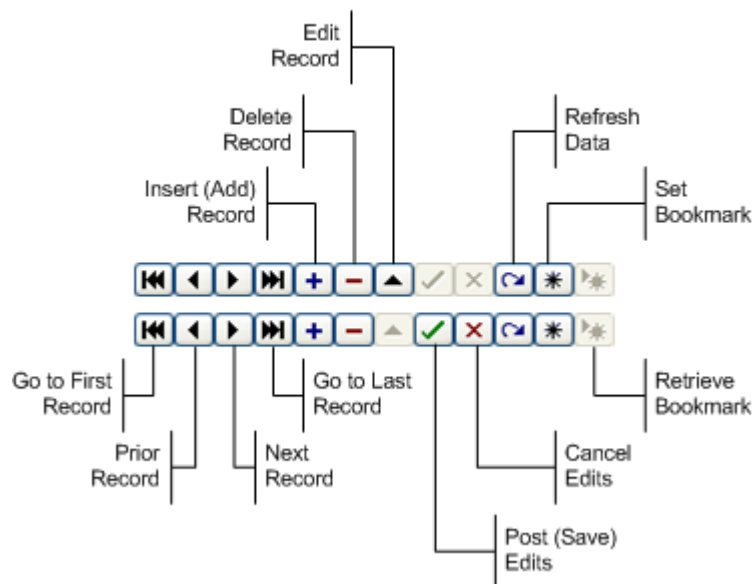
1. If XStudio Recorder is functioning as a database server in addition to its other duties, application response time could be a bit slower if one or more utility applications are connected and performing database-intensive tasks. This occurs because XStudio Recorder has to divide its attention between normal operations and serving the database requests of connected client applications.
2. If XStudio Recorder is connecting to a remote database server and network (LAN) traffic is extremely high, application response time could be slower as a result of the the high network traffic impeding retrieval of data from the database server.

5.2 Using Data Navigators

Several areas in XStudio Recorder make use of so-called "data navigators". Essentially, a data navigator is an organized set of buttons that provides an easy-to-use interface for navigating around in displayed data like the log, station definitions, cart masks, and music databases. In addition to navigation, some of the navigators include buttons to add (insert), edit, & delete items.

Two example navigators are shown here – there are two because the "state" (availability) of buttons will vary depending on the current task. For instance, if you are at the beginning of a log, the navigator buttons for moving backwards through the log are disabled – at least, until you move away from the beginning of the log.

Data Navigator Button Map

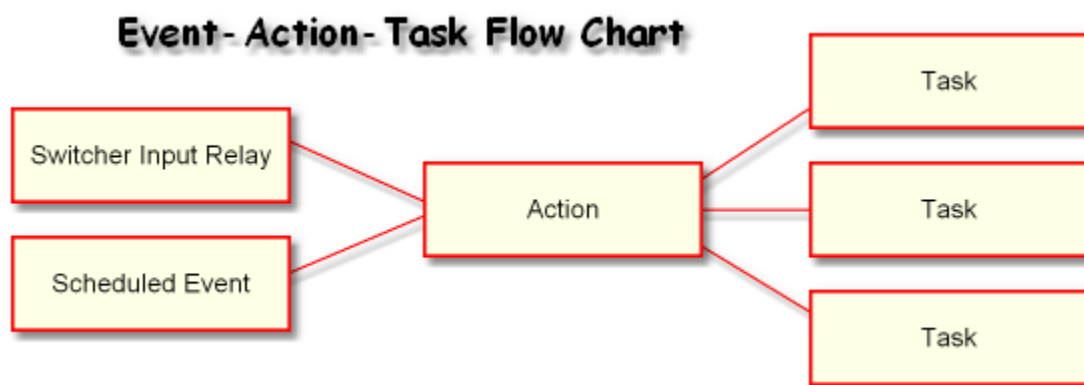


Depending upon the area of XStudio Recorder in which you're working, some of the navigator buttons depicted are not visible – because the functionality they provide is not allowed.

5.3 Task Reference

Tasks are a core component of automated execution. Each task does only one specific thing, unlike some systems where multiple actions are taken within a single task. This approach allows for greater flexibility, as tasks can be re-used easily without concerns about side-effects of anything done in addition to performing the basic task.

Tasks are combined with other tasks to form what is known as an Action, which is simply an ordered list of tasks. When an Action is run, its list of tasks is performed, in order. Actions can be initiated by associating the action with an audio switcher input relay or as a scheduled event.



Available Tasks

XStudio Recorder allows you to create, modify and delete all available tasks. Keep in mind, though, that some tasks may not be applicable or useful for use with the application task database that you are remotely administering.

Task Type (Alphabetical) Description

Banner Message	Display a text message in the XStudio Recorder Message Center dialog.
Remap Input Relays	Change or reset input relay mapping for an audio switcher.
Send Control Command	Send a control command to an external device via an external control port.
Set Clock	Sets the system clock to the specified minute and second of an hour.
Set Mode	Sets the operating mode of the system, e.g, Emergency, Automation.
Set Voice	Sets the Global voice number of the system, used in conversion of the ## macro.

Task Type (Alphabetical) Description

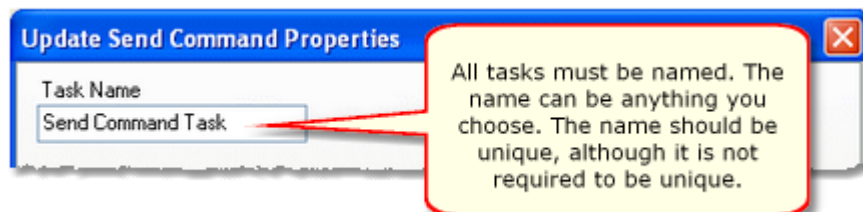
Start Play	Start playback of audio from a list of audio (either single cut or play list).
Start Record	Start recording audio. Record to a specific cart number on a specific channel.
Stop Play	Stop play of audio on a selected channel, either by channel or by cart number.
Stop Record	Stop an active recording on a specified channel.
Switcher Fade	Fade a single channel, up or down, on a selected audio switcher. Only a few audio switchers support this feature.
System Backup	Backup system database files and optionally, XStudio Recorder preference and settings files.
Timer	Delay task execution a specified amount of time. Effectively a "wait" command.
Update DOut	Pulse a single DOut on a selected switcher. Not all devices support DOut pulsing.
Update Switcher	Turn on or off input channels for a specific audio switcher.
Use Existing Action	Use an existing Action as a Task. In effect, "nests" an action within an action.

5.3.1 Properties Common to All Tasks

There are two kinds of properties common to all tasks - a **Task Name**, which appears on the main page of the task dialog, and a set of execution control properties.

Task Main Page Properties

The Task Name property is common to all tasks and appears as the first edit field on a task's main window, as shown. All tasks must be named (non-blank).



Task Name maximum length is 30 characters

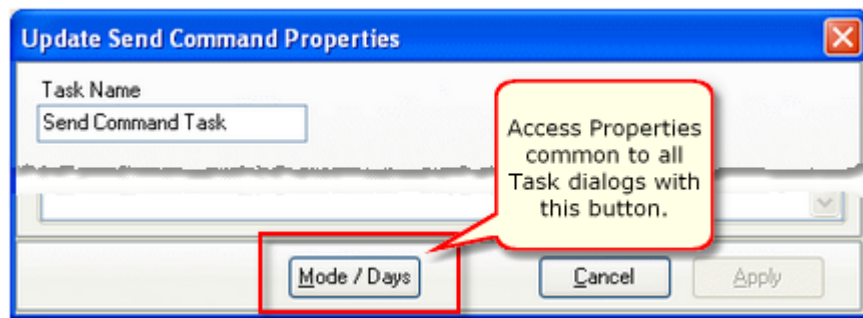
The task name is used for reference purposes to help you identify what the task is used for. A task can be named anything you like, up to a limit of 30 characters, and should be meaningful to you. The task name does not have to be unique, but it is recommended, as the name is displayed in lists, etc, and if the names are unique, there's less chance of confusion.

Task Advanced Properties (Mode/Days)

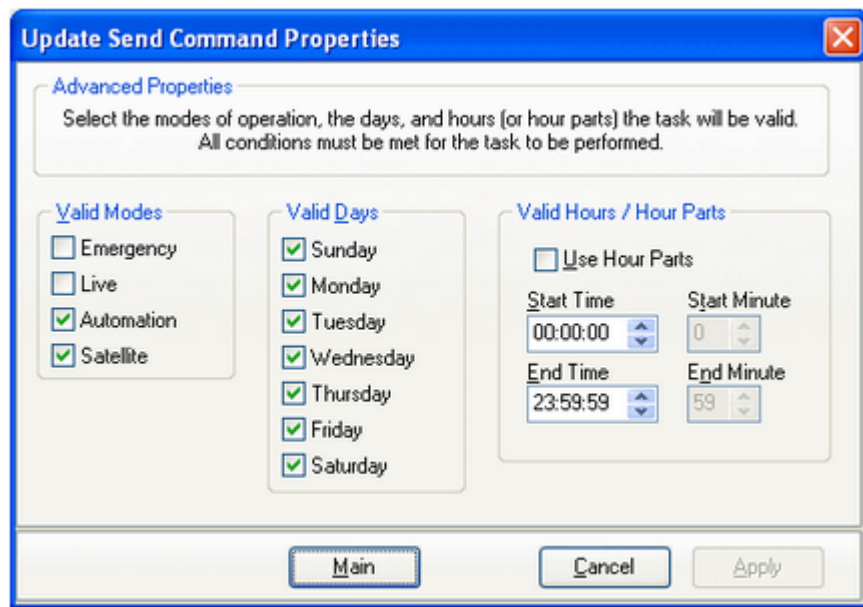
All tasks provide a set of properties to control whether or not the task will be executed at run time. These properties include:

- System Operating Mode
- Day of Week
- Time of Day (Day Part or Hour Part)

Access these properties from any task dialog with the [**Mode/Days**] button.



The Advanced Properties allow you to set conditions that must be met for the task to be performed. Note that ***all conditions must be met for the task to execute.***



Default Advanced Properties Settings

Valid Modes

At least one mode must be selected for a task to be valid. You will not be allowed to apply changes to a task until one or more modes are selected.



XStudio Recorder runs in **Automation** mode. Modes are not significant with the exception that for a task to perform in XStudio Recorder, Automation mode must always be selected.

Valid Days

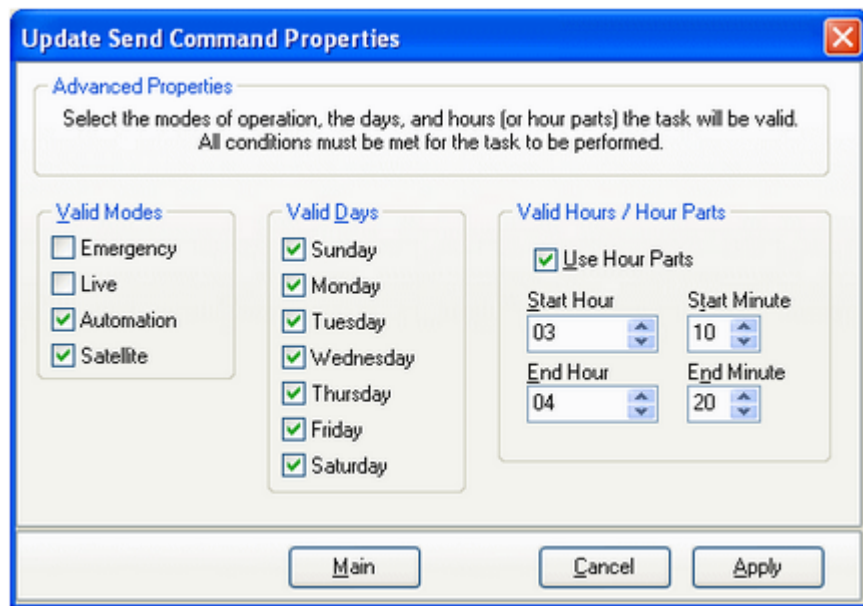
At least one day must be selected for a task to be valid. You will not be allowed to apply changes to a task until one or more days is selected.

Valid Hours / Hour Parts

When determining whether a task is valid for execution, you can limit valid times of the day to either a contiguous time range (sometimes called a Day Part) or a specified range of minutes within a specified range of hours, called Hour Parts.

An **hour range** is simple to understand - there's a beginning time and an ending time, and if the task execution attempt occurs within that time range, it is considered valid and executes. The default value for the time of day property is 00:00:00 through 23:59:59, which means the entire day. You can use this type of range to allow a task to execute, for example, between 4:00 PM and 5:59:00 PM only.

An **hour part range** is a bit more complex. As shown in the example, you set beginning and ending hours and separately, beginning and ending minutes within each of the valid hours.



Advanced Properties Settings using Hour Parts

In the example, the beginning hour is 3 AM and the ending hour is 4 AM. The beginning and ending minute values are 10 and 20, respectively. In short, this time restriction means that the task will execute only in the following time ranges:

- 3:10:00 - 3:20:59 AM (note the seconds values)
- 4:10:00 - 4:20:59 AM (note the seconds values)

Using hour parts allows you to refine a task's valid execution time to only certain minute ranges within specified hour ranges, providing a very flexible means of controlling task execution times.

More About Start Minute and End Minute Values

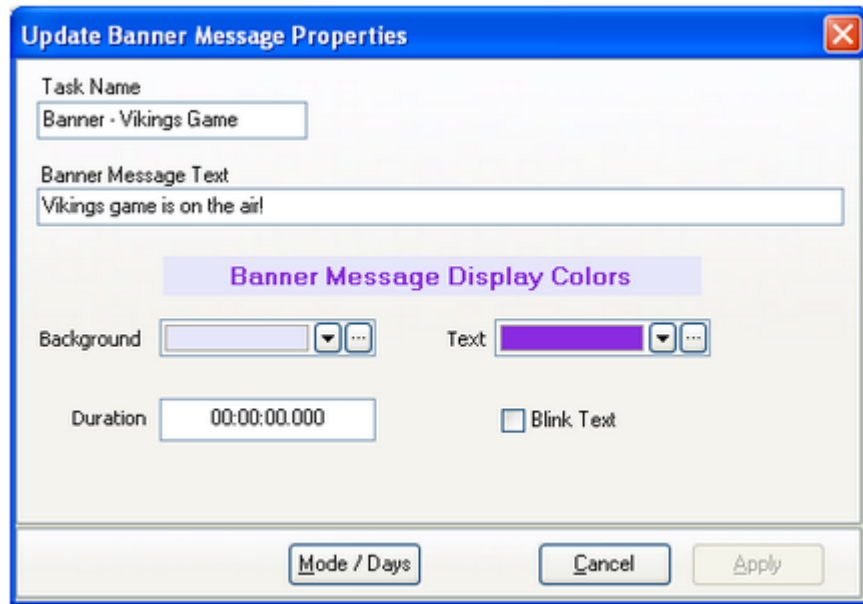
When using **Hour Parts** to set the valid times a task can run, you may have noticed there is no provision for a **seconds** value, as there is in the standard Hours entries. In task validation, they are handled in the following way:

- **Start Minute** - the seconds value is zero, i.e. 10:**00**
- **End Minute** - the seconds value is 59, i.e. 20:**59**

This means that if we set a valid minutes range within an hour to 10 through 20, it actually is 10:00 through 20:59. In this example if you did not want the task to execute beyond 20 minutes past the hour, you could set the End Minute value to 19, which would allow the task to execute from 10:00 through 19:59, thus excluding the 20:00 past the hour time.

5.3.2 Banner Message Task

The Banner Message task is used to display user-defined text in the XStudio Recorder Message Center. This task can be used to inform operators of system status changes, special events that might be currently airing and "reminder" messages.



Banner Message Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

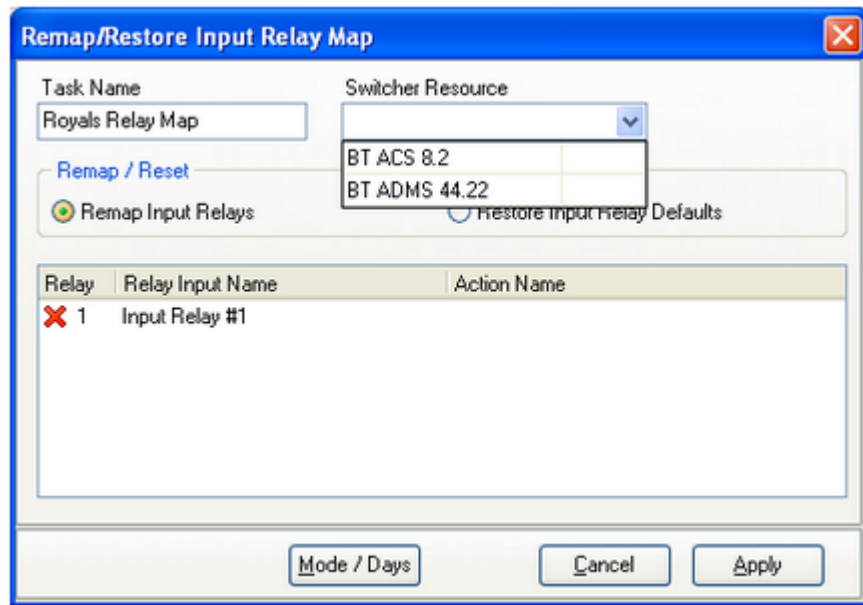
<u>Property</u>	<u>REQ</u>	<u>Description</u>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Banner Message Text	✓	The text that will appear in the XStudio Recorder Message Center when the task is executed. Text length is not limited, but longer messages may not display completely depending on the user-adjusted size of the Message Center display panel. Text should be the minimum necessary to convey the intent of the message.
Background Color		This property sets the XStudio Recorder Message Center background color when this task's message is displayed.

<u>Property</u>	<u>REQ Description</u>
Text Color	This property sets the the XStudio Recorder Message Center text color when this task's message is displayed.
Duration	Default value: 00:00:00.000. This property determines whether or not the banner message will be automatically cleared after a certain period of time. If the value is non-zero, the message will be cleared automatically after the entered time value, in hours, minutes and seconds, has elapsed, starting from the time the message is displayed.
Blink Text	Default: Unchecked. If checked, the message text will be blink on and off when displayed in the XStudio Recorder Message Center.

Text displayed in the Message Center remains until replaced by another Banner Message task, the duration of the message (if greater than zero) has elapsed, or an operator manually clears the message from the Message Center.

5.3.3 Remap Input Relays Task

The Remap Input Relays task is used to change or reset input relay mapping for an audio switcher. This task is useful for situations where you may wish to disable (or "unhook") input relay actions used for normal programming, replace them with a different set of actions enabled (or "hooked") to input relays for a special event, and later restore the "default" input relay mapping when programming returns to normal.



Remap Input Relays - Selecting the Switcher



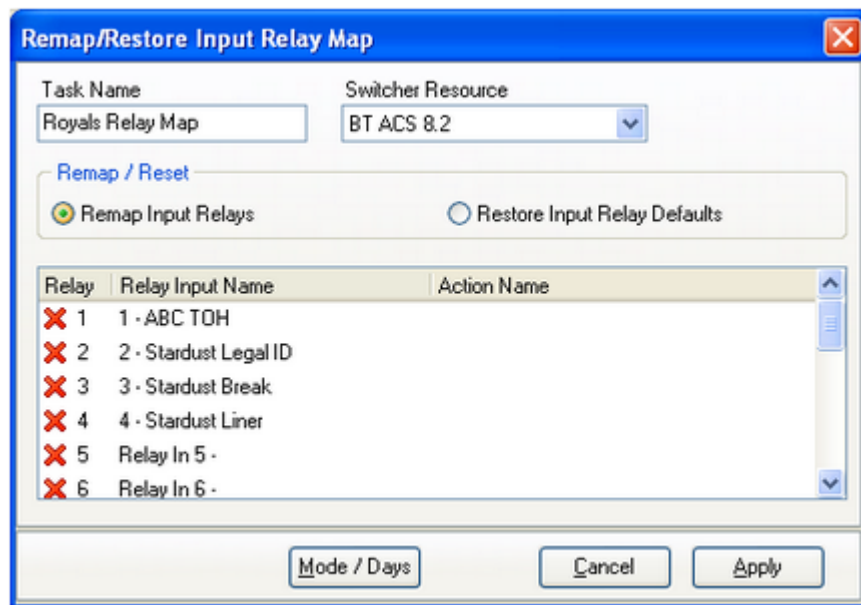
When remapping or restoring input relays with this task, any [input relay lock-out values](#) originally assigned to the resource are not changed.

