

## Edit Menu

The Edit menu has the following commands:

{button ,AL('HID_EDIT_UNDO',1)}	<u>Undo</u>
{button ,AL('HID_EDIT_REDO',1)}	<u>Redo</u>
{button ,AL('HID_EDIT_HISTORY',1)}	<u>History</u>
{button ,AL('HID_SELECT_SUBMENU',1)}	<u>Select</u>
{button ,AL('HID_EDIT_CUT',1)}	<u>Cut...</u>
{button ,AL('HID_EDIT_COPY',1)}	<u>Copy...</u>
{button ,AL('HID_EDIT_PASTE',1)}	<u>Paste...</u>
{button ,AL('HID_EDIT_DELETE',1)}	<u>Delete...</u>
{button ,AL('HID_CREATE_CLIPS',1)}	<u>Create Clips</u>
{button ,AL('HID_Audio_SUBMENU',1)}	<u>Audio Submenu</u>
{button ,AL('HID_PLUGIN_ROOT',1)}	<u>Plug-in</u>
{button ,AL('HID_EDIT_SLIDE',1)}	<u>Slide</u>
{button ,AL('HID_EDIT_QUANTIZE',1)}	<u>Quantize...</u>
{button ,AL('HID_EDIT_LENGTH',1)}	<u>Length...</u>
{button ,AL('HID_EDIT_TRANSPOSE',1)}	<u>Transpose...</u>

## Undo

Edit/Undo

This command reverses your last action. Successive Undos cancel preceding actions in reverse order.

To redo the action, see [Redo](#).

To undo previous actions, see [History/Undo History](#).

## Redo

Edit/Redo

This command cancels a just-previous Edit-Undo command.

## History/Undo History

Edit/History...

This command displays a history of your actions. You can set how many actions you want the Undo History dialog box to preserve.

Use the Undo History dialog box to jump to a previous time in the history of the project. Then you can continue from that point, causing the history from that action on to disappear. Alternately, you can then jump to another time.

See [Tips & Tricks](#).

## Select Submenu

### Edit/Select

The Select submenu has the following commands:

{button ,AL('HID_SELECT_ALL',1)}	<u>All</u>
{button ,AL('HID_SELECT_NONE',1)}	<u>None</u>
{button ,AL('HID_SELECT_FILTER',1)}	<u>By Filter...</u>
{button ,AL('HID_SELECT_TIME',1)}	<u>By Time...</u>
{button ,AL('HID_FROM_EQ_NOW',1)}	<u>From = Now</u>
{button ,AL('HID_THRU_EQ_NOW',1)}	<u>Thru = Now</u>
{button ,AL('HID_FROM_EQ_START',1)}	<u>From = Start</u>
{button ,AL('HID_THRU_EQ_END',1)}	<u>Thru = End</u>

## All

Edit/Select/All

This command selects everything in all open views. Any action affects all selected objects.

## None

Edit/[Select](#)/None

This command cancels all selections, with the result that nothing is selected.

To clear a partial clip selection, see [Working with Partial Clips](#).

## Select by Filter

Edit/[Select](#)/By Filter...

This command lets you change a selection to keep only events with the criteria you specify.

See

[Selecting Events](#)

[Searching for Events](#)



## Select by Time

Edit/Select/By Time...

This command lets you specify times from which and through which Cakewalk selects.

To select partial clips by time, see [Working with Partial Clips](#).

## **From = Now**

Edit/Select/From = Now

This command lets you specify the Now time as the time from which a selection extends.

## **Thru = Now**

Edit/Select/Thru = Now

This command lets you specify the Now time as the time through which a selection extends.

## **From = Start**

Edit/Select/From = Start

This command lets you specify the start of a piece as the time from which a selection extends.

## **Thru = End**

Edit/Select/Thru = End

This command lets you specify the end of a piece as the time through which a selection extends.

## Cut

Edit/Cut...

This command lets you remove from the project and put on the clipboard any selected objects. You can specify the kinds of objects to cut in the Cut dialog box.

---

See:

[Moving and Copying Clips](#)

[Erasing Tracks](#)

You can paste the contents of the clipboard elsewhere. See [Paste](#).

## Copy

Edit/Copy...

This command lets you put on the clipboard any selected objects. You can specify the kinds of objects to copy in the Copy dialog box.

---

See:

[Moving and Copying Clips](#)

[Working with Partial Clips](#)

[Importing Material from Another Cakewalk Project](#)

[Importing MIDI Files](#)

You can paste the contents of the clipboard elsewhere. See [Paste](#).

To remove rather than copy objects, see [Cut](#).

To make copies of linked clips, see [Working with Linked Clips](#).

## Paste

Edit/Paste...

This command lets you put the contents of the clipboard into any appropriate place in your project. You can specify what, where, and how to paste in the Paste dialog box.

---

See:

[Moving and Copying Clips](#)

[Importing Material from Another Cakewalk Project](#)

[Importing MIDI Files](#)

To put data on the clipboard, see [Cut](#), [Copy](#).



## Delete

Edit/Delete...

This command removes selected objects from the project. It doesn't put them on the clipboard, so they can not be subsequently