Remap Input Relays Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Switcher Resource	✓	Select the audio switcher that will be used for this task from the drop down list. When a device is selected, the appropriate number of input relays and their labels are displayed in the relay map table. If the selected device does

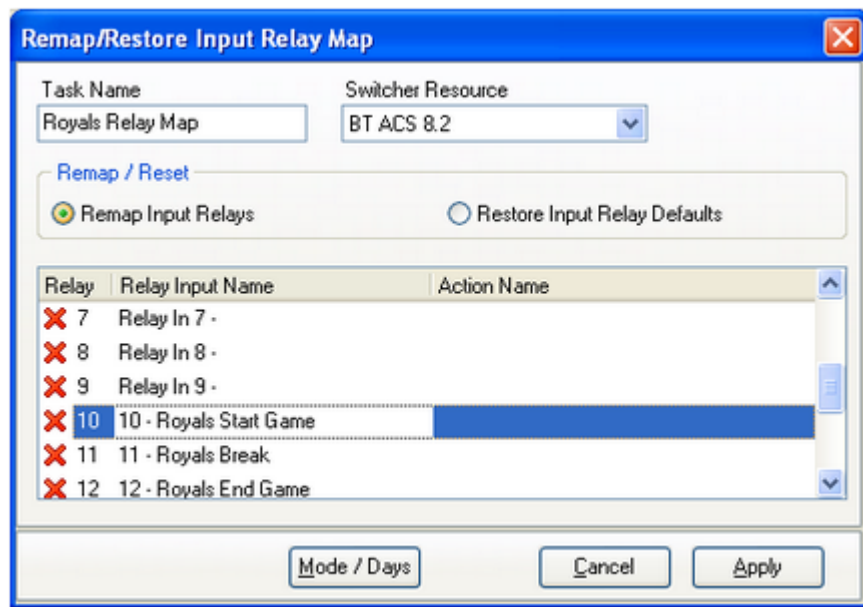
<u>Property</u>	<u>REQ Description</u>
Remap / Reset	<p>not have input relays, you are prompted to select a different device from the list.</p> <p>✓ Select the radio button item appropriate for what you want to accomplish. The default selection is "Remap Input Relays", which allows you to select each available input relay and associate an Action with it. If the "Restore Input Relay Defaults" radio button item is selected, the Relay Map Table is disabled and when the task is executed, the selected device's original input relay mapping is restored.</p>
Relay Map Table	<p>Displayed input relays for the selected device are listed, initially with no Actions assigned to any of the input relays. Select the desired input relay and either [Double-Click] on the item or [Right-Click] and select the menu item "Assign Action ..." to display an Action selection dialog.</p>



Remap Input Relays - Device Selected

Assigning Actions to Input Relays

When a switcher resource has been selected and the device's input relay list is displayed, you can begin assigning Actions to the input relays. The easiest way is to locate the input relay you want to assign by scrolling through the list.



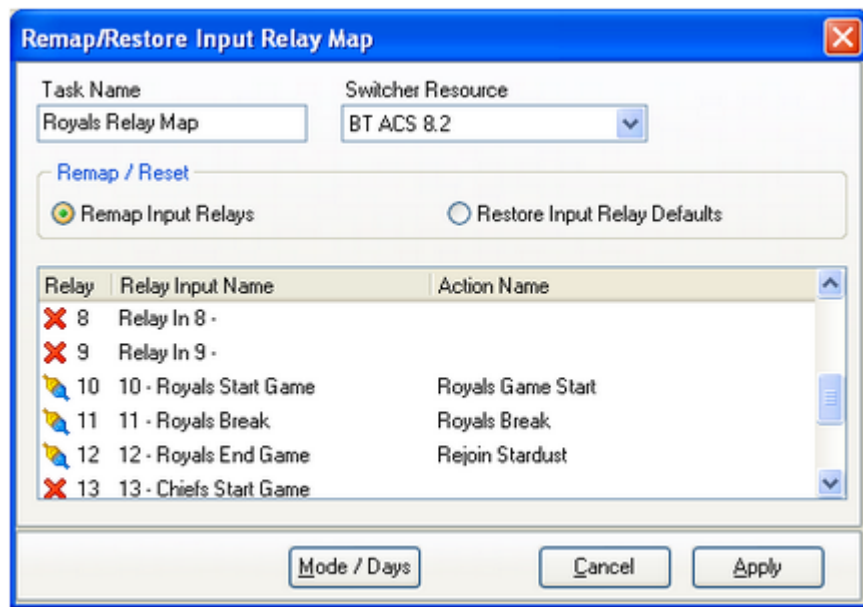
Selecting an Input Relay to Remap

To assign an Action to an input relay, [**Double-Click**] on the input relay to display the **Assign Action to Relay Input** dialog. Alternatively, you can [**Right-Click**] on the selected input relay and select the menu item "**Assign Action ...**" to display an Action selection dialog.



Selecting an Action to assign

When you have completed all of the input relays that need to be mapped, click on the [**Apply**] button to save the task. A sample of a completed assignments is shown here.



Remap Input Relays complete.



To disable all input relays for the device, select the "Remap Input Relays" option and do not assign an Action to any of the available input relays. When the task is executed, it will essentially "unhook" all relays.

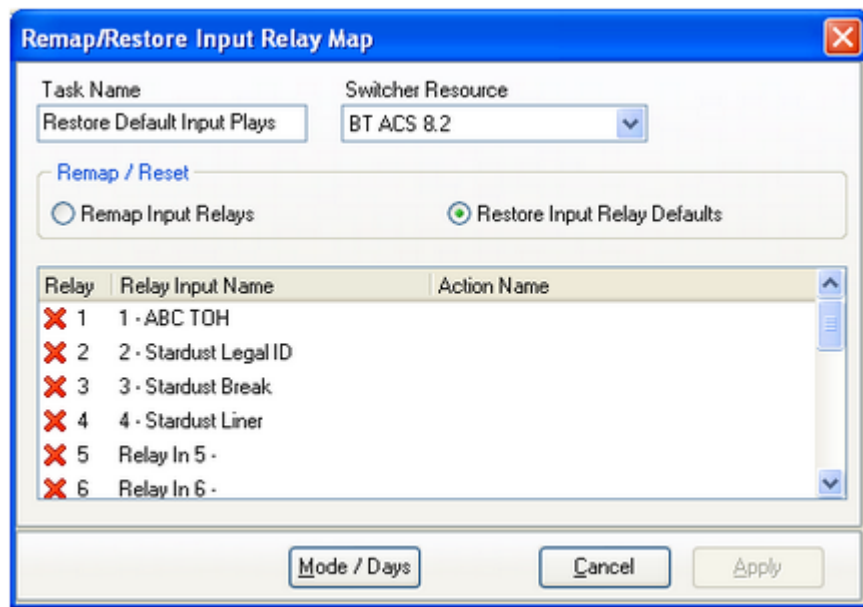
Clearing (Removing) an Action from an Input Relay

If you wish to remove an Action assigned to an input relay, **[Right-Click]** on the input relay to be changed and select the pop-up menu item "**Clear Action...**" The Action associated with the selected input relay will be removed.

Assign / Clear Action Pop-up Menu

Restore Input Relay Mapping

To restore the selected switcher resource's default input relay mapping, select the "**Restore Input Relay Defaults**" radio button item in the Remap / Reset option group. The Relay Map Table is disabled, as it will not be used. Click on the **[Apply]** button to save the task.



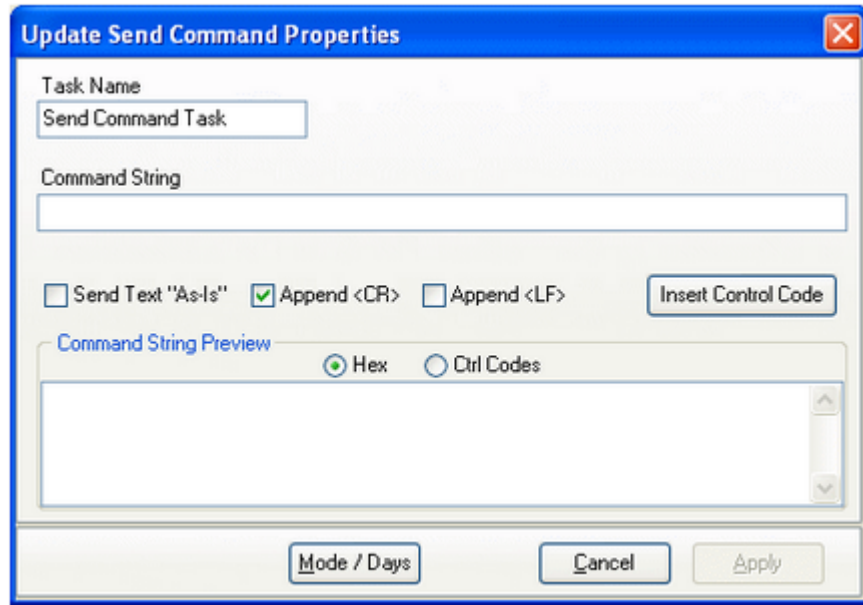
Restore Default Input Relay Mapping

When this task is executed with the Restore Input Relay Defaults option, the switcher resource's original input relay settings are restored from the device's [resource record](#).

5.3.4 Send Control Command Task

The Send Control Command task is used to send a string of data to an external device for purposes of controlling the device or causing it to take some action. The data string can be sent as pure text or as binary information. This is a send-data-only task; any information returned by the device is ignored.

When creating a new Send Control Command task, the dialog is initially displayed similar to the example shown here, with its default property settings.



Send Control Command Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Command String	✓	The characters, including optional control codes, that are to be sent to the external device.
Send Text As-Is		If this property is checked, the data sent will be exactly as displayed in the Command String field. Control codes are represented as "<xxx>" in the Command String field, if inserted, and are normally interpreted to their binary value (Decimal 0..31) when the command string is sent. As an

<u>Property</u>	<u>REQ Description</u>
	example, if the "ACK" value (Decimal 6) needs to be sent, it is represented in the Command String as "<ACK>" and at send time, the decimal byte value 6 is sent. If this property is checked, what will be sent instead is "<ACK>" as plain text, which is 5 bytes, ie, the displayed text of the Command String with no interpretation.
Append <CR>	When this property is checked (the default), a Carriage Return (Decimal 13, Hex 0D) is appended to the Command String when sent to the external device.
Append <LF>	When this property is checked, a Line Feed (Decimal 10, Hex 0A) is appended to the Command String when sent to the external device.

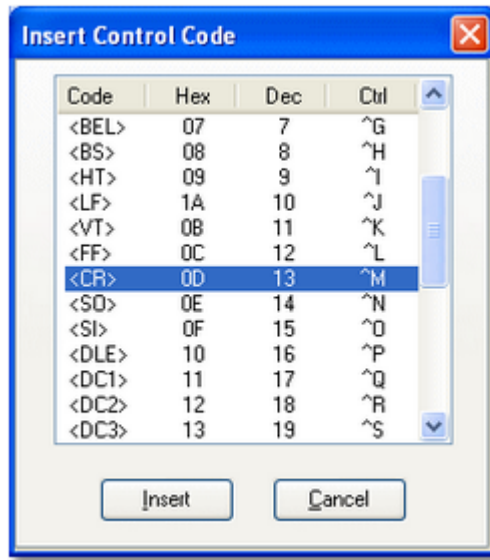


When both **Append <CR>** and **Append <LF>** are checked, they are appended to the Command String in conventional order - Carriage Return followed by Line Feed. If you need to reverse this order, use the **[Insert Control Code]** button to insert them manually directly into the Command String and uncheck both of these properties.

Inserting Control Codes in the Command String

Control codes are defined as Decimal values 0 through 31 and as the name implies, are traditionally used for special "control" characteristics of a device receiving the Command String. Control codes might be used to mark the beginning or end of a command sequence, for instance.

Control codes can be placed anywhere in the Command String field, either by correctly typing the control code representation or using a pop-up control code selection dialog. Place the cursor in the position in the Command String field where you want to insert a control code and click on the **[Insert Control Code]** button.

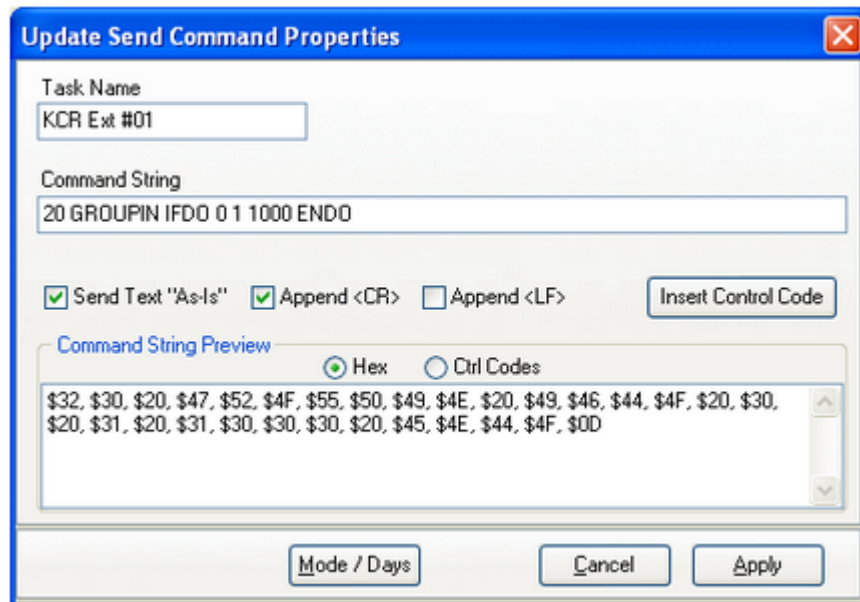


Control code insertion dialog

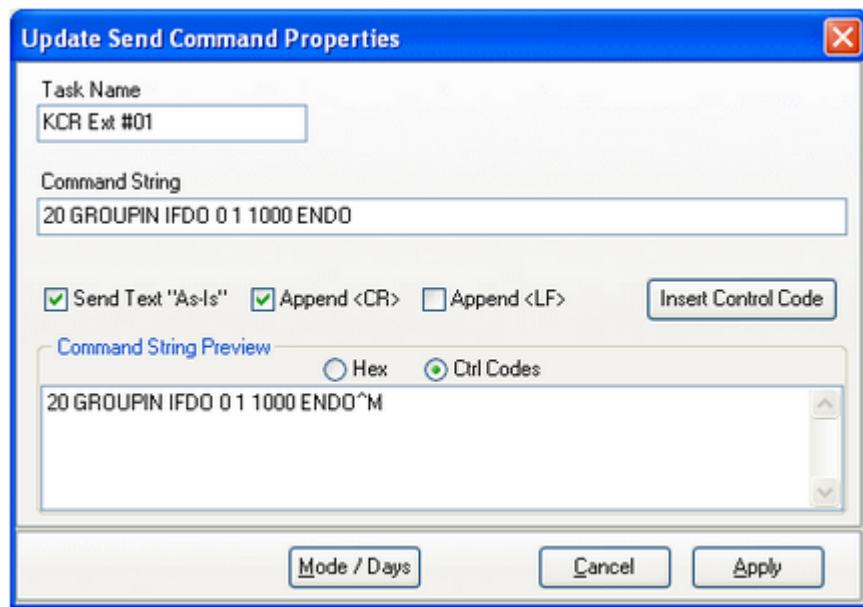
Select the control code you wish to place in the Command String and click on the **[Insert]** button. The control code representation will be inserted at the cursor position.

Send Command Examples

When you have finished setting the Send External Command properties, the displayed information will appear similar to the examples shown here, with the command string previewed in either Hex or Control Code mode. Click on the **[Apply]** button to save your changes.



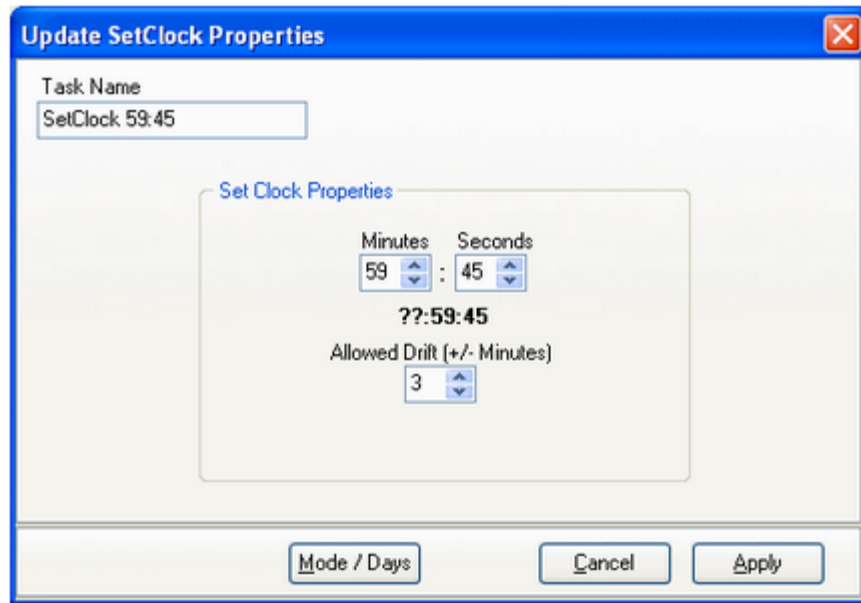
Command String preview in Hex



Command String preview in Control Codes

5.3.5 Set Clock Task

The Set Clock task is used to reset the time on the host PC, typically signaled by an external source such as a fixed-time relay (closure) from a satellite programming service. When this task is executed, the minutes and seconds of the hour are set. You can control how much adjustment is allowed with the Allowed Drift property.



Set Clock Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Minutes		The minute value of the hour that is set when this task is executed.
Seconds		The seconds value of the hour that is set when this task is executed.
Allowed Drift		The amount of time, expressed in plus or minus minutes from the target time, that will be used to decide if the clock is updated. For instance, if the target time is 59:45 and the Allowed Drift is 3 minutes (the default), the clock would only be updated if the PC's clock time falls within 56:45 to 02:45

Property**REQ Description**

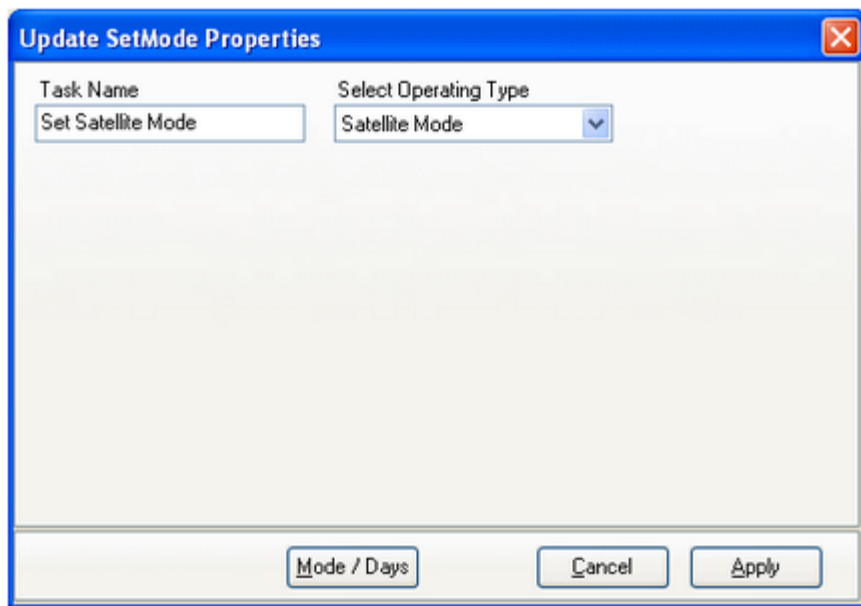
of the next hour. In this example, the clock would only be reset if it had drifted no more than 3 minutes either way from the target time. If the PC clock's current time falls outside the Allowed Drift window when the task is executed, the clock is not updated.

5.3.6 Set Mode (Operating Mode) Task

The Set Mode (Set Operating Mode) task is used to set the current operating mode of the system. There are 4 modes from which to choose:

- * **Emergency**
- * **Automation**
- * **Live**
- * **Satellite**

The operating mode affects how the system reacts to things like log directives, input relays and a number of other events that occur. This task is most often used when transitioning to and from satellite programming.



Set Mode Properties

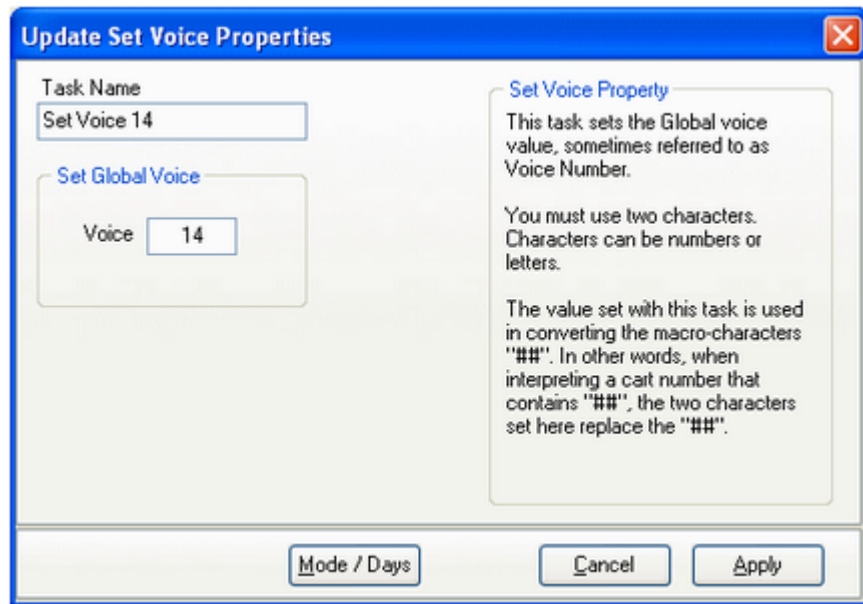
Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Operating Type		Select the appropriate mode item from the dropdown list. The default is "Automation".

5.3.7 Set Voice Task

The Set Voice task is typically used in conjunction with satellite programming. Programming services will often provide liners, splitters, etc, done by the program hosts. These liners are then signaled by the programming service at various times. As the host changes, the custom liners, etc, need to change as well.

Rather than creating many different tasks that play different cart numbers, you can use this task to set a 2-character value for the so-called "voice number". Then, you can create a single liner playback task, for instance, that uses the current voice number to dynamically determine what cart number to play. The [macro characters](#) "##" (pound sign twice) are used for this purpose in cart numbers. For instance, if the current voice number is "14" (shown here), then a liner cart play with a cart number of "L1##" would become "L14" when called for playback.



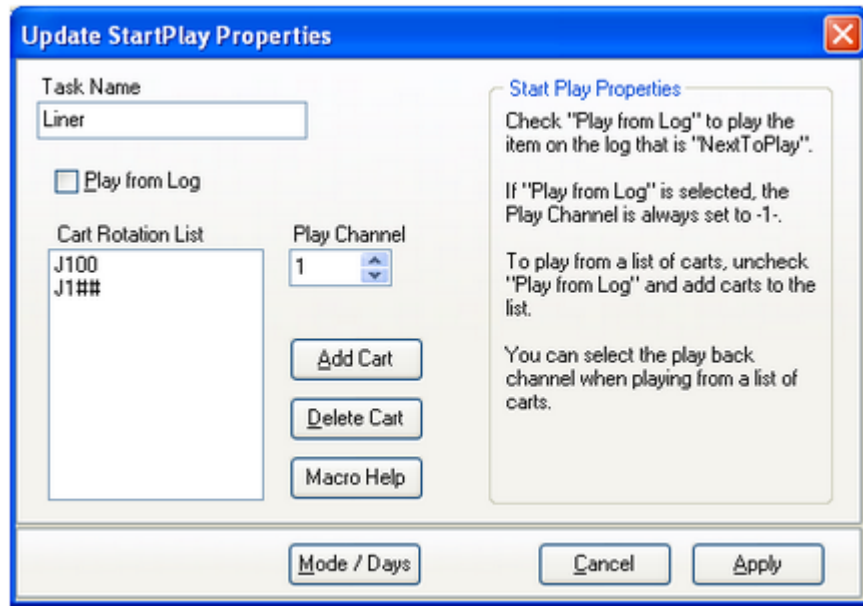
Set Voice Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Voice	✓	Enter the 2 characters that the global voice number is to become. You must use 2 characters and they can be in the range 0..9 and A..Z.

5.3.8 Start Play Task

The Start Play task is used to play a specified cart (audio item) to a specific play channel.



Start Play task for playing carts from a list

Start Play Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Play From Log	✓	<i>This item should always be unchecked as it is not applicable to XStudio Recorder.</i> XStudio Recorder shares common Task functionality with other dcsTools applications and this option is intended for use with on-air playback systems.
Cart Rotation List		When the Play From Log property is not checked, this list is enabled for adding and deleting specific cart numbers to play. The list must contain a minimum of one cart number. To manage the list contents, use the [Add Cart] and [Delete Cart] buttons. Cart number macro characters can be used as a part of the cart number. When multiple cart numbers are placed in the list, the items are rotated when the task is

Property**REQ Description**

executed multiple times while XStudio Recorder is running. At program start-up, the first item in the list is used the first time the task is executed and subsequent execution of the task uses the next item in the list and so on.

Play Channel

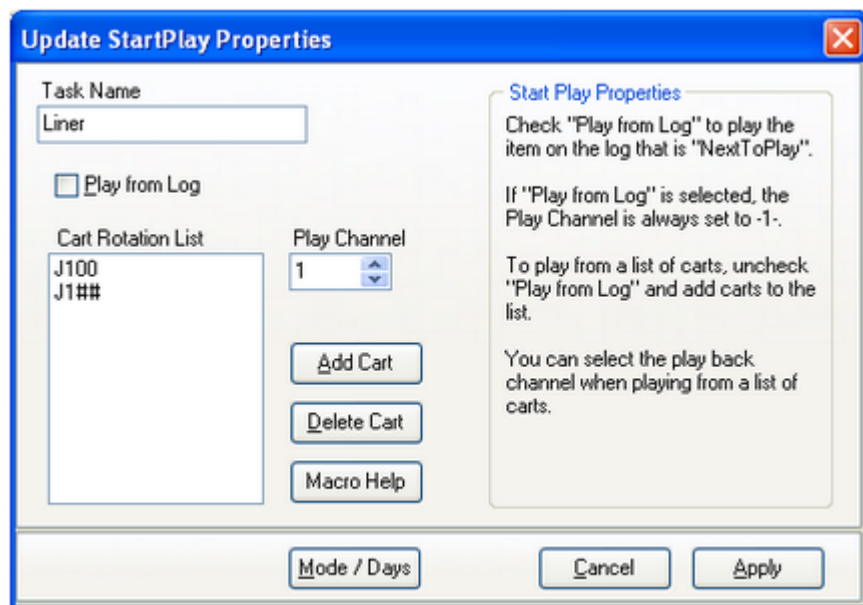
Select the play channel (1-4) on which items from the cart list will be played. This item is enabled only if the Play From Log property is not checked.



The Play From Log option is not useable in XStudio Recorder as there is no program schedule. It should always be disabled (unchecked). The Start Play task applicable only if you wish to play a specific cart on a specific channel.

Start Play Using the Cart Rotation List

When playback is to be a specific cart, uncheck the **Play From Log** property, which enables play channel selection and the controls to add and delete cart numbers in the **Cart List**, as shown.



Start Play task for playing carts from a list

Individual cart plays are most often used for satellite programming inserts - liners, jingles, etc. To add cart numbers to the list, click on the **[Add Cart]** button or use the **[Insert]** key. To

remove a cart number from the list, select the item and click on the [**Delete Cart**] button or use the [**Delete**] key. You can use [cart macro characters](#) in the cart numbers.

5.3.8.1 Using Cart Macro Characters

To use cart number macro characters, enter the appropriate macro as a part of the cart number.

Supported Cart Number Macro Characters

Macro Usage

Current Voice Number (2-character string)

Whenever these characters are encountered in a cart number, they are replaced by the current global Voice Number value.

Note: You must always use two characters for defining a voice number and always use the ## (pound sign, pound sign) designation when entering the Current Voice Number macro.

% Current Day of Week (1=Monday .. 7=Sunday)

This character is replaced by the numeric value for the current day of the week.

^ Current Hour (12-hour format)

Hours 1 through 9 = 1..9, 10 = A, 11 = B, 12 = C

Note: Because this is a 12-hour format, the current hour value used when substituting for this macro character can occur twice during the day. For instance the 10 AM and 10 PM hours will return the same value - "A".

@ Nearest Hour (12-hour format)

If current minute of the hour ≥ 30 , then the returned hour value is incremented by 1.

Note: Because this is a 12-hour format, the current hour value used when substituting for this macro character can occur twice during the day. For instance the 10 AM and 10 PM hours will return the same value - "A".

= Current Hour (24-hour format)

Hours 0 (midnight) through 9 = 0..9, 10 = A, 11 = B, 12 (noon) = C, 13 (1 PM) = D through 23 (11 PM) = N

Using this macro character format, there are no duplicates throughout the day.

Macro Usage**+** Nearest Hour (24-hour format)

If current minute of the hour ≥ 30 , then the returned hour value is incremented by 1.

Hours 0 (midnight) through 9 = 0..9, 10 = A, 11 = B, 12 (noon) = C, 13 (1 PM) = D through 23 (11 PM) = N

Using this macro character format, there are no duplicates throughout the day.

Day of Week Values

The day of week macro character returns a numeric value, based on the current day of the week. Values returned are shown in this table.

<u>Day</u>	<u>Value</u>
Monday	1
Tuesday	2
Wednesday	3
Thursday	4
Friday	5
Saturday	6
Sunday	7

Hour of Day Values

Hour of Day macro characters will return different one-character values, depending on the specific macro character used. The main differences occur between any 12-hour format and any 24-hour format. Values returned by each format type are listed in this table.

<u>Hour of 12-Hour Format</u>	<u>24-Hour</u>	<u>Format</u>
Midnight	C	0
1 AM	1	1
2 AM	2	2
3 AM	3	3
4 AM	4	4
5 AM	5	5
6 AM	6	6

<u>Hour of 12-Hour Format</u>		<u>24-Hour</u>
<u>Day</u>		<u>Format</u>
7 AM	7	7
8 AM	8	8
9 AM	9	9
10 AM	A	A
11 AM	B	B
Noon	C	C
1 PM	1	D
2 PM	2	E
3 PM	3	F
4 PM	4	G
5 PM	5	H
6 PM	6	I
7 PM	7	J
8 PM	8	K
9 PM	9	L
10 PM	A	M
11 PM	B	N

5.3.9 Start Record Task

The Start Record task is used to initiate an audio recording. You can set the recording channel, whether or not the recording will start immediately or wait for first audio, the cart number and most other properties that might normally be associated with an audio recording.

The Start Record task dialog is divided into 3 tabs that group like information in addition to the standard Advanced properties that are accessed with the [\[Mode / Days\]](#) button. Description of the properties are grouped by tab for ease in understanding.

Start Record Cart Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

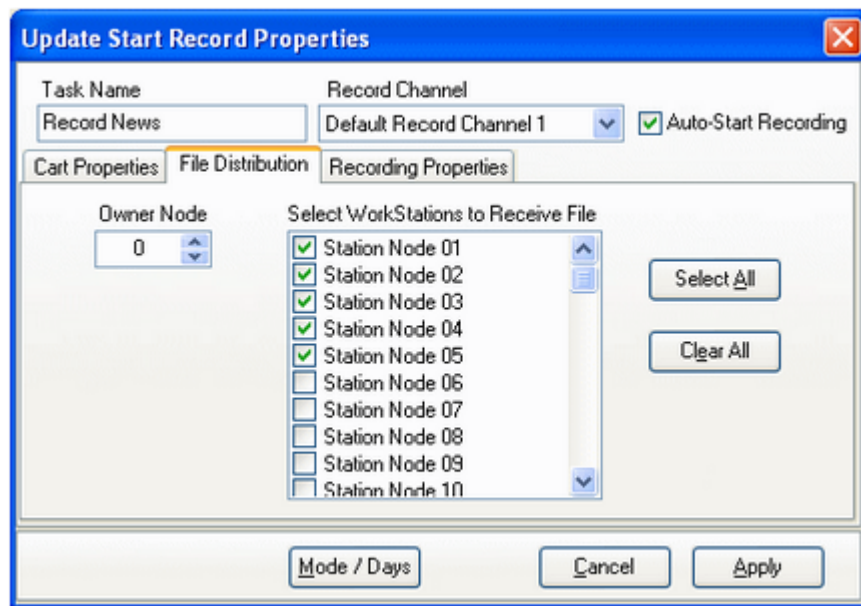
<u>Property</u>	<u>REQ</u>	<u>Description</u>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Record Channel		Available recording channels are displayed in a dropdown list. Select the channel you wish to use for the recording.



The available record channels will normally be populated with a list of channels actually available on the system. If this information is

<u>Property</u>	<u>REQ Description</u>
	not available when creating or editing this task, a default list of channels is presented from which to choose.
Auto-Start Recording	If checked, the system will wait for first audio (based on the audio threshold you set in Preferences). If not checked, recording will begin immediately and may include some "dead air" at the beginning for the recording.
Cart No.	✓ The 4-character number for this recording. This entry can include cart number macro characters , which are translated at run-time.
Description	✓ Free-form description of the recording. This text appears in inventory lists and audit reports. Maximum length is 24 characters.
Agency	Secondary text information. It appears in cart properties dialogs. Maximum length is 15 characters.
Log Length	The expected length of the audio, in the format mmm:ss (minutes, seconds). Maximum value is 999:59, which is 999 minutes, 59 seconds (16 hours, 39 minutes, 59 seconds).
Max Length	✓ This field defines the maximum recorded length of the audio. If this value is reached and the recording is still active, recording will be halted immediately. If you are using an input relay to halt recording, this value can be used as a "drop-dead time", meaning that if the relay doesn't arrive, the recording will be no longer than this value.
Aux Mark	The default value is 00:00:00.000, meaning no Aux Mark (sometimes called secondary tone) will be set when the recording has completed. If the value is non-zero, when the recording has been completed and the header information is updated, the value entered here will be set as the Aux Mark. If the Aux Mark value is greater than the actual length of the recorded audio, it will be ignored.
Start Date	The first date on which this audio will be valid for play. Values can be entered as "plus days" values or actual calendar dates. When entering plus days values, the date is translated as the recording date plus the "plus days" value.

<u>Property</u>	<u>REQ Description</u>
	For instance "+0" translates to the date of the recording, "+2" translates to the date of the recording plus 2 days. The default is to use "plus days" and a value of "+0".
End Date	The last date on which this audio will be valid for play. Values can be entered as "plus days" values or actual calendar dates. When entering plus days values, the date is translated as the recording date plus the "plus days" value. For instance "+0" translates to the date of the recording, "+2" translates to the date of the recording plus 2 days. The default is to use "plus days" and a value of "+1" (valid on the date of recording plus one day).

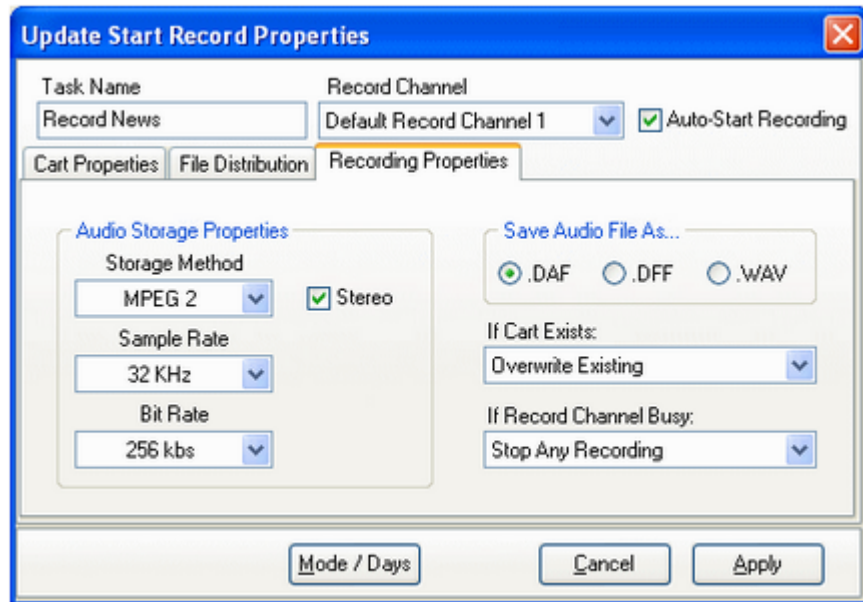


Start Record File Distribution Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ Description</u>
Owner Node	The node number you wish to assign as the "owner" of this recording. Values are in the range 0..63, which correspond to station nodes 1..64.

<u>Property</u>	<u>REQ</u>	<u>Description</u>
Distribution List		Checked items are the work stations that are to receive and be able to use this audio file. The default is all work stations.



Start Record Recording Properties

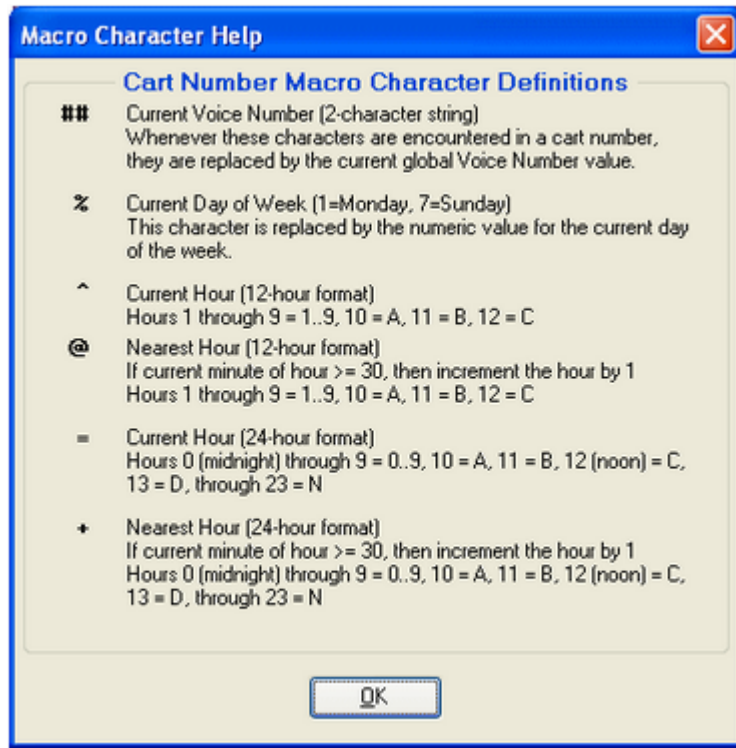
Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ</u>	<u>Description</u>
Storage Method		The storage method for this recording. The default value is your system storage method default. Values include PCM (linear), MPEG 2, and apt-X™. Note that for MP2 and apt-X, you must have the appropriate encoder installed on the system.
Sample Rate		The sampling rate that will be used for the recording. The default value is your system default. Available values will change based on the selected storage method.
Bit Rate		The bit rate that will be used for this recording. The default value is your system default. Available values will change based on the storage method and Stereo flag.
Stereo		The default value is checked, meaning the recording will be stereo. If unchecked, the recording will be monaural.

<u>Property</u>	<u>REQ Description</u>
Save Audio File As	The file type for this recording. The default value is your system default. Use the .WAV option to store the recording as a standard wave file for post-recording editing, etc.
If Cart Exists	This option determines whether or not the recording will occur if the cart already exists. The default is to overwrite the existing file. The other option is Do Nothing, which means the recording will not occur if the audio file already exists.
If Record Channel Busy	<p>This property determines what will be done if a recording is already active on the channel you've selected to record this cart. Options include:</p> <ul style="list-style-type: none">Stop Any Recording (default)Stop Auto-RecordingDo Nothing <p>Stop Any Recording immediately stops the active recording and starts this recording. Stop Auto-Recording checks to see if the active recording is a background recording and if so, immediately stops it and starts this recording. The Do Nothing option means this recording will not occur if any kind of recording is using the selected channel.</p>

5.3.9.1 Using Cart Macro Characters

To use cart number macro characters, enter the appropriate macro as a part of the cart number. Many dialogs where macro characters might be applicable provide a button to pop-up a cart number macro help window, similar to the one shown here.



Macro character help dialog

Supported Cart Number Macro Characters

Macro Usage

Current Voice Number (2-character string)

Whenever these characters are encountered in a cart number, they are replaced by the current global Voice Number value.

Note: You must always use two characters for defining a voice number and always use the ## (pound sign, pound sign) designation when entering the Current Voice Number macro.

% Current Day of Week (1=Monday .. 7=Sunday)

This character is replaced by the numeric value for the current day of the week.

Macro Usage**^** Current Hour (12-hour format)

Hours 1 through 9 = 1..9, 10 = A, 11 = B, 12 = C

Note: Because this is a 12-hour format, the current hour value used when substituting for this macro character can occur twice during the day. For instance the 10 AM and 10 PM hours will return the same value - "A".

@ Nearest Hour (12-hour format)

If current minute of the hour ≥ 30 , then the returned hour value is incremented by 1.

Note: Because this is a 12-hour format, the current hour value used when substituting for this macro character can occur twice during the day. For instance the 10 AM and 10 PM hours will return the same value - "A".

= Current Hour (24-hour format)

Hours 0 (midnight) through 9 = 0..9, 10 = A, 11 = B, 12 (noon) = C, 13 (1 PM) = D through 23 (11 PM) = N

Using this macro character format, there are no duplicates throughout the day.

+ Nearest Hour (24-hour format)

If current minute of the hour ≥ 30 , then the returned hour value is incremented by 1.

Hours 0 (midnight) through 9 = 0..9, 10 = A, 11 = B, 12 (noon) = C, 13 (1 PM) = D through 23 (11 PM) = N

Using this macro character format, there are no duplicates throughout the day.

Day of Week Values

The day of week macro character returns a numeric value, based on the current day of the week. Values returned are shown in this table.

<u>Day</u>	<u>Value</u>
Monday	1
Tuesday	2

<u>Day</u>	<u>Value</u>
Wednesday	3
Thursday	4
Friday	5
Saturday	6
Sunday	7

Hour of Day Values

Hour of Day macro characters will return different one-character values, depending on the specific macro character used. The main differences occur between any 12-hour format and any 24-hour format. Values returned by each format type are listed in this table.

<u>Hour of 12-Hour Format</u>	<u>Day</u>	<u>24-Hour Format</u>
Midnight	C	0
1 AM	1	1
2 AM	2	2
3 AM	3	3
4 AM	4	4
5 AM	5	5
6 AM	6	6
7 AM	7	7
8 AM	8	8
9 AM	9	9
10 AM	A	A
11 AM	B	B
Noon	C	C
1 PM	1	D
2 PM	2	E
3 PM	3	F
4 PM	4	G
5 PM	5	H
6 PM	6	I
7 PM	7	J
8 PM	8	K
9 PM	9	L
10 PM	A	M
11 PM	B	N

5.3.10 Stop Play Task

The Stop Play task is used to stop playing audio - either audio playing on a specific channel or a specific cart number.

Stop Play Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Play Channel		The channel on which to stop audio. The default is channel 1. When stopping play on a specific channel, <i>all carts playing on the selected channel are stopped.</i>
Stop a Specific Cart		If checked, the Stop Play task will attempt to stop a specific cart number playing <i>on any channel.</i> If more than one of the specified cart number is playing, only the first one found is stopped.
Cart Number	✓	The cart number to stop if Stop a Specific Cart is checked. This field is disabled unless the Stop a Specific Cart property is checked. The cart number must be 4 characters long.

Stopping Audio on a Specific Channel

To stop audio playing on a specific channel, make sure the Stop a Specific Cart item is unchecked (the default) and select the channel number you wish to stop. The sample task dialog above is an example of using the Stop Play task targeted to a specific channel.



When a specific channel is selected, ***all carts playing on the selected channel are stopped***. The Stop Play task is commonly used when transitioning from local automated programming to satellite programming and, after switching to the satellite program service, it is desirable to stop all carts that might be playing. Since the possibility exists that more than one audio item might be playing in this situation - for instance, audio overlap when finishing one item and starting another - it's desirable to stop all items on the selected playback channel.

Update Stop Play Properties

Task Name: Stop N100

Play Channel: 1

Stop a Specific Cart

Cart Number: N100

Mode / Days Cancel Apply

Stopping a Specific Cart (Audio File)

To stop play of a specific cart number, check the **Stop a Specific Cart** property and enter the cart number you wish to stop. The cart number must be 4 characters in length.

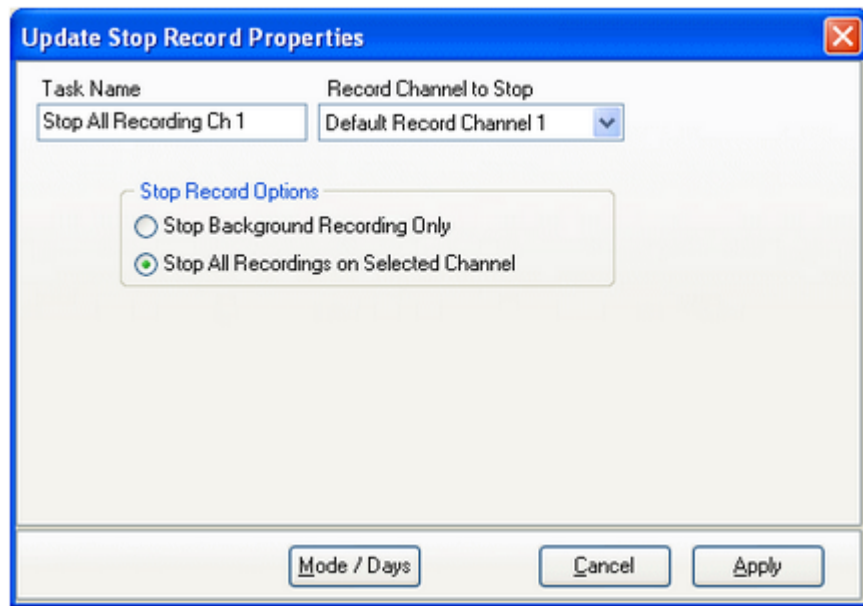


When stopping a specific cart, an attempt to stop the specified cart number playing ***on any playback channel*** is made. If more than one of the specified cart number is playing, only the first one found is stopped. Should multiple carts of the same number be playing, the first one

found and thus stopped would typically be the one that started playing first, regardless of play back channel.

5.3.11 Stop Record Task

The Stop Recording task is used to stop an active recording on a specified recording channel. You can stop any recording on the channel or just those recordings that are background recordings - recordings not initiated by a user.



Stop Recording Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Record Channel to Stop		The channel on which to stop recording. Available recording channels are displayed in a dropdown list. Select the channel on which you wish to stop recording.



The available record channels will normally be populated with a list of channels actually available on the system. If this information is not available when creating or editing this task, a default list of channels is presented for you to choose from.

<u>Property</u>	<u>REQ Description</u>
Stop Record Options	<p>This property allows you to choose what kind of recordings will be stopped.</p> <p>Choose Stop Background Recordings Only to stop only recordings that are automatically initiated by a Start Record task.</p> <p>Choose the Stop All Recordings option to stop any active recording on the selected channel, whether initiated by a Start Record task or by the user.</p>

5.3.12 Switcher Fade Task

The Switcher Fade task is used to fade audio on a selected channel, either a fade up or fade down.



Currently, the only switchers that support this task are the Broadcast Tools ACS 8.2 family of audio switchers and the Broadcast Tools ADMS 44.22. The fade duration is controlled by the switcher's fade settings.

Switcher Fade Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Switcher Resource	✓	Select the audio switcher that will be used for this task from the dropdown list.



If the switcher you select does not support input channel fade, you will be advised to select a different switcher. Task information cannot be saved (applied) until a device that

Property**REQ Description**

supports this task is selected. If you do not have a switcher that supports channel fade, click on the **[Cancel]** button to abort the task.

Fade Audio Up

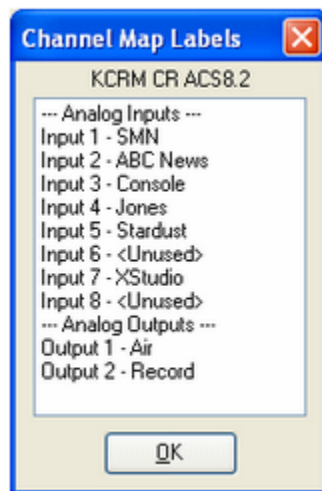
This property determines the audio fade direction. If checked, audio is faded up; if unchecked the audio is faded down. The default value is unchecked.

Channel to Fade

Select the number of the audio channel to fade. Use the **[Show Map]** button to display a list of channel labels for the selected switcher.

Show Map Dialog

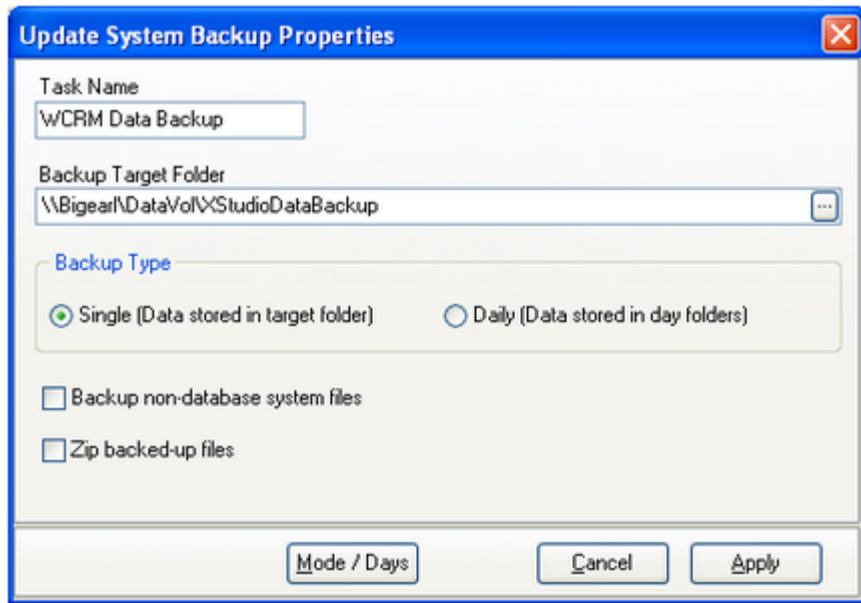
The **[Show Map]** button displays the input and output channel labels as they are assigned to the switcher resource. It is used as a reference when selecting a channel to fade.



The channel list can be printed, saved to a file or copied to the Windows clipboard using a pop-up menu that appears when you **[Right-Click]** on the channel list.

5.3.13 System Backup Task

The System Backup task is used to perform a backup of the XStudio Recorder system database files and optionally, other XStudio Recorder preference and settings files. The backed-up files can be used to manually restore database tables, preferences and settings if needed.



System Backup Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ</u>	<u>Description</u>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Backup Target Folder	✓	This property controls where backup files are placed. The location can be on the local PC or on another PC in the local area network using a UNC path. If the selected backup type is "Daily", the folder becomes the "base" folder, under which daily folders are created. The selected base backup folder must exist - it will not be created when running this task.

Property**REQ Description**

The Backup Target Folder must be set up from the point-of-view (POV) of XStudio Recorder and the logged in user must have read and write privileges in the Backup Target Folder. If these conditions are not met, the backup task will fail.

Backup Type

The selected type dictates where backed-up files are located. If the "Single" option is selected, backup files are located directly in the Backup Target Folder. If the "Daily" option is selected, backup files are placed in folders directly under the Backup Target Folder, one for each day of the week. "Daily" option folders are automatically created as needed and are named "01_Monday", "02_Tuesday" and so on through "07_Sunday".

Backup Non-Database System Files

If checked, preference files, settings files and other selected files located in the application folder are backed up. If not checked, only system database files are backed up.

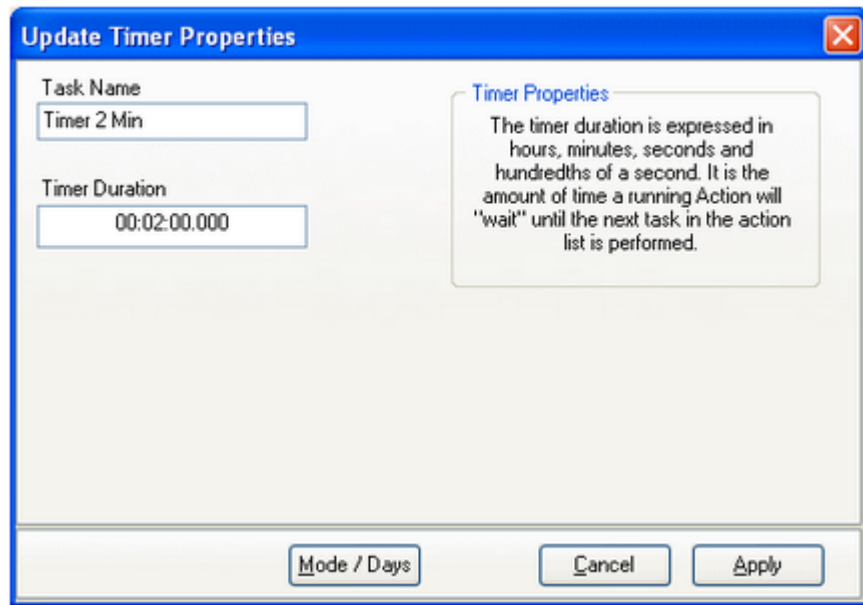
Zip Backed-up Files

If checked, backed-up files are moved to a zip file to reduce disk space consumed by the backup files. The zip file is will be located in the Backup Target Folder specified by this task.

Each time the System Backup task is run, previous backup files in the target folder are replaced. For the "Single" backup type, only one set of backup files exists at any one time. When the "Daily" backup type is selected, as many as seven (7) sets of backup files are retained, one for each day of the week. As noted earlier in the properties description, daily backup types are stored in individual day folders located under the Backup Target Folder.

5.3.14 Timer Task

The Timer task is essentially a "delay" or "wait" command. When a timer task is executed in a running Action, the Action "waits" for the timer duration before moving on to the next task in the action list. Timer tasks have a resolution of 1/100th of a second. The maximum length allowed for a timer task is 23:59:59.990 - 23 hours, 59 minutes, 59 seconds, 990 milliseconds (99 centiseconds).



Example 2-minute Timer task

Timer Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

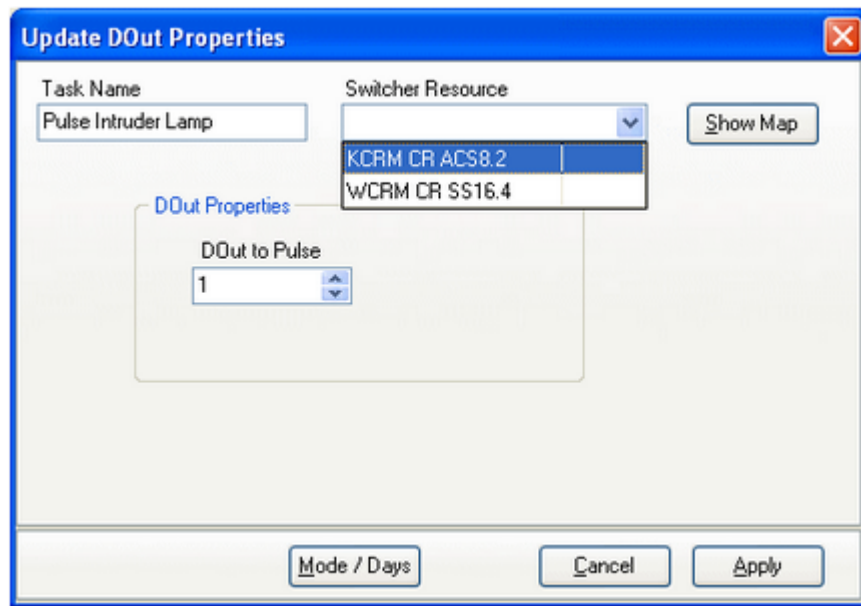
<u>Property</u>	<u>REQ</u>	<u>Description</u>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Timer Duration	✓	The time to "wait" before an Action moves on to the next task in its list. Time entry is in hours, minutes, seconds and hundredths of a second. Internally, the timer duration is stored as milliseconds and during data entry, the last digit (a zero) is automatically filled in. Maximum timer length is 23:59:59:990.

5.3.15 Update DOut Task

The Update DOut task is used to send an outbound relay pulse from an audio switcher that supports this functionality. The relay pulse might be used to turn on a light or start some other device.



Some audio switchers support additional outbound relay functionality, including toggling the relay on (closed) and holding it on (closed). This task supports **pulse output** only. The duration of the pulse is controlled by the audio switcher settings. Pulse duration is typically one second or less, with most switchers supporting a range from ~100 milliseconds up to ~9.9 seconds



Selecting the switcher resource for a DOut

Update DOut Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

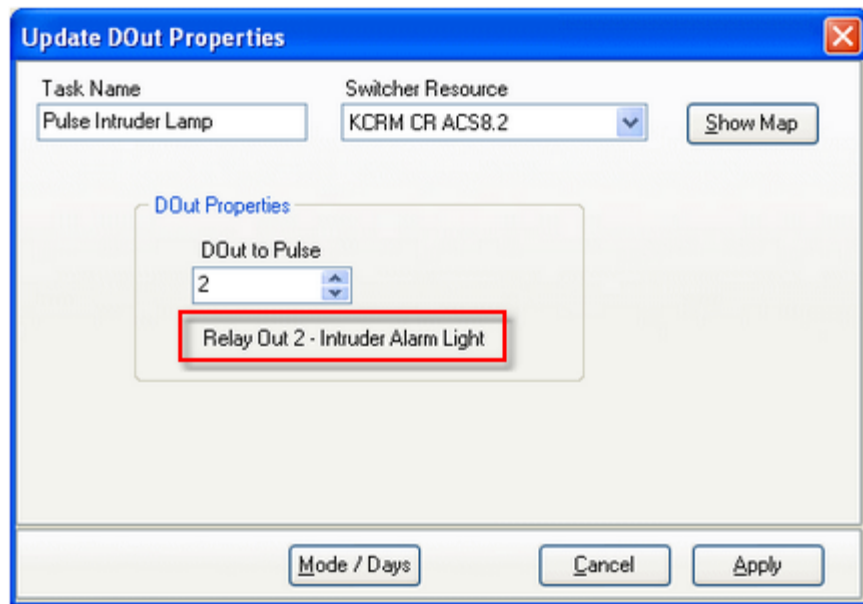
<u>Property</u>	<u>REQ</u>	<u>Description</u>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Switcher Resource	✓	Select the audio switcher that will be used for this task from the dropdown list.

Property**REQ Description**

If the switcher you select does not support DOut's, you will be advised to select a different switcher. Task information cannot be saved (applied) until a device that supports this task is selected. If you do not have a switcher that supports DOut's, click on the **[Cancel]** button to abort the task.

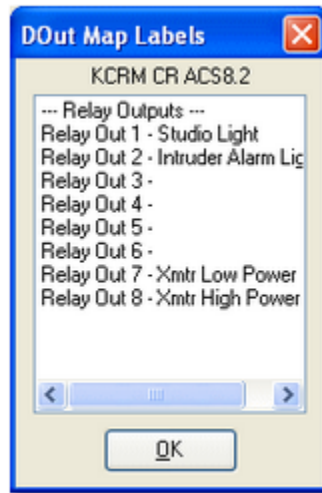
DOut to Pulse

This property sets the specific DOut to pulse. As the value is changed, the selected DOut description is displayed, as shown in the example.



Show Map Dialog

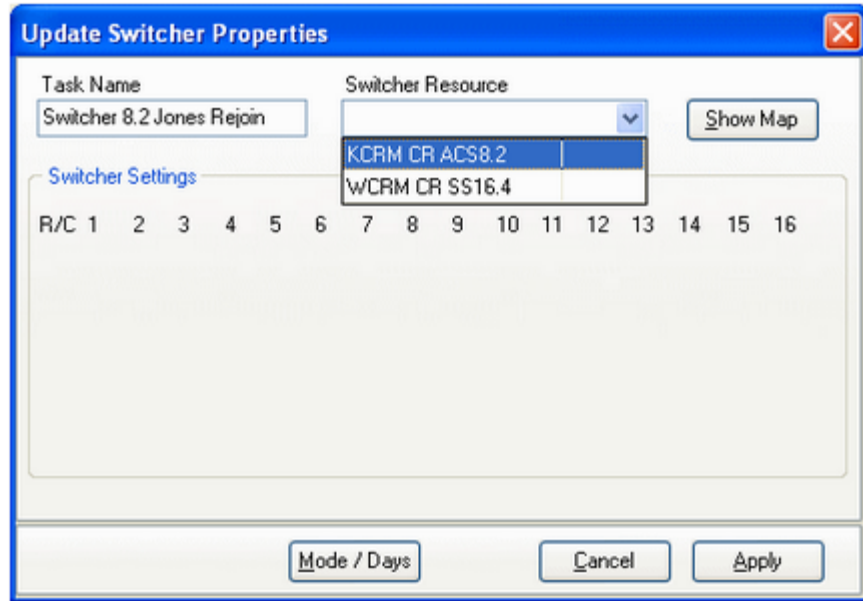
The **[Show Map]** button displays the DOut identification labels as they are assigned to the switcher resource. It is used as a reference when selecting a DOut to pulse.



The DOut label list can be printed, saved to a file or copied to the Windows clipboard using a pop-up menu that appears when you [**Right-Click**] on the displayed list.

5.3.16 Update Switcher Task

The Update Switcher task is used to set channel states on an audio switcher. Channels can be explicitly turned on and off or left alone in their current state. You must set at least one channel on or off for the task to be valid. Changes cannot be saved until at least one channel is turned on or off.



Update Switcher - selecting the audio switcher

Update Switcher Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<i>Property</i>	<i>REQ</i>	<i>Description</i>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Switcher Resource	✓	Select the audio switcher that will be used for this task from the dropdown list. When selected, the appropriate number of channels and rows of channels is updated in the switcher settings panel.
Switcher Settings	✓	Set individual channels off, on, or "no change". At least one channel must be set on or off for the task to be valid.

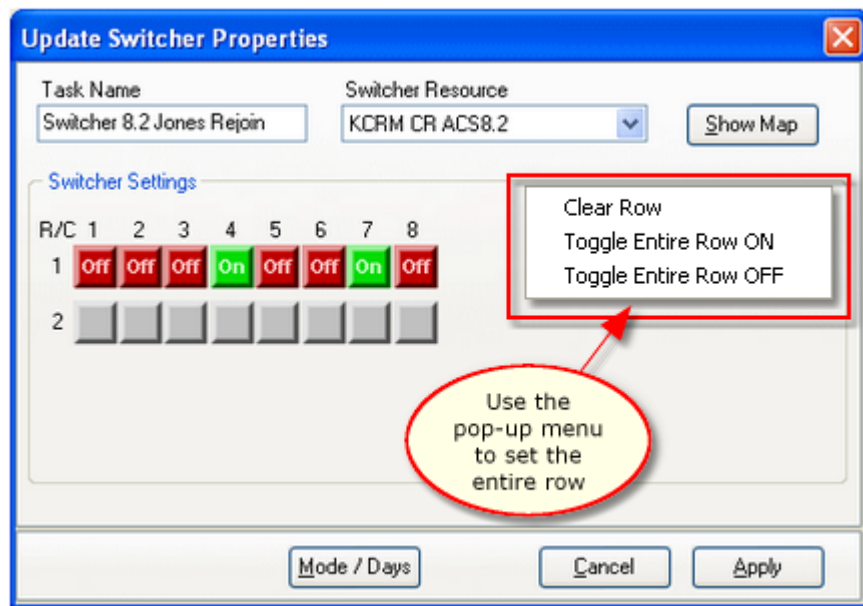


Displayed channel buttons can have one of three states,

Property**REQ Description**

which are shown above. In order of display, the states are channel off, channel on, and do not set channel state, which means no change to existing settings for this channel when the task is executed.

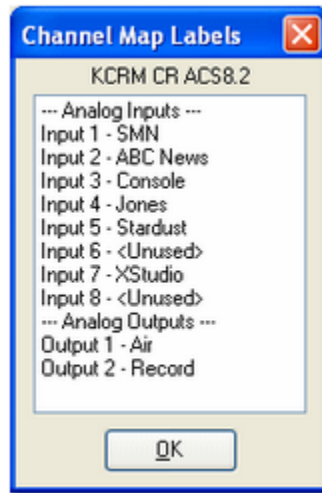
Entire rows can be toggled on or off and the row state cleared to no change using a pop-up menu (shown below). Float your mouse over the row you wish to change and **[Right-Click]** to display the menu.



Update Switcher task - change entire row pop-up menu displayed

Show Map Dialog

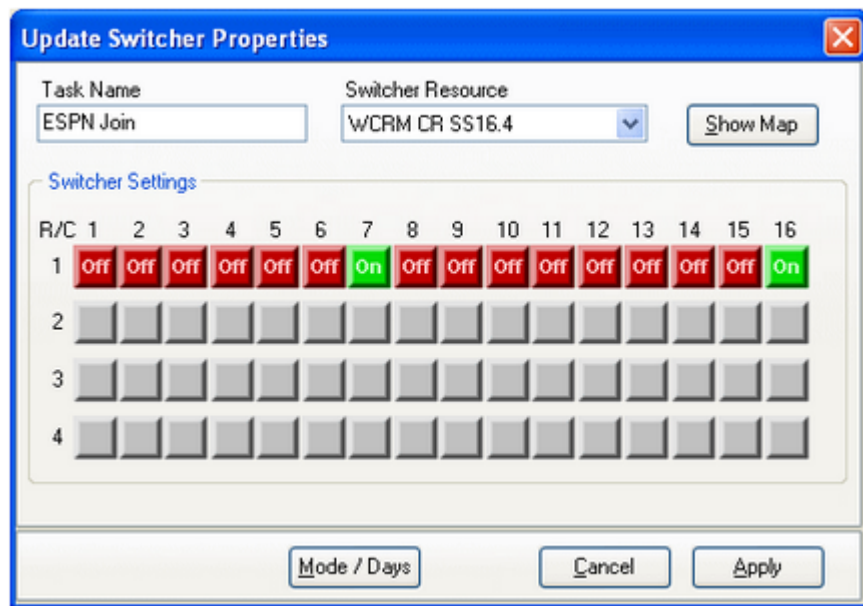
The **[Show Map]** button displays the input and output channel labels as they are assigned to the switcher resource. It is used as a reference when setting a channel's state.



The channel list can be printed, saved to a file or copied to the Windows clipboard using a pop-up menu that appears when you [**Right-Click**] on the channel list.

Example 16x4 Switcher Dialog

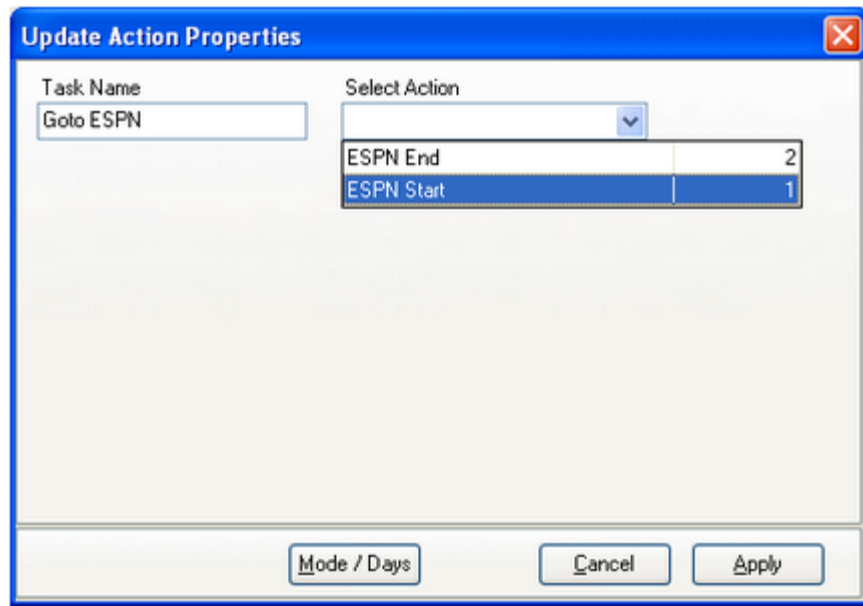
This dialog demonstrates the appearance of the Update Switcher dialog when a 16x4 (16 input channels, 4 output rows) switcher is being updated.



Example 16x4 Update Switcher Dialog

5.3.17 Use Existing Action Task

The Use Existing Action task is used to "nest" an Action within a running Action's task list. As this task is about to be executed in an action task list, it is checked like any other task to see if it is valid for the current mode of operation, day of week and time of day. If this criteria is not met, the **entire action** referenced by this task is skipped.



Selecting an Action for the Use Existing Action task

Use Existing Action Properties

Items with a check mark in the **REQ** column require user entry, while unchecked items have default values which can optionally be changed.

<u>Property</u>	<u>REQ</u>	<u>Description</u>
Task Name	✓	The user-friendly name of the task. See Common Properties for more information.
Selected Action	✓	Select the Action that will be performed when this task is executed and all execution criteria for the task are met. See the section on Advanced Task Properties , which explains how you can control whether or not the action begins execution.



Once this task has been validated as OK to execute at run-time, each task within the selected action is validated as well, as a normal task

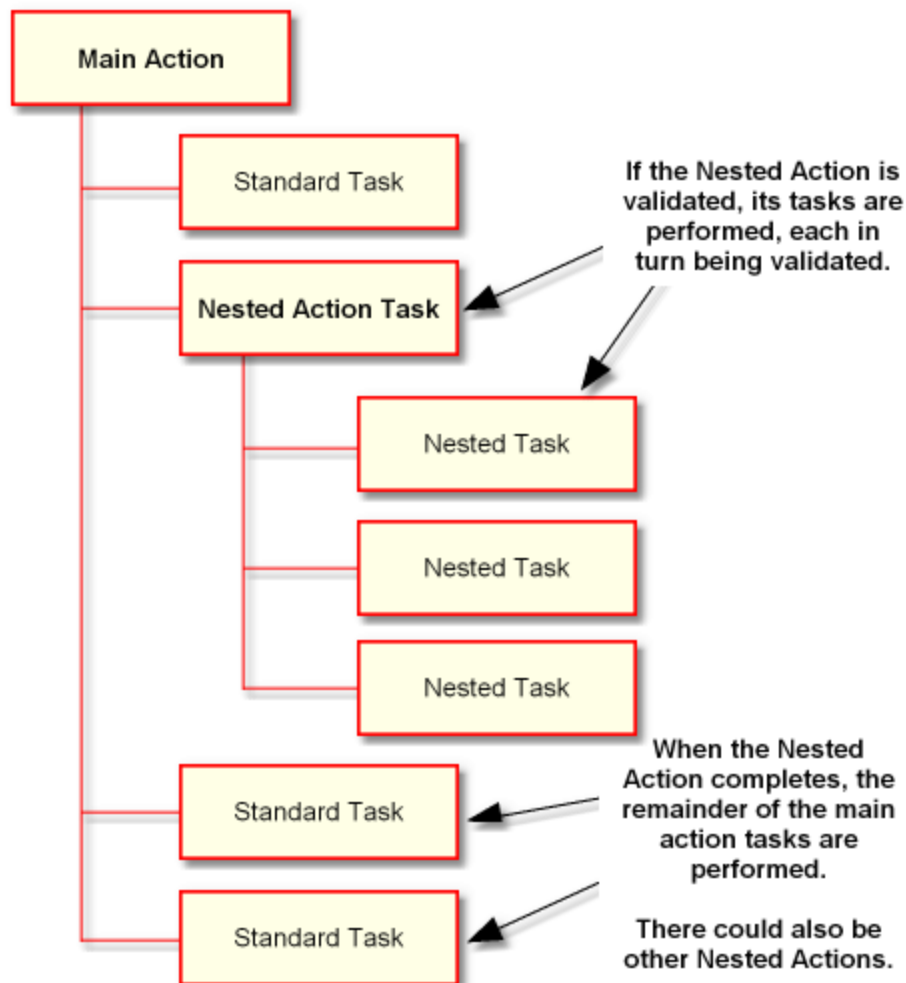
would be. It is possible, then, that while an action launched with this task executes, not all of its own member tasks would execute.

Use Existing Action Task Flow

When this task is executed at run-time, the assigned action's task list is executed only if this task's Advanced Properties permit. If this task fails validation, the entire action is skipped.

If this task passes validation, then the assigned action's list of tasks is performed, in order, subject to each individual member task being validated. When the assigned action's task list has been completed, any other tasks contained in the master action list following this task are validated and performed. The flow diagram shown displays graphically the order of execution.

Action Task Flow with Nested Actions



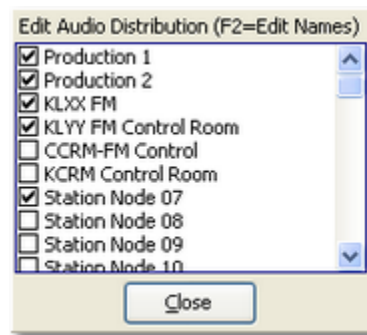
As you might deduce by looking at the diagram, it is possible to further "nest" actions by placing a Use Existing Action tasks in an Action already being used as a nested action. In fact, you could go several layers deep, although perhaps with some level of confusion when the nesting gets more than 3 or 4 layers deep.

More commonly, you might use several Use Existing Action tasks in a master Action, with each nested action's execution being controlled by the Advanced Properties settings for the task - in other words, maybe only one of 5 nested actions would actually be performed when the master action executes.

5.4 Using the Cart Distribution List Panel

Audio files created by XStudio Recorder contain a distribution list that historically has been used to determine whether or not a given audio work station is permitted to use the file in DCS and Maestro systems. XStudio Recorder does not use these settings - they are used only when recording audio that is targeted to a DCS or Maestro system.

The cart distribution list is displayed when you wish to change these settings in Preferences on the [General](#) page.



Distribution List Edit Panel

Usage is simple - checked "nodes" or "stations" are included, unchecked nodes are not.

Customizing Work Station Names

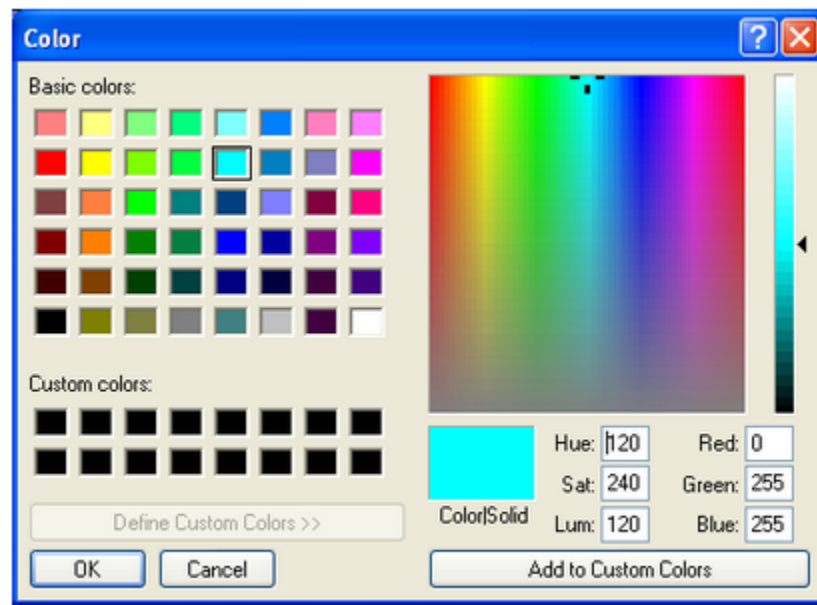
To make it easier to identify audio work stations in a station's broadcast facility, the text for each work station name in the list can be edited. [**Double-Click**] on the item in the list whose name you wish to edit. A dialog appears, allowing you to make changes. When you're finished editing the name, click on the dialog's [**OK**] button to save the changes.



Work stations in the list are sorted in node number order. The 1st name in the list corresponds to node number 1 (or zero – 0 – under the covers in DCS and Maestro).

5.5 Using the Color Customization Dialog

The Color Customization Dialog is a standard Windows dialog for selecting and/or creating colors, similar to the example shown.



Color Customization Dialog (expanded)

All of the standard methods for creating custom colors are available in this dialog. You can visually create a color by clicking on the color spectrum display, then moving the gradient marker, or you can manually enter a color value as a set of numbers, either based on the RGB values or Hue, Saturation, and Luminescence values.

If you find that you are consistently using a particular custom color, you may wish to write down the RGB values for that color to make it easier the next time you want to duplicate it. You can also add a newly created color to the "custom colors" panel, but remember these settings are not persistent between sessions - if you exit the software, the custom color is not saved.

5.6 Using a Remote Database

As a default, XStudio Recorder creates and maintains a local database with complete control over it. No other applications are allowed access to the data or to the files that comprise the database unless you explicitly [allow remote access](#) to the local database for remote administration of the automation data using XStudio Admin.

A second option available is to use a centralized, remote database server typically located on another PC. This option requires a stand-alone database server application be installed, configured and available to XStudio Recorder.

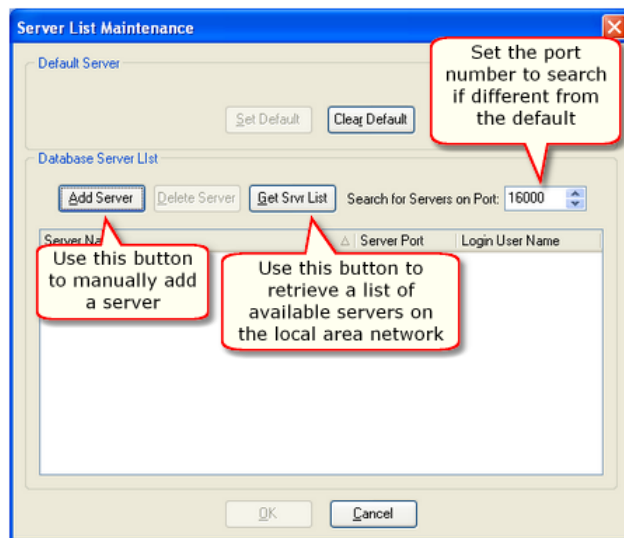


The necessary stand-alone database server software for implementing a centralized database is not included in the XStudio Recorder installation package. If you wish to use a centralized database, contact your vendor for information on obtaining the database server software, along with its requirements for use.

5.6.1 Database Server List Maintenance

If you will be connecting XStudio Recorder to a remote database - one that is not the local database XStudio Recorder creates and maintains as a default - you can use the database server list maintenance dialog to locate the server (if physically on your LAN) or create a manual entry for the server.

When initially opened with no defined remote database servers, the server list maintenance display will look similar to the example shown.

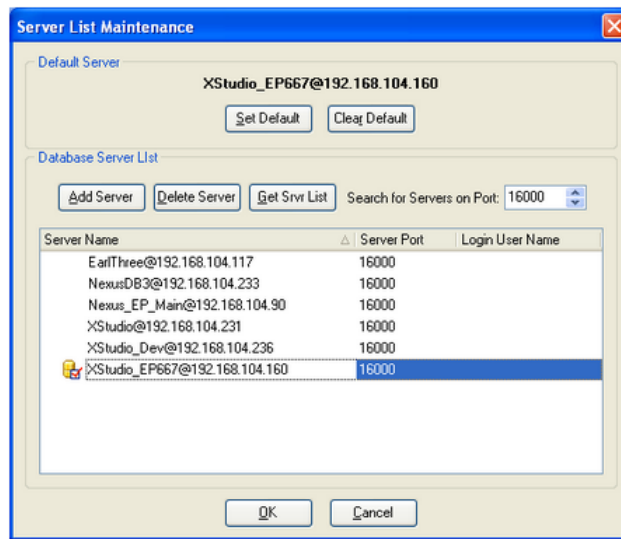


Default Server List Maintenance Dialog with no Defined Servers

There are two ways to define servers - retrieve a list of available servers from you local area network, and manually add a server that either does not appear on the local area network or is at a remote location.

Retrieve Servers Available on the Local Area Network

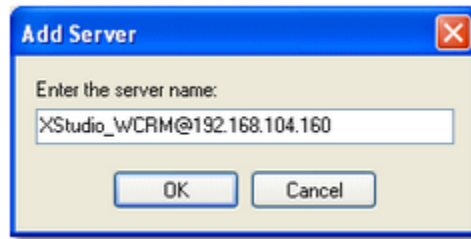
If the database servers you will be maintaining are on your local area network, use the [**Get Srvr List**] button, which broadcasts a message asking for available servers to respond. In order for the broadcast messaging to work, certain [TCP/IP ports](#) must be available for use and not blocked by a firewall. After broadcasting a message across your local area network and waiting a few moments for responses from active database servers, all found servers are added to the database server list.



In the example display shown, one of the servers has also been designated the "**Default Server**." This means that when XStudio Recorder is launched, the selected server is the one that XStudio Recorder will initially log in to and use if you have the [Use Remote Database](#) property enabled.

Manually Add Servers to the Server List

If a local database server cannot be found or if you need to connect to a database server outside your local area network, you can manually add the server using the [**Add Server**] button, which displays a dialog for entering the server name.



Enter in the server name and click the [OK] button to add it to the server list. The correct entry format for manually adding a server is in the format "**Name@Address**", where the "Name" portion is whatever the name assigned by the host application is, the "Address" portion is the IP address or resolvable network path, and the "@" symbol separates the two.

Example Server Name Entries

Server names can be entered in any of these formats:

Entry Syntax

XStudio_KCRM@192.168.110.120

XStudio_KCRM@KCRM_ControlRoom

XStudio_KCRM@KCRM.dns2go.com

Description

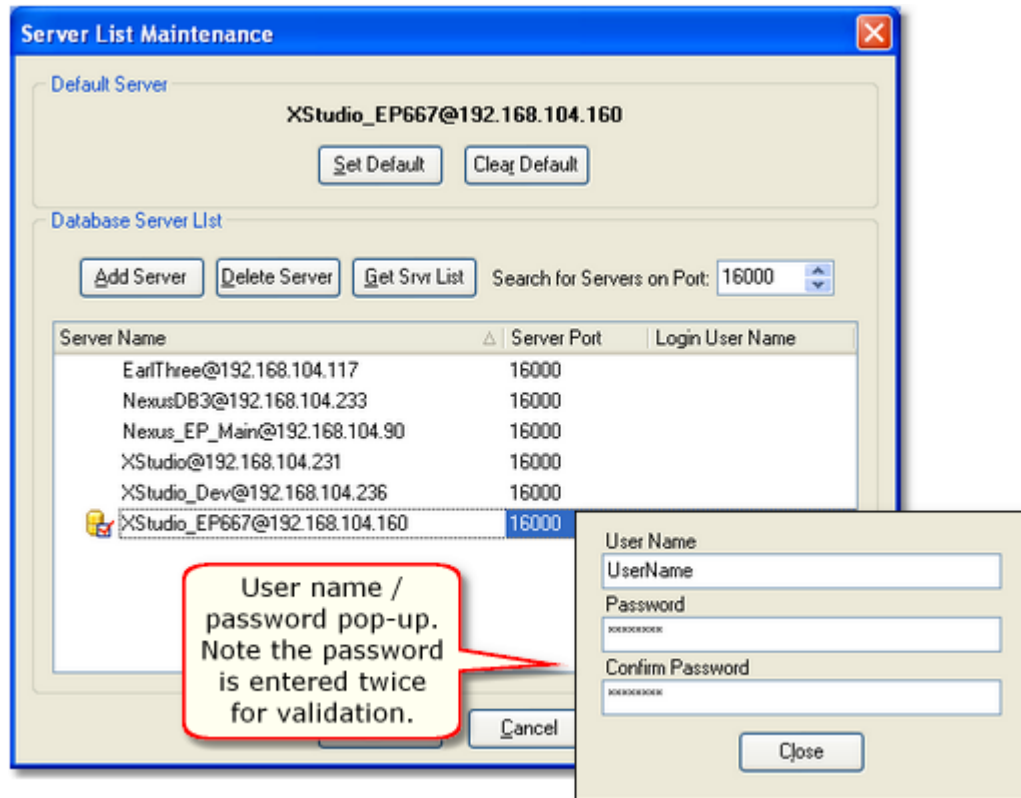
Standard IP address notation.

Machine Name notation - local area network only!

Internet domain name notation.

User Name and Password

As a default, the XStudio Recorder database does not require a user name and password to gain access. However, should the remote database server require a valid user name and password, you can enter the information in the **Login User Name** field. When you select this field, a dialog appears.



Enter the required user name and password - note the password is entered twice for validation. If the password entries do not match, you will be prompted to reenter them.

When the server list is saved, the user name and password are included. Future logins to the selected database server will have the user name and password entered automatically for you, avoiding a prompt to manually enter them.

5.6.2 TCP/IP Port Information

In order for XStudio Recorder to communicate with a remote database server, certain TCP/IP ports must be available for use and not blocked by a firewall. ***This applies to both the XStudio Recorder PC and the PC running the database server application.*** If you launch XStudio Recorder and see a Windows message similar to the following, you either need to tell Windows to unblock the port or manually unblock the port.



Database Communication Ports

Only one TCP port is used for database communications and is the only required port. The default port number is: **16000**.

If you are accessing a remote database server somewhere outside of your local area network (LAN), this is the only port that needs to be available and unblocked. Ports referred to in the section on broadcast ports are only useful on a local area network.

Broadcast Ports

The automatic retrieval of remote database server names is dependent on being able to broadcast a request for available servers to respond, and being able to receive their responses.

Broadcasts use as a default UDP ports **16000** (for requests) and **16001** (for responses). If you want to be able to retrieve a list of available remote database servers automatically, both of these ports need to be available and unblocked.

Default Port Usage Table

Use this table as a reference if manually configuring port blocking exceptions.

<u>Port Type</u>	<u>Port Number</u>	<u>Usage</u>
TCP	16000	Database communications. This is the only required port.

<u>Port Type</u>	<u>Port Number</u>	<u>Usage</u>
UDP	16000	Used to broadcast requests for available database servers. Useful only on the local area network.
UDP	16001	Used to receive broadcast replies from available database servers. Useful only on the local area network.

5.7 Using the XStudio Recorder Clock

The XStudio Recorder clock is a floating window used to display the current time in either military or standard AM/PM time formats.



XStudio Recorder Clock



The clock is disabled (hidden) as a default and does not display the very first time XStudio Recorder is launched. When XStudio Recorder is closed, the clock state (shown/hidden, position, colors and size) is recorded and restored the next time XStudio Recorder is started.

Showing or Hiding the Clock Display

To show or hide the clock, select the main menu item **View | Show Clock**. The menu item is checked when the clock is displayed.

The menu item acts as a toggle, alternately hiding and displaying the clock. The clock state is stored on program exit and restored on program start-up.

Changing the Clock Appearance

You can modify the clock appearance, including the time display type, size of the text, text color and background color. To do so, **[Right-Click]** on the clock time text to display the clock properties menu.



Select the item you wish to change. Depending on the item you choose, the change will either be made immediately or you'll be prompted to make an option selection. Review details of each menu item for the clock display in the following table.

<u>Menu Item</u>	<u>Description</u>
Enlarge	The text size of the displayed time is made larger, up to a maximum of 54 points. The text size can also be enlarged using the [UpArrow] and [+] keys on the numeric keypad when the window is active.
Reduce	The text size of the displayed time is made smaller, down to a minimum of 13 points. The text size can also be reduced using the [DnArrow] and [-] keys on the numeric keypad when the window is active.
Change Text Color	Displays a color customization dialog to choose the color of the clock's time text.
Change Background Color	Displays a color customization dialog to choose the color of the clock's background.
Reset Colors to Default	Resets the clock's time text and background color to XStudio Recorder defaults.
Military Time	Toggles the time display between standard AM/PM and military time.
Close	Hides the XStudio Recorder clock and backtimer (if enabled).

5.8 Using the XStudio Recorder Message Center

The XStudio Recorder Message Center is a floating dialog used to display text messages that originate from the execution of a [Banner Message](#) task. When this task type is executed, the XStudio Recorder Message Center dialog is automatically shown.



The Message Center background and text colors, duration of the message and whether or not text blinks are controlled by the [Banner Message](#) task properties. The width, height and screen position of the Message Center dialog is managed by the user.

The Message Center dialog can be manually shown or hidden by the user with the XStudio Recorder main menu item **View | Show Message Center**.

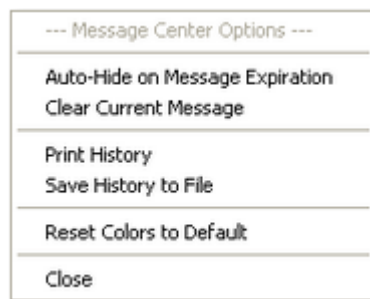
Manually showing or hiding the Message Center dialog does not affect the message contents.

Message Center Size and Position

The Message Center size (width and height) and screen location can be adjusted to suit your preferences. To adjust the width and height, [**Left-Click**] and hold the mouse button down while dragging one of the Message Center borders. To position the Message Center, [**Left-Click**] and hold the mouse button down on the title bar to drag the Message Center dialog to the desired location. When the Message Center dialog is re-sized, the message text (if any) size is automatically adjusted to fit the new height and width of the text panel.

Message Center Menu Options

The Message Center has a pop-up menu that can be used to modify its behavior. [**Right-Click**] on the Message Center text panel to display the pop-up menu.



<u>Menu Item</u>	<u>Description</u>
Auto-Hide on Message Expiration	Click on this menu item to toggle whether or not the Message Center hides itself when a message that has an assigned duration expires. If the menu item is checked, the auto-hide feature is enabled. The default is to not hide the Message Center when a message expires (unchecked).
Clear Current Message	Select this menu item to manually clear the current message.
Print History	Select this menu item to print the Message Center history list. The history list is sent to the default printer.
Save History to File	Select this menu item to save the Message Center history list to a file. You will be prompted for a file name.
Reset Colors to Default	This menu item changes the message background and text color to the system default. On receipt of the next message, the background color and text color may be changed based on the Banner Message task properties.
Close	Select this menu item to hide the Message Center dialog. The current message, if any, is unaffected.

Message Center History

When new messages are processed in the XStudio Recorder Message Center, the existing message (if present) is added to a history list. The history list contains the ten (10) most-recent messages that have been displayed in the Message Center. To view the history, click on the **[Show History]** link at the lower-left-corner of the Message Center. The Message Center dialog will expand to display the history.



The screenshot shows a window titled "xSRecorder Message Center" with a yellow header area containing the text "Recording Fox Sports (short version)". Below the header is a "Hide History" link and a table with three columns: "Start Time", "End Time", and "Message". The table contains one row of data.

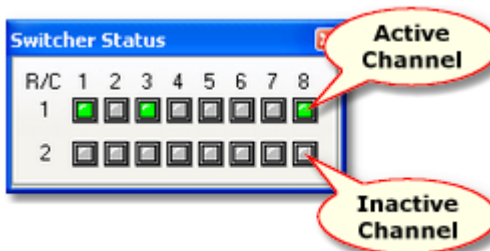
Start Time	End Time	Message
2013-12-16 16:00:00	2013-12-16 16:05:00	Recording ABC News

To hide the history list, click on the [**Hide History**] link at the lower-left-corner of the Message Center text panel.

The Message Center history list can be printed or saved to a file if desired. Refer to the previous section on [Message Center Menu Options](#) for additional information.

5.9 Using the XStudio Recorder Switcher Status Dialog

When you are using an audio switcher with XStudio Recorder, you can optionally display a status dialog that shows you the status of each of audio channels. Each time XStudio Recorder makes a change, the status display is updated. The status display is a floating window that can be moved around to your preferred position. It's size is fixed, based on the active audio switcher's number of audio input channels and audio output rows.



XStudio Recorder Switcher Status



The switcher status dialog is hidden as a default and does not display the very first time XStudio Recorder is launched. When XStudio Recorder is closed, the switcher status dialog's state (shown/hidden and screen position) is recorded and restored the next time XStudio Recorder is started.

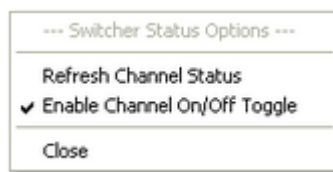
Showing or Hiding the Switcher Status Dialog

Use the main menu item **View | Automation Info | Display Switcher Status** to show or hide the switcher status dialog.

The menu item acts as a toggle, alternately hiding and displaying the switcher status dialog. The dialog state is stored on program exit and restored on program startup.

Switcher Status Options Menu

You can refresh the switcher status data and enable the channel on/off toggle functionality by using the dialog's pop-up menu. **[Right-Click]** on the switcher status dialog to display the options menu.



*Switcher Status Pop-up
Options Menu*

<u>Menu Item</u>	<u>Description</u>
Refresh Channel Status	When selected, XStudio Recorder forces the audio switcher to re-send audio channel status data, thus updating the display. This is useful if you have manually changed a channel on the switcher by selecting the channel on the hardware itself.
Enable Channel On/Off Toggle	When this item is checked, toggling any of the displayed audio channels is enabled. You can turn on or turn off a given audio channel by clicking on it. If the channel was on, it is turned off and vice-versa. This item is unchecked as a default to prevent unintended channel toggling. If you wish to use this dialog to toggle channels on and off, you must re-enable (check) this item each time XStudio Recorder is launched.

Troubleshooting

Part



XStudio Recorder has been designed to be as trouble-free as possible and has been thoroughly tested. However, not every usage scenario can be anticipated. This section is intended as a starting point diagnosing and solving problems, but should not be viewed as an all-encompassing source of problem resolution.

XStudio Recorder automatically generates an event log of its activities, which is a good place to start when trying to track down the cause of a problem. See the topic on [Using Application Event Logs](#) for additional information.

If the difficulty you're experiencing is not covered in this document, contact the dealer who provided you with XStudio Recorder first. Alternatively, you can contact dcsTools.com - see the topic on [technical support](#).

Application Bugs or Errors

Bugs and errors generally fall into one of two categories - a bug, which is the application not doing something as you might have predicted it would, or; an error, which is the failure of the application to run or perform a specific task altogether.

If you find a bug, report it. Every effort is made to ensure XStudio Recorder performs as expected, but there may be circumstances that were not predicted in the development of the software. See the section on [Technical Support](#) for information on reporting a bug.

If you encounter an error, you will get an error message indicating a severe failure and XStudio Recorder may terminate. Provisions are made to "catch" such errors and log the error information to a file in the XStudio Recorder application directory. The file name is **xsRecorder.elf**. Again, report any application errors you encounter. You may be asked to send the appropriate log file for analysis.

Common Problems

[Audio Engine Troubleshooting](#)

[Session Properties](#)

[I can't record audio](#)

[Vista, Windows 7 & Windows 8 Issues](#)

[I can't start the audio engine](#)

[Using Application Event Logs](#)

[Remote Database Issues](#)

6.1 Audio Engine Troubleshooting

This topic is intended to assist in diagnosing and correcting unusual problems with the XStudio Recorder audio engine.



Some techniques involve manually modifying the registry. It is strongly urged that the sections of the registry that pertain to the XStudio Recorder audio engine be backed up before they are modified. See the [Registry Information](#) topic for details on where information is stored.

The audio engine is installed as a Windows service and is set up to automatically start when the PC's operating system is loaded. This makes the audio engine available before any user login is performed on the host PC.

Current Audio Engine Version Numbers

<i>File</i>	<i>Version</i>
AudioEngine.exe	Version 1.99.76.101 (Build 20220112 - 13:34)
GenCodec.dll	No version info. Date: 01/12/2022 1:31 PM
NCTAudioCompress.dll	Version 1.7.8.0 Date: 2/11/2003 2:32 PM
asihpi32.dll	Version 4.30.13.0 Date: 9/17/2021 5:32 AM
aeRemote.dll	Version 1.0.0.1 Date: 01/12/2022 1:35 PM (Used by client applications, provided for completeness)

This version requires the Microsoft Visual C++ 2015-2019 Redistributable Package (x86), which is automatically installed by the dcsTools Audio Engine installer if not present on the host system.

6.1.1 Audio Engine Specific Problems

This section documents specific problems that may occur and the solution and/or work-around. Before applying any of the techniques described, you should check to be sure that you are running the latest version of XStudio Recorder and double-check your application settings (Preferences) to ensure everything is correct.

6.1.1.1 Audio Engine Service Unresponsive

Symptom: The audio engine service is started and appears to be running, but client applications are unable to communicate with the audio engine.

Reviewing the application client event log indicates that the audio engine service is running. The client communications software, aeRemote.dll, loads OK according to the XStudio Recorder event log, but when a connection attempt is made, the attempt times out after trying 10 or more times.

Solution 1 - TCP/IP Port Check

XStudio Recorder communicates with the audio engine using TCP/IP on port **12042**. Another application may have control of this port or a firewall may be preventing communications on the port. You may have to consult with your LAN administrator to determine if either of these possibilities are the case.

Solution 2 - apt-X Encoder Check

Check to see if the apt-X encoder is installed with the audio engine. If apt-X is installed, check to see if the apt-X temporary time period has expired. It can be checked one of two ways:

1. Use the **apt-X Registration Utility** included in audio engine installations - the file name is aptX_RegDlg.exe.
2. Stop the audio engine service and launch the audio engine from a command window. See the topic on [running the audio engine in console](#) mode for instructions.

If an expired apt-X trial license is the issue, the apt-X registration dialog will appear using either of the two methods. Correct the problem by registering the software or removing it.

Solution 3 - Host PC Name Check

Check the client application's host PC name. If the computer name is longer than 15 characters, it is unlikely a connection can be made. To test, shorten the computer name to 15 characters or less. This problem occurs because of Microsoft's maximum computer name length of 15 characters for NetBios naming compatibility. It is why users are warned when they try to create a computer name longer than this limitation.

6.1.1.2 Audio Engine Slow Playback Response Time

It is possible that a combination of factors comes together to cause what might be called a "hesitation" in playback of audio when rehearsing sequences. If there is a noticeable delay between the time you click on the **[Play]** button and when you hear audio - on the order of 1/2-second or more, there are some things that can be done to improve response time.

The problem most generally manifests itself when the playback audio folder is on a remote machine, as would be the case with centrally-stored audio.

Here are some steps to try to improve response time - try them in order, shutting down the audio engine before making the changes, then restarting the audio engine and testing the change. It is recommended you make one change at a time to get a good sense of the effect of each change rather than making several changes and not knowing which of them may have fixed the problem.

1. **Change the audio stream buffer size.** The default audio stream buffer size is 32768 (32,768 bytes). Open the registry, locate the key **PlayBufferSize** (see the [Registry Information](#) section for details on its location) and change the value to 8196 (8,196 bytes). Relaunch the audio engine and test the playback start response. If the response is acceptable, shut the audio engine down and increase the value to 16384 (16,384 bytes). Re-test playback response. If it's still acceptable, try increasing the value to 24580 (24,580 bytes) and repeat the test. If playback response time is acceptable, leave the setting. If not, revert the setting back to the last value you tested that produced acceptable results.



Lowering the **PlayBufferSize** value increases hard disk read frequency. The idea is to use the largest value possible while getting acceptable play start response time. This is particularly true of situations where the playback audio is stored on a central server - you want to keep disk access to a minimum to keep from "hammering" the central storage device any more than necessary.

2. **Change the pipe clock setting.** If you've changed the buffer size down to 8196 and are still not getting acceptable results, you can try changing the pipe clock setting. Note changing this value may cause some audio cards to fail altogether, including some Digigram models.

Ensure the audio engine is shut down, then open the registry and locate the key **PipeClock**. See the [Registry Information](#) section for details on its location. Change the value from its default of 44100 to 32000, restart the audio engine and test playback response. You can also try setting the value to 48000.

By way of explanation, if the source playback audio was sampled at 32kHz and the **PipeClock** setting is 44100 (44.1kHz), the audio engine is rate-converting, which adds some time to the process. The idea is to match this value to the value of the majority of the source audio.



Changing the **PipeClock** value produces best results when you know all or most of the source playback audio was sampled at the same rate. For audio files produced on a DCS system, this would be 32000 (32kHz).

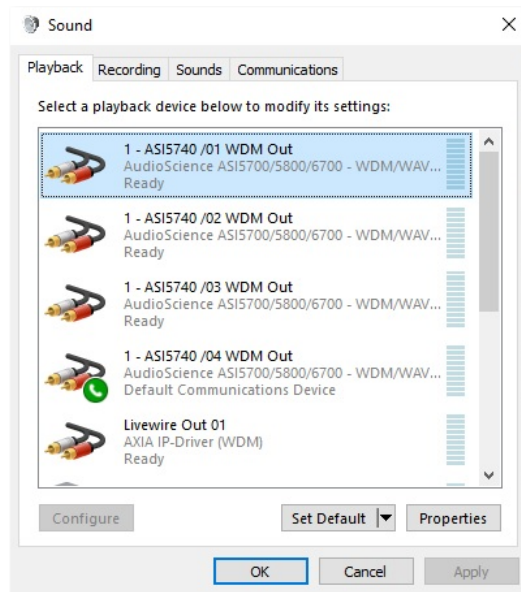
6.1.2 Specific Audio Card Issues

This section provides information on audio card issues that can occur, along with remedies or workarounds.

6.1.2.1 Audio Science (ASI) WDM Configuration

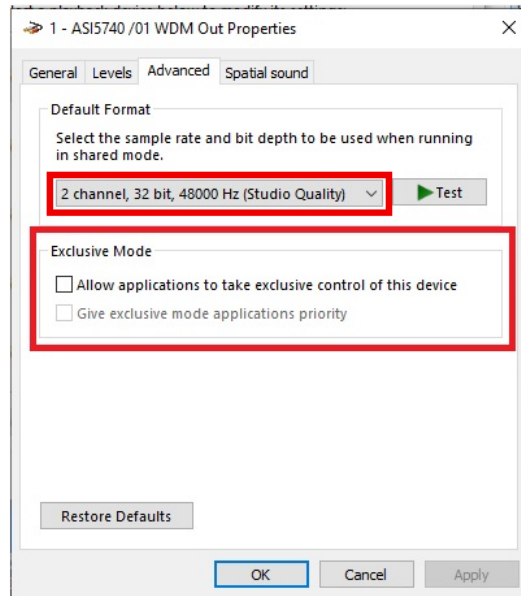
If you are having trouble playing or recording audio (particularly simultaneous play/record) with an ASI card using their WDM (WAVE) drivers, it most likely can be remedied by making changes to the input and output Windows Sounds properties. Note these changes are to the device Windows properties, not ASI's driver or card configuration properties.

1. Open the Sound Control Panel, either from **Control Panel (Sounds)** or by accessing it via the task bar - **[Right-Click]** on the sound (speaker) icon, then selecting the **"Sounds"** menu item from the pop-up menu. The Sound dialog will be displayed:



2. For each Playback output and Record Input (on the Playback & Recording tabs, respectively), select the item and click on the **[Properties]** button.

3. Select the **Advanced** tab, as shown:



4. In the **Default Format** section, select the "**2 channel, 16 bit, 44100 Hz (CD Quality)**" option.
5. In the **Exclusive Mode** section, uncheck the "**Allow applications to take exclusive control of this device**" item. This will automatically disable the "**Give exclusive mode application priority**" item.
6. Save the changes (click on the **Apply** button).

Be sure to do this for each of the ASI WDM Out & ASI WDM In items in the dialog.

6.1.3 Audio Engine Manual Installation

The audio engine is normally automatically installed when the XStudio Recorder is installed. Should there be a situation where it is not installed, or there's a need to manually-install the audio engine, here are basic steps that should be followed.



The audio engine can be used only on Windows 7 and above operating systems. It will not run on older OS versions.

1. Files needed for manual installation:

AudioEngine.exe

GenCodec.dll

NCTAudioCompress.dll

asihpi32.dll

aptX100.dll (**ONLY IF** apt-X is to be installed and licensed)

pcgw32.dll (**ONLY IF** apt-X is to be installed and licensed)

It is important that the files come from the same release version of the audio engine. Review the [Current Audio Engine Version Numbers](#) for additional details.



Audio Engine Prerequisites

Beginning with version 1.99.76.101, the audio engine and client dll require the **Microsoft Visual C++ 2015-2019 Redistributable Package (x86)** be present on the host PC. To check whether or not it is installed, open Add/Remove Programs (or equivalent) in Control Panel. Look for the item "**Microsoft Visual C++ 2015-2019 Redistributable - x86**" followed by a version number. If not present you will need to download and install the software from Microsoft.

2. Copy all needed files to a common folder. All files must be in the same folder. The normal location for these files is "**x:\dcsTools\AudioEngine**", where "**x**" is the boot drive. Exceptions are the aptX100.dll & pcgw32.dll files, which can be located in the Windows path, although not recommended.
3. The NCT dll must be registered with the operating system. To register the dll, open a command window (DOS window) and navigate to the folder in which the NCT dll is located. At the command prompt, type the following: **regsvr32 NCTAudioCompress.dll** followed by the **[Enter]** key to register the dll.

- The audio engine must be installed as a service. You can do this from a command window (DOS window), similar to the NCT dll registration. Open a command window and navigate to the folder in which the audio engine executable is located. At the command prompt, enter the following:

audioengine /install

Press the [**Enter**] key to install the service.



To manually uninstall the audio engine from a command prompt, type the following:

audioengine /uninstall

Press the [**Enter**] key to uninstall the audio engine as a service.

Running the Audio Engine in Console Mode

For troubleshooting purposes, the audio engine can also be run in console mode. Ensure that the audio engine, if installed as a service, is not running before attempting to run it as a console application.

To start the audio engine as a console application, open a command window (DOS window), navigate to the folder containing the audio engine files, and enter the following at a command prompt:

audioengine /console

Press the [**Enter**] key to launch the audio engine. The audio engine will launch and the command window will display status information. The command prompt disappears.



When running in console mode, the audio engine inherits the rights and privileges of the logged-on user, which may be different from the rights and privileges assigned to the audio engine when running as a service.

To stop the audio engine when running as a console application, press [**Ctrl-C**] in the command window. The audio engine will shut down and the command-prompt will reappear.

6.1.4 Audio Engine Registry Information

The audio engine uses the Windows registry to store its settings, including registration information. The base key for these settings is:

HKEY_LOCAL_MACHINE\SOFTWARE\dcsTools\AudioEngine

There are several sub-keys containing information about audio channels, available devices, and audio stream configuration.



The base registry key is for 32-bit (x86) operating systems. If using a 64-bit OS (x64), you will find the entries in the **HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\dcsTools\AudioEngine** base key location.

All of the standard settings are automatically set and maintained by the engine with the exception of the registration information, which must be entered in order for the engine to run as a fully-licensed application. As a default, the audio engine will run 5 days from first launch in trial mode. After that, registration is required.

Some of the registry keys can be "tweaked" to correct or further diagnose problems. The following is a list of registry settings used by the audio engine, along with a brief explanation as applicable.

Audio Engine Registry Settings

<u>Key Name</u>	<u>Default Value</u>	<u>Description</u>
HKEY_LOCAL_MACHINE\SOFTWARE\dcsTools		
CodeTraceLevel	Key does not exist.	DWord. This key is used to force the audio engine to create dump files for tracing codec problems. It is used primarily for determining why apt-X or MPEG errors are occurring, with messages like "codec not available". When the key is created and assigned a value of 2 , dump files with the naming syntax GenCodecXXX.dmp are created, with a new XXX value each time the audio engine is launched.
Registration Key	Key does not exist.	REG_SZ. Contains the user-entered registration key, which enables full

<u>Key Name</u>	<u>Default Value</u>	<u>Description</u>
		functionality of the audio engine. The audio engine as a default supports PCM, apt-X and MPEG encoding, although the apt-X encoding dll must be present and available.
HKEY_LOCAL_MACHINE\SOFTWARE\dcstools\AudioEngine		
Registration Key (Deprecated)	Key does not exist.	REG_SZ. Contains the user-entered registration key, which enables full functionality of the audio engine. The audio engine as a default supports PCM, apt-X and MPEG encoding, although the apt-X encoding dll must be present and available.
TraceLevel	Key does not exist.	DWord. This key must be added manually. It is used for troubleshooting and when present, increases the amount of information stored in the AudioEngine.dmp log file. To increase the logging detail, create this key as a REG_DWORD type and enter a value of 2 .
HKEY_LOCAL_MACHINE\SOFTWARE\dcstools\AudioEngine\Channels		
PipeClock	44100	DWord. The clock rate for audio handling. For Windows driver devices, this value can be changed, but for devices like the Digigram audio card, it must be left alone. Valid values are: 32000, 44100, and 48000
HKEY_LOCAL_MACHINE\SOFTWARE\dcstools\AudioEngine\Device_x		
(There could be more than one of these entries if a Digigram or AudioScience card is installed in the PC in addition to standard wave devices.)		

<u>Key Name</u>	<u>Default Value</u>	<u>Description</u>
DeallocateldlePipes	Engine-maintained.	DWord = 1
DefaultRecordInput	Engine-maintained.	DWord = 0
EnableWatchdog	Engine-maintained.	DWord = 0
PlayPipeMask	Engine-maintained.	DWord = 4294967295
PreallocatePlayPipes	Engine-maintained.	DWord = 0
PreallocateRecordPipes	Engine-maintained.	DWord = 0
RecordPipeMask	Engine-maintained.	DWord = 4294967295
StreamCount	Engine-maintained.	DWord = 3
WatchdogTimeout	Engine-maintained.	DWord = 500
HKEY_LOCAL_MACHINE\SOFTWARE\dcsTools\AudioEngine\Devices		
Device_1	0	DWord. 0 = WDM (WAVE) Driver. Device_1 contains wave device information. (Value 6 = Audio Science ASIO Driver)
Device_2	4294967295	DWord. 2nd device record.
Device_3	4294967295	DWord. 3rd device record.
Device_4	4294967295	DWord. 4th device record.
Device_5	4294967295	DWord. 5th device record.
Device_6	4294967295	DWord. 6th device record.

<u>Key Name</u>	<u>Default Value</u>	<u>Description</u>
Device_7	4294967295	DWord. 7th device record.
Device_8	4294967295	DWord. 8th device record.
HKEY_LOCAL_MACHINE\SOFTWARE\dcstools\AudioEngine\Streams		
xxx BufferCount	8	DWord. The " xxx " portion is "Play" and "Record". The number of buffers allocated for audio data handling. The larger the number of buffers, the more memory consumed. If the BufferSize value is reduced, it may be beneficial to increase this value to something like 12 .
xxx BufferSize	32768	DWord. The " xxx " portion is "Play" and "Record". The size of each individual audio data buffer. Valid values can range from a low of 2048 to a high of 32768 (the default). Recommended values in case of a need to change would be on 4K boundaries - ie, 8192, 12288, 16384, 20480, 24576, 28672. General recommendation is to stick with 8K boundaries - 8192, 16384, 32768. This value, by observation, can have an impact on audio play response time. If the play source is a network drive and the buffer is the default, some delay in start of audio may be noticed as the buffer is being filled and decompressed. To improve response, reduce the buffer size. See the topic on slow play response . Note: If using the Audio Science ASIO driver, these values should be set to 2048 (the minimum allowed size).

<u>Key Name</u>	<u>Default Value</u>	<u>Description</u>
MpegCodec	2	DWord.
RateConvertQuality	1	DWord.
UseMpegCodec	0	DWord.

6.1.5 Audio Engine Revision History

This topic documents older revisions of the XStudio Recorder audio engine. This information may be helpful in determining if you are using the correct version of the audio engine.

Version 1.99.45.16 (Build 20120215 - 14:15)

All files used by this version of the XStudio Recorder audio engine, including file version numbers and date stamps, are listed in the table below.

<u>File</u>	<u>Version</u>
AudioEngine.exe	Version 1.99.45.16 (Build 20120215 - 14:15)
GenCodec.dll	No version info. Date: 1/20/2012 12:03 PM
NCTAudioCompress.dll	Version 1.7.8.0 Date: 2/11/2003 2:32 PM
aeRemote.dll	Version 1.0.0.1 Date: 2/15/2012 2:16 PM (Used by client applications, provided for completeness)

This version required the Microsoft Visual C++ 2008 SP1 Redistributable Package (x86).

Version 1.90 (Build 20070630 - 17:48)

All files used by this version of the XStudio Recorder audio engine, including file version numbers and date stamps, are listed in the table below.

<u>File</u>	<u>Version</u>
AudioEngine.exe	Version 1.90 (Build 20070630 - 17:48)
GenCodec.dll	No version info. Date: 6/28/2007 2:11 PM
NCTAudioCompress.dll	Version 1.7.8.0 Date: 2/11/2003 2:32 PM
aeRemote.dll	Version 1.0.0.1 Date: 6/26/2007 10:26 PM (Used by client applications, provided for completeness)

6.2 Can't Record Audio

There are a number of possibilities relating to XStudio Recorder not being able to record audio. The most common problems and their solutions are covered in this topic – many of the issues that come up are related to working with audio files located on a computer other than the one running XStudio Recorder.

Audio Engine Service is not Installed

XStudio Recorder utilizes an audio engine that runs as a service application. The audio engine is automatically installed when XStudio Recorder is installed. When XStudio Recorder starts up, it checks to see if the audio engine service is installed – if not, you will see an error message indicating the service is not installed. To solve the problem, re-install XStudio Recorder.

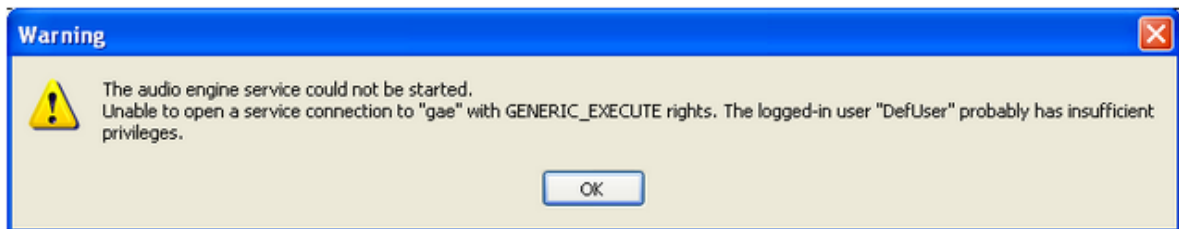


You must have administrative privileges to install XStudio Recorder. If the logged-in user does not have administrative privileges, the installation will abort without installing or updating any files.

Audio Engine Service is not Running

When XStudio Recorder is installed, the audio engine service is installed and configured to automatically start when the computer starts up. A user or system administrator, however, can stop the audio engine or even disable it so that the audio engine will not start up automatically when the computer starts.

When XStudio Recorder starts up, it checks to see if the audio engine service is installed, and if so, if it is running. If the service is not running, an attempt is made to start it. However, if the logged in user does not have enough privileges, the attempt to start the audio engine service will fail and you will see an error message to that effect.



If the audio engine service is installed, but XStudio Recorder reports that it cannot start the service, contact your system administrator for assistance in starting the audio engine service.

A utility program, dcsTools Audio Engine Access Utility (aeSetAccess.exe), is installed with the audio engine and can be used to grant the needed privileges to a specific user or group. Then, when XStudio Recorder is launched by that user or group member, the audio engine

service can be started by XStudio Recorder.



In order to use the dcsTools Audio Engine Access Utility, the logged-on user must have administrative privileges.

Incorrect Folder Locations for Target Audio

It may be that you made an error in defining your [File Path](#) properties. If the paths are correct but are located on another PC, the next section may help explain why you are having problems.

The Audio Engine cannot access folders on other PC's

If you wish to record audio files that are located on a different PC, the problem is likely related to either user privileges or path definitions.



The XStudio Recorder audio engine runs as a service application and as such, has no knowledge of any "mapped" drives – a drive letter assigned to a folder on a PC other than the one the audio engine is running on. Therefore, in order for the audio engine to be able to play or record files that are located on another PC, the paths to those folders must be entered using UNC notations. As an example, instead of using "**P:\Audio**" as the path, use the UNC notation: **\Remote_PC_Name\Share_Name\Audio** in the path property field.

It is possible that you have entered the paths properly, but that the remote PC refuses to allow access to the audio engine. This occurs because the audio engine service is installed with standard **System User** logon credentials. In order to be able to play and record audio located on another PC, the audio engine service logon must be changed to a username and password combination that is authorized and has the appropriate privileges on the remote PC.



If you wish to record audio located on another PC, the audio engine service logon credentials must be changed. You must have administrative privileges to change the audio engine service logon information – if you do not have these privileges, contact your system administrator for help.

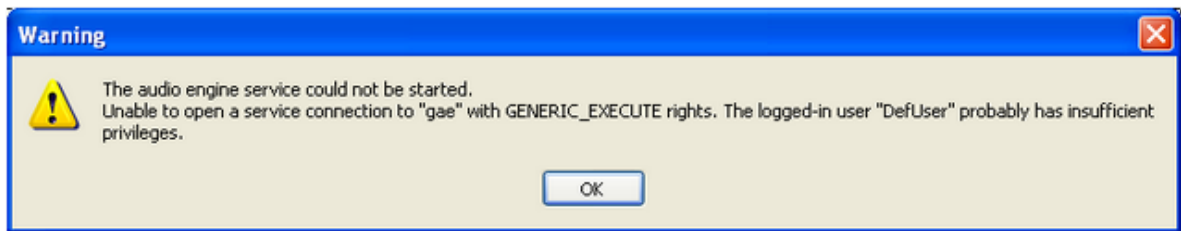
The Logged-In User cannot access folders on other PC's

In order to retrieve or save information about an audio file on a remote PC, the currently-logged-in user must have the appropriate privileges on the remote PC. If you suspect this is the problem you are having, contact your system administrator.

6.3 Can't Start the Audio Engine

When XStudio Recorder is installed, the audio engine service is installed and configured to automatically start when the computer starts up. A user or system administrator, however, can stop the audio engine or even disable it so that the audio engine will not start up automatically when the computer starts.

When XStudio Recorder starts up, it checks to see if the audio engine service is installed, and if so, if it is running. If the service is not running, an attempt is made to start it. However, if the logged in user does not have enough privileges, the attempt to start the audio engine service will fail and you will see an error message to that effect.



If the audio engine service is installed, but XStudio Recorder reports that it cannot start the service, contact your system administrator for assistance in starting the audio engine service.

A utility program, dcsTools Audio Engine Access Utility (aeSetAccess.exe), is installed with the audio engine and can be used to grant the needed privileges to a specific user or group. Then, when XStudio Recorder is launched by that user or group member, the audio engine service can be started by XStudio Recorder.



In order to use the dcsTools Audio Engine Access Utility, the logged-on user must have administrative privileges.

6.4 Remote Database Problems

If you are using a centralized database server instead of the default local database, you may encounter problems with connecting to the database or encounter performance problems. This section covers the most common issues encountered.

You should also review the [Using a Remote Database](#) topic, which covers basic information on TCP/IP ports used for the remote database and the correct naming conventions for assigning a remote database server.

6.4.1 Problems Connecting to the Remote Database

If you experience difficulties connecting to the remote database you wish to maintain, it is likely that one or more of the following issues are affecting the connection.

The remote database identity is incorrect

If the remote server address was manually entered, it might not have been entered correctly. There are three distinct parts to the identity - a name, a separator (the "@" symbol), and the address. Of these, the separator and address are the key elements. For more information on creating remote database names (identities), see the topic on [manually adding servers](#) to the server list.

The database port number is incorrect

The port normally used (default port) to connect to a remote database is **16000**. However, XStudio Recorder supports user-defined port numbers for this connection, so you need to ensure the port you've assigned for the remote database connection matches the remote database server port that has been assigned.

The remote PC cannot be reached via TCP/IP

In order for XStudio Recorder to connect to a remote database server, it must be able to reach the host PC via TCP/IP.

If the server address you are trying to reach uses an IP address or internet domain name, ensure that you have a "route" to the host PC by attempting to "ping" the remote PC. Use the "address" element of the remote database server identity as the address to ping.

If the server address you're trying to reach uses a machine name notation, ensure that you can browse to the named machine (the name used in the "address" portion of the remote database identity) using Network Neighborhood or File Explorer.

Access to the remote PC is blocked

If you are certain that the remote server identity is correct and that you can reach the remote PC, ensure that both the PC running XStudio Recorder and the PC running the host application (and database server) have port **16000** available for use and unblocked. See the topic on [TCP/IP Port Information](#) for details on all ports used for database communications between XStudio Recorder and the host application.

6.4.2 Slow Database Performance

Database performance, meaning how quickly displays are updated and how long it takes to retrieve information, is generally most affected when using XStudio Recorder to access a remote database not located on your local area network (LAN).

Performance is directly affected by available bandwidth (data flow capacity) between you and the remote database PC. The lower the bandwidth, the more time it takes to get the data from the remote database server and the longer it takes for the display to be updated.

While there is no substitute for bandwidth, performance problems can be mitigated somewhat when working with a remote database that is not on your local area network.

The host database server normally sends requested information as it resides in the database tables, but can be instructed to "compress" the requested data before sending it to XStudio Recorder. Using compression, more data can be sent in the same bandwidth, although at the cost of the time it takes to compress the information on the server end and subsequently decompress the information at the receiver end.



Using data compression when communicating with remote database servers located on your local area network may actually reduce performance. If all host application databases you are maintaining are located on your in-house LAN, data compression is not recommended.

Implementing Data Compression

You can enable data compression in XStudio Recorder Preferences by setting the database property [Data Compression](#).



You must exit and restart XStudio Recorder for changes in the data compression setting to take effect.

Refer to the table for an explanation of available data compression settings.

Value Meaning

- | | |
|---|---|
| 0 | No Compression. This is the default value and means XStudio Recorder will not request compressed data from the database server. |
| 1 | Fastest Zip Compression. |
| 2 | Fast Zip Compression. |
| 3 | Fast Zip Compression. |
| 4 | Medium Zip Compression. |

Value Meaning

- 5 Medium Zip Compression.
- 6 Medium Zip Compression.
- 7 High Zip Compression.
- 8 High Zip Compression.
- 9 Highest Zip Compression.
- 10 RLE Compression.

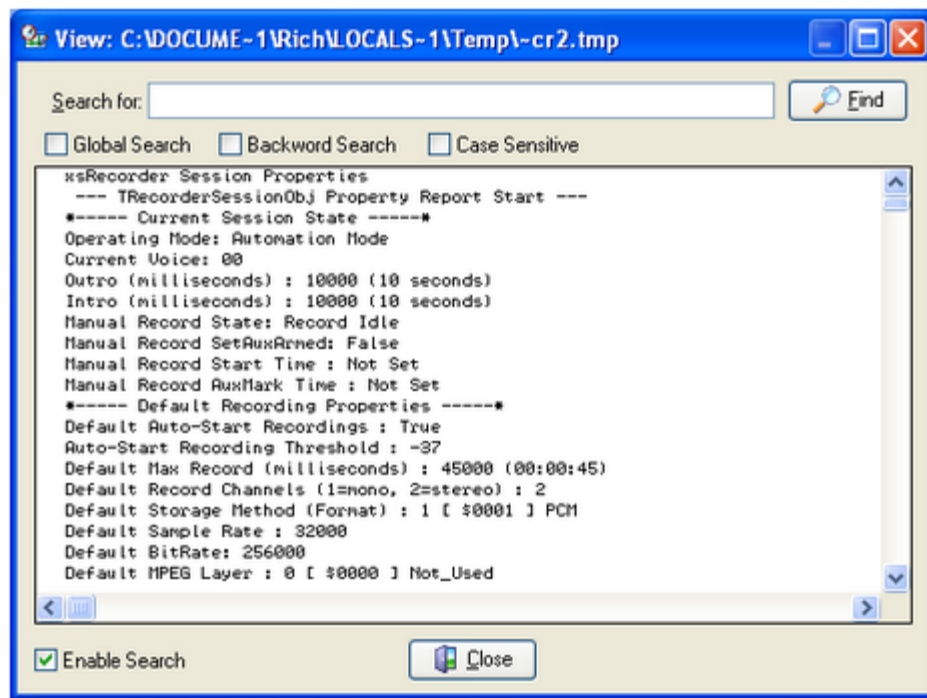
You'll notice there are several "flavors" of zip compression, which provide a balance between speed of compression and size of the compressed data. You can experiment with various settings to see which achieves the greatest satisfaction.

6.5 Session Properties

During operation, XStudio Recorder keeps track of a number of bits of information, called session properties, that affect program execution. Session properties include such things as the current recording default values, the current voice number (used in cart macros), certain preferences that might change on the fly, channel states, audio paths, and audio switcher information, including assigned input relays and lockout values.

This information can be useful for determining the cause of problems or to assist in determining XStudio Recorder's current "state."

You can view a session properties report on-screen, and optionally save the property information to a file of your choosing. To review the session properties, select the main menu item **Help | Troubleshooting | View Session Info**.



XStudio Recorder Session Properties Report

When displayed, the report can be searched, scrolled and archived to a file if desired. It is organized in sections containing related information.



Keep in mind that a session property report reflects the "state" of XStudio Recorder at the moment the report is generated. Property values can change only milliseconds later, depending on system activity.

6.6 User Account Control (UAC) Issues

Starting with the introduction of Windows Vista and subsequent operating system releases, Microsoft added a significant amount of additional security to these operating systems.

Generally referred to as **UAC (User Account Control)**, the sum of these changes dramatically affect named users who might be categorized as "standard" or "general" users. Areas that previously had been quite open, allowing these users to modify, create and delete items like files and registry entries are now protected as default. Users with standard rights and privileges on these systems are now as a default prevented from making changes in such areas as the Program Files folder, the Windows folder and in the Windows registry area known as **HKEY_LOCAL_MACHINE**.



XStudio Recorder does not use the Windows registry during normal operations. The only information stored in the registry is created when installing XStudio Recorder and is used if you later decide to remove the software from the system.

In addition, Microsoft published numerous guidelines and usage information regarding these changes. Some of the guidelines would cause applications who require the end-user to be able to modify preference settings, etc., to place files in several locations on the PC. While these changes do enhance the overall security of the operating system, having files and information for a specific application spread all over the system in places not intuitive or easy to find creates a significant support burden for IT managers and the application vendor.

Over the years, we have chosen to try to keep all of our application's files, including those that store preferences, files containing run-time information like exception logging and activity detail, and small database files, in one location for ease in troubleshooting and housekeeping.

For these reasons, our applications are generally placed in a folder other than the Microsoft-recommended Program Files folder. As a default, these other folders historically have been "wide open" in the sense that any user could read, write and modify files.

However, depending on how tightly-secured a system is when running Vista or a later operating system, issues may arise that relate to user rights. The following points may assist you in locating problems with XStudio Recorder when running one of these operating systems and the user reporting issues does not have administrative privileges.

1. Make sure that user having trouble with XStudio Recorder has read, write, modify and delete privileges in the folder in which XStudio Recorder is installed. These privileges might be assigned to an individual user but more commonly are assigned to a user group of which the user is a member.
2. If you are placing files in a location other than the XStudio Recorder folder, file locations that are set up in the Preferences area, ensure that the named user has read, write, modify and delete privileges in that folder location.

3. One way that some issues can be overcome is to modify any XStudio Recorder shortcuts to cause the application to be run under administrator privileges. [**Right-Click**] on the shortcut and select the menu item "Run as Administrator". A negative of this approach is that the end-user will more than likely have to enter an administrative password, which defeats the concept of administrative security as you'd have to provide the user with the password.

Another approach some people use is to disable UAC. While this action more or less returns user accounts to the sort of status they had in previous versions of Windows, this too defeats the idea of enhanced operating system security.

4. If an application uses the registry, particularly the portion known as HKEY_LOCAL_MACHINE, you may have to extend rights to specific keys that the application modifies or creates during normal usage. In order to add permissions to the registry, you will need to use **regedt32.exe**, the extended registry editor.



In order to extend additional privileges to a user or user group, either in the file system or registry, you need to be logged on to the operating system as an administrator.

apt-X™ Issues

The apt-X encoder/decoder uses a software protection scheme that can be tricky to get working under Vista and later operating systems. A hidden file is created by the software, generally placed in either the Windows directory or the root folder of the boot-up drive. Additionally, registry entries are created and maintained in several places in the Windows registry, many of which are normally restricted in later operating systems.

When setting up XStudio Recorder, the apt-X installation, registration, etc., is done by a user with administrative privileges, so no problems occur initially. However, as soon as a user with "normal" privileges tries to use apt-X, errors occur because the underlying apt-X security system is trying to make changes in these prohibited areas.

Audio Engine Issues

Unlike the main XStudio Recorder application, **the audio engine service does use the Windows registry** to store and retrieve settings. Thus, it is important that the audio engine service's log-on user account have read/write privileges in specific parts of the registry. See the topic on the [audio engine registry](#) for information on specific locations and keys.

6.7 Using Application Event Logs

XStudio Recorder documents its actions by writing information to a set of daily event logs, which are automatically maintained for a user-specified number of days. Event logs are text files containing a time stamp for each line of information (record) and descriptive text about what happened or what was done by XStudio Recorder.

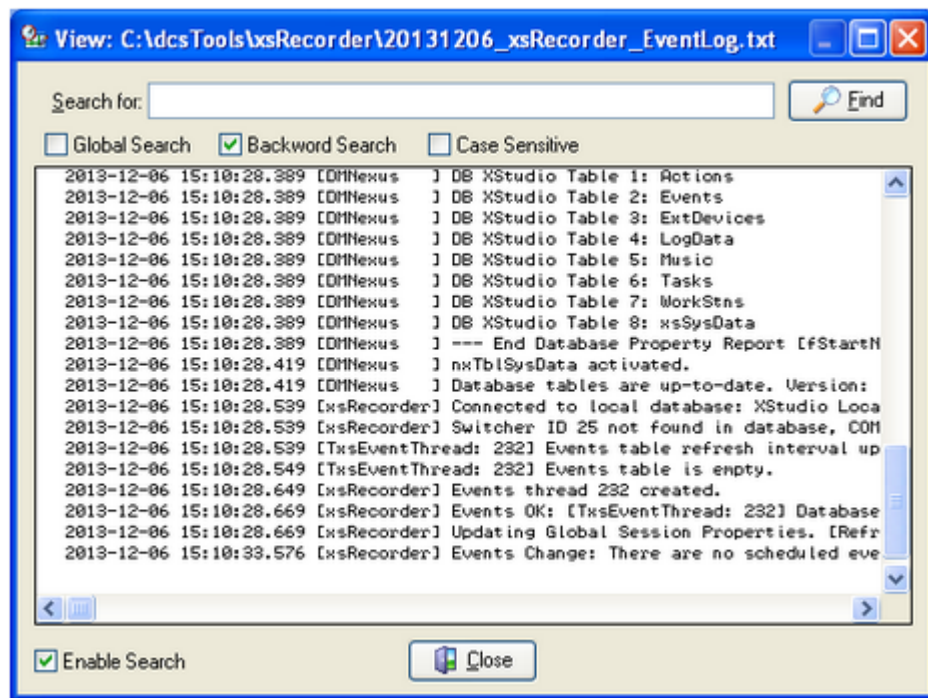
Event logs are very useful in troubleshooting problems or simply trying to determine why XStudio Recorder performed in a certain way. As a default, event logs are retained for 14 days, but you can change the number of days and the amount of detail XStudio Recorder stores in the event log. Refer to the topic on [Event Logging Properties](#) in the Configuration chapter for information on adjusting the number of days and detail level.



Event log information is separate from and in addition to the standard audit report data that XStudio Recorder maintains for each day. Audit report data documents mainly significant activity that might be used for reporting on recording activities only, whereas the event logs contain a lot more information about the details of operations. Event logs are stored in the XStudio Recorder application folder; the audit report files are stored in a folder under the XStudio Recorder application named "**AuditData**".

Viewing Current-Day Event Logs

You can at any time review the current-day event logs within XStudio Recorder. Select the menu item **Help | View Event Log**.



The event log view can be re-sized as desired and includes search capability along with standard scrolling and keyboard navigation of the event details.

Hint

When viewing text, you can assign up to 10 temporary bookmarks. To assign a bookmark, use the keystroke combination **[Ctrl-Shift] + 0 to 9**. A small marker becomes visible in the left margin of the line. To jump to a bookmark, use the keystroke **[Ctrl] + 0 to 9**. Bookmarks are lost when the dialog is closed.

You can also enlarge & reduce the event log text size. Use the plus "+" or minus "-" keys or **[Right-Click]** to select a text size from the pop-up menu.

Reviewing Event Logs Outside of XStudio Recorder

Since XStudio Recorder event logs are text files, you can use virtually any text editor or text file viewer to review the information for any of the available event log files, which are stored in the XStudio Recorder application folder using a naming conventions of:

yyyymmdd_XsRecorder_EventLog.txt

The **"yyyy"** is the year, **"mm"** is the month and **"dd"** is the day of the month for which the event log was created.

A handy alternative to using a standard text editor is our custom [***Event Log Viewer***](#) application, which provides enhanced features for sorting, grouping and filtering of event log data. Visit our [web site](#) for details on downloading and using this free utility.

Contacting dcsTools

Part



If you need to contact dcsTools.com, you can do so using one of the following methods. We are here to help, so do not hesitate to communicate with us when needed.

Mailing Address

C-R Media
8494 Saratoga Lane
Eden Prairie, MN 55347
USA

Telephone Information

Sales and Technical Support can be reached from 9:00 AM to 5:00 PM, U.S Central Time

Voice: 952-949-9450

FAX: 952-949-9448

Email Information

To contact us via email, use our [on-line contact form](#). If you wish to use a standard email client, send correspondence to: rich@c-rmedia.com.

Technical Support

To contact technical support for our products, use the telephone numbers or email information provided above. You can also send an [on-line product-specific email](#).

Web Site

Visit our [web site](#) for information on product updates and other products we offer.

Appendices

Part  **VIII**

The topics placed in this section might be useful to the end-user but do not fit into the major categories (chapters) used in this documentation as they are not germane to day-to-day usage of XStudio Recorder.

8.1 Registration

XStudio Recorder requires a valid registration code to enable full use of the product. If you have purchased XStudio Recorder, you should have received a registration code or instructions on how to obtain your registration code with your installation materials. The registration code contains the product serial number and is unique to each PC on which XStudio Recorder is installed. Depending on whether or not you have additional encoding options installed, you may need to register the options as well.

XStudio Recorder uses an audio engine that runs as a Windows service, which also requires registration.

Preparing to Register

In order to register XStudio Recorder, you need to supply your vendor with information unique to the PC on which the software is installed. From the main display, select the menu item **Help | Get Machine ID for Registration**. A dialog is displayed, containing the ID's necessary to register the software.



You will need to either write down the machine name, ID and Audio Engine ID or you can use the **[Copy to Clipboard]** button to copy this information to the Windows clipboard. If you use the clipboard method, you can paste the information into an email or a Notepad text document using the **[Ctrl-V]** keystroke.



All three (3) pieces of information are required to register XStudio Recorder – the **machine name**, the **application ID** and the **Audio**

Engine ID. If you also purchased the apt-X encoding option, a [separate registration](#) is required.

When your information has been processed, you will receive the appropriate registration information and you're ready to register XStudio Recorder.

XStudio Recorder Application Registration

Enter registration information by selecting **Help | Register | Register Application** from the main menu. You'll be presented with a dialog similar to the following:



The screenshot shows a dialog box titled "Product Registration" with a blue header. Below the header, the text "xsRecorder Registration" is displayed in a large, bold, blue font. There are two input fields: "Licensed To (Company Name):" with the text "dcsTools.com" entered, and "Registration Code:" which is empty. Below these fields, the text "Registration Information" is displayed in a bold, blue font, followed by "Not registered." At the bottom of the dialog, there are three buttons: "Save" (with a key icon), "Cancel" (with a red X icon), and "Help" (with a question mark icon).

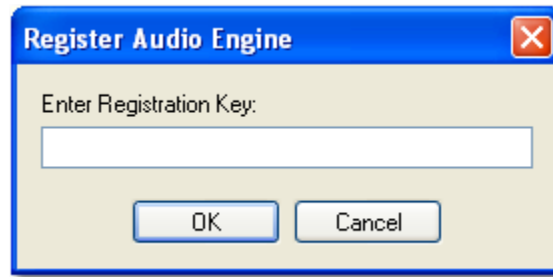
Fill in the Licensed To (Company Name) field as desired, and then enter the Registration Code, exactly as it was supplied to you. Click on the **[Save]** button to save your registration information.



If you received your registration release key electronically, you can copy it from the source document and paste it into the Registration Code field. Copy the key information in the source document, select the Registration Code field in the XStudio Recorder Registration dialog, and use **[Ctrl-V]** to paste the key into the field.

XStudio Recorder Audio Engine Registration

To register the audio engine, select **Help | Register | Register Audio Engine** from the main menu. You'll be prompted to enter the audio engine registration key:



Enter the registration key supplied by your vendor and press [OK] to complete registration of the audio engine.

apt-X Encoder Registration (Optional Product)

If you have the apt-X encoder software installed with a product, you must register this software module separately. The encoder software is machine-specific. This software can only be registered *after* it is installed on the PC.

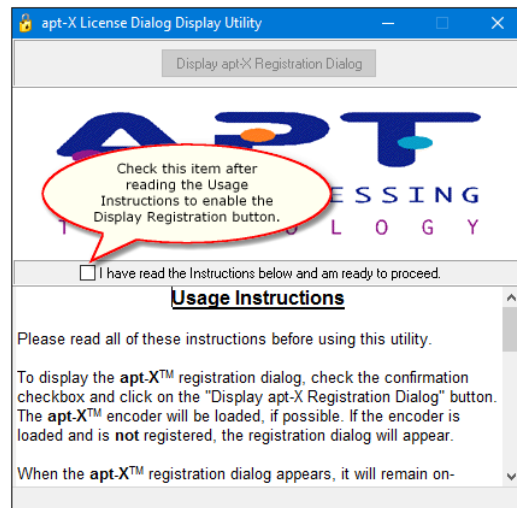
When first installed and not yet registered, the apt-X encoder normally will pop up a trial run dialog when the host application is run. However, when the encoding software is being used by a **Windows service application**, you will not see the registration dialog because service applications and their display windows are hidden from the desktop.

In order to view the apt-X registration dialog, retrieve the needed information to register the software and, when you have received the registration, complete the registration process, you need to use a utility application supplied with XStudio Recorder.

Soft apt-X™ Registration Step-by-Step (Service Application)

1. Launch the apt-X License Dialog Display Utility. A menu item is usually created to access this utility. Depending on the installation, it can be found in the Programs (or All Programs) menu under either **XStudio Recorder | apt-X Registration Utility** or **dcstools | Audio Engine | apt-X Registration Utility**. If you cannot locate a menu item, use Windows Explorer to find the file **aptX_RegDlg.exe**, which will be located in the folder where the software was installed.

When started, the utility's main display appears, similar to the example shown.



2. Read the on-screen instructions and click on the check box confirming that you have read the instructions are ready to continue. The **[Display apt-X Registration Dialog]** button will be enabled.
3. Click on the **[Display apt-X Registration Dialog]** button to display the apt-X registration dialog, which will appear similar to the example shown. If the apt-X registration dialog not appear, refer to the section on ***apt-X Registration Troubleshooting*** below.



Hint

The apt-X registration dialog normally closes after several seconds if no action is taken by the user. To keep the dialog from closing while you copy down the needed information, select the **"Unlock Application"** radio button, which prevents the dialog from closing.

4. Select the **"Unlock Application"** radio button when the apt-X registration dialog is

displayed. This stops the dialog from disappearing after a few seconds, giving you the time to write down both the **MID Code** and the **Site Code**, which appear across the top of the display. You can use a mouse to select and copy each of the two codes to the Windows clipboard, if you wish, to avoid handwriting the information.

5. When you have written down both codes, select the “**Enter Application**” radio button and click on the [**Continue**] button, which closes the apt-X registration dialog.
6. Close the apt-X License Dialog Display Utility.
7. E-mail the Mid Code and Site Code information you’ve written down to your supplier, or alternatively, use our [on-line product-specific contact form](#). To better identify your request, write “**Soft apt-X Registration**” in the Subject line of your e-mail.
8. You will receive by return e-mail the necessary **Init Code** to register the apt-X software. You will also receive a **Remove Code**, which may be needed at a later time. Be sure to keep both of these codes for future use.
9. When you receive the **Init Code**, launch the apt-X License Dialog Display Utility. Click on the check box confirming that you have read the instructions are ready to continue. The [**Display apt-X Registration Dialog**] button will be enabled. Click on the [**Display apt-X Registration Dialog**] button to display the apt-X registration dialog. Select the “**Unlock Application**” radio button and enter the **Init Code** you received. Click on the [**Continue**] button. The registration information is recorded and the apt-X software is now registered.



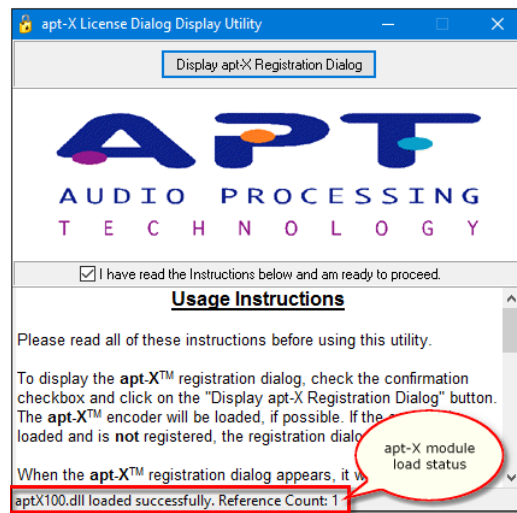
If you decide to move the software that uses apt-X and the apt-X encoder software to another machine or substantial changes occur on the PC running with the apt-X software, the apt-X registration will have to be transferred or updated. In order to do so, you will need the **Remove Code**. Be sure you have saved both the **Init Code** and the **Remove Code** in a safe place!

apt-X Registration Troubleshooting (Service Application)

When the apt-X encoding software is being used by a **Windows service application**, normal display of the apt-X registration dialog is not possible, so a utility application is used to display the dialog.

The most common problem is that the apt-X registration dialog does not display when you click on the [**Display apt-X Registration Dialog**] button of the apt-X License Dialog Display Utility.

Check the status bar of the apt-X License Dialog Display Utility. It will tell you whether or not the apt-X module was successfully loaded.



If the status bar indicates the apt-X module was not loaded, then either the module is missing altogether or the module is not in the system path. Search your hard disk for the file **aptx100.dll** to see if it exists.

If the status bar indicates the apt-X module was successfully loaded, but the apt-X registration dialog does not display, then the problem is likely to be that the software is already licensed. When the apt-X module is already registered, the registration dialog does not display.

8.2 System Backup & Restore

As XStudio Recorder is running, a significant number of database tables, preference and settings files are being created, updated and maintained. These files contain the key elements of your system setup and operating information. As such, a total loss of some or all of the files - as might occur if the host PC fails - can leave you with the formidable task of rebuilding your system configuration manually.

To help prevent having to rebuild the system from scratch, XStudio Recorder has a task ([System Backup](#)) that can be executed on a relay-driven or scheduled basis (just like any other XStudio Recorder task). The backup operation occurs in the background and does not affect XStudio Recorder operations.

When executed, the XStudio Recorder system database tables are backed up to a target location defined in the task. Optionally, XStudio Recorder preference and settings files can be backed up. The task also has an option to zip the backed-up files to save disk storage space.

Setting Up a System Backup

Setting up a system backup is fairly simple. There are just a few basic steps:

1. Create a [System Backup](#) task. A key property of the task is the Backup Target Folder - the location where backed-up files will be placed. The files could be located on the XStudio Recorder PC, but a better choice might be a server on your local area network (LAN). That way, if the XStudio Recorder PC fails, you will still have access to the backup files.
2. Create an [XStudio Recorder Action](#) that contains the System Backup task.
3. Determine when and how you want the backup Action to execute. To have the backup execute on a regularly-scheduled basis, you could create a [Scheduled Event](#) and decide what day(s) of the week and time to perform the backup. Typically, a good time to do a backup is sometime overnight like 3:20 AM. If you are located in a time zone that uses Daylight Savings Time, avoid the 1:00 AM to 3:00 AM time period to prevent either doubling up or skipping of a scheduled backup.

What is Backed Up?

When a system backup is performed, XStudio Recorder system database files are always backed up. For additional information on the database tables that are backed up, see the [Database Reference](#) topic.

If the "backup non-database system files option" is enabled, the following file types are backed up from the **XStudio Recorder application folder only**:

1. Preference files. These files have a file extension of **".ini"** and include the main XStudio Recorder preferences file (xsRecorder.ini), which contains your registration information and application settings.
2. Settings files. These files have a file extension of **".dat"**.

Refer to the [List of Files](#) topic for details on specific file names in this group of file types.



When backing up non-database systems files, only those files located in the XStudio Recorder application folder are backed up.

Restoring Backed-Up Files



Restoring backed-up XStudio Recorder system database and/or settings files is a manual process. XStudio Recorder must not be running at the time you restore any of the backed-up files or your restoration of files will fail. In most cases, when restoring backed-up files you will be overwriting an existing XStudio Recorder file of the same name.

To restore some or all of the backed-up files, locate the folder in which the backup data is stored. If your backup was configured for daily backups, you may have as many as seven (7) sets of backup files, one for each day of the week. The daily backup sets are located in individual folders under the base backup folder. If you have multiple backups, you will need to decide which group of files to use, typically the most recent.

Backup files may have been zipped to a single file as part of the backup task (if so configured). You need to have a utility to unzip the backup. Recent Windows operating systems typically have support for zip files built-in, but you may wish to use another utility if you have a preference. If the backup you wish to use is zipped, you should unzip the files to a temporary location as an initial step.

Backup files are grouped together without regard to the folder location they originated from and fall into two (2) categories; a) database files, and b) preference and settings files. Database files will always be present in a backup while the preference and settings files are optionally included when you create the [System Backup](#) task. The two groups of files are handled differently in the restore process, as outlined in the following sections.

Restoring System Database Files

System database files all have a file extension of **".nx1"**. As a general rule, database files should be restored as a complete set of files as most files are tables that are related to one another (a relational database). Further, XStudio Recorder will fail to operate correctly if a partial set of database files is present at launch of the program. See the [Database Reference](#) topic for a list of the files that make up the system database.

Restoring the database files is a matter of copying all of them to the XStudio Recorder system database folder. Typically, this is a folder named "**Data**" located under the XStudio Recorder application folder. During the copy process, it is likely you will be overwriting files that already exist in the folder, replacing the contents with the backed-up content.

Restoring Preference and Settings Files

All backed-up preference and settings files originated from the XStudio Recorder application folder and must be restored to that same folder. The application folder is determined by the user during the installation of XStudio Recorder.

Backed-up preference and settings files are not interrelated, so you can selectively restore these files depending on your needs. See the section on [what is backed up](#) for information on each of the file types that are a part of this group.

Using a Backup to Clone XStudio Recorder

If you are in the process of installing XStudio Recorder in multiple locations or are adding another XStudio Recorder to your operation, you may wish to use an XStudio Recorder backup to speed up the process of setup. This might be desirable if you have created a large number of Tasks and Actions and want to do the same things in another XStudio Recorder installation. The steps to take are as follows:

1. Install and launch XStudio Recorder on your new control room PC. At first launch, XStudio Recorder will automatically create a new system database. Initially, all database tables are empty.
2. Close down XStudio Recorder.
3. Copy all of the backup system database files to your new installation's "**Data**" folder. The effect of this step is to have all defined Tasks, Actions, scheduled events and audio switcher definitions from the backup now a part of the new system.
4. Optionally, copy selected preference and settings files to the new installation's application folder. Refer to to the [what is backed up](#) section for information on which files you might want to use.
5. Restart XStudio Recorder, [register](#) the software and complete the system setup.

8.3 Companion Programs & Utilities

In addition to the core functionality for audio recording that XStudio Recorder provides, there are a number of separate software programs and utilities available for use with XStudio Recorder. These programs offer functionality that may or may not be required by a particular station operation; thus they are made available separately so a station can pick and choose only the additions that are needed.

Available software is listed alphabetically along with a brief description of functionality and usage. Complete information on these programs is available at our [web site](#).

<u>Product/Utility</u>	<u>Description/Usage</u>
dcTools Utility Pack	Free utility programs for review and analysis of XStudio Recorder and other dcsTools products' event log files, along with an ini file editor.
iDAF	A utility for analyzing and reporting .DAF audio inventory information. Available in both a free and "Pro" version.
XStudio Admin	A free utility for maintaining the XStudio Recorder database remotely.

8.4 List of Files

When XStudio Recorder is installed, a number of files are placed on your computer. As XStudio Recorder is used, other files are generated, as outlined here.



AppDir is the drive and folder location where you installed XStudio Recorder (default: c:\dcsTools\xsRecorder). **EngineDir** is the drive and folder location where the audio engine service was installed (default: c:\dcsTools\AudioEngine).

File	Location	Usage
yyyyymmdd_xsRecorder_EventLog.txt	<i>AppDir</i>	Event log for the main application. Contains operations and troubleshooting information.
aeRemote.dll	<i>AppDir</i>	Audio engine communications module.
AERemote.dmp	<i>AppDir</i>	Event log for the audio engine communications module. Contains troubleshooting information.
GenCodec.dll	<i>AppDir</i>	Support file for aeRemote.dll.
xsRecorder.chm	<i>AppDir</i>	The main help file.
xsRecorder.exe	<i>AppDir</i>	The main program file.
xsRecorder.ini	<i>AppDir</i>	Application settings file. Contains registration information, user settings, audio device settings.
Audio Engine Service		
aptX_RegDlg.exe	<i>EngineDir</i>	Utility application used to display the apt-X encoding software registration dialog.
Aptx100.dll	<i>EngineDir</i>	Optional apt-X encoding module component.
asihpi32.dll	<i>EngineDir</i>	Audio engine support file.
AudioEngine.dmp	<i>EngineDir</i>	Event log for the audio engine service. Contains troubleshooting information.

<u>File</u>	<u>Location</u>	<u>Usage</u>
AudioEngine.exe	<i>EngineDir</i>	The audio engine service main program file.
crSetSvcAccess.exe	<i>EngineDir</i>	Utility application used to set user access privileges for the audio engine service.
GenCodec.dll	<i>EngineDir</i>	Audio engine support file.
NCTAudioCompress.dll	<i>EngineDir</i>	Audio engine support file.
Pcgw32.dll	<i>EngineDir</i>	Optional apt-X encoding module component.

8.5 Revision History

This topic contains historical information on changes, enhancements and corrections to XStudio Recorder by version number and date. For the most recent changes and enhancements, see the [What's New](#) topic.

Version 1.1.0.170 - 06/15/2016

1. **Enhancement.** XStudio Recorder now detects Windows 10 and adjusts its display accordingly.
2. **Change.** The underlying database engine has been updated to NexusDB version 4.
3. **Fix.** The focused control would occasionally "disappear" when tabbing among fields in task dialogs.
4. **Fix.** The Remap Input Relays task edit dialog has been updated to ensure the task description length is correct.

Version 1.0.0.135 - 03/11/2014

1. **Enhancement.** Added support for [System Backup](#) and [Banner Message](#) tasks. A new XStudio Recorder Message Center displays the content of Banner Message tasks.
2. **Enhancement.** XStudio Recorder application help is implemented and available from help menus within the application.
3. **Enhancement.** XStudio Recorder event logging detail level is now user-controlled. See the [General Preferences](#) topic for additional information.
4. **Enhancement.** XStudio Recorder now detects Windows 8, Windows 8.1, Windows Server 2012 and Windows Server 2012R2 operating systems and adjusts its display accordingly.

Version 0.9.1.115 - 12/05/2012

1. Initial release of XStudio Recorder.

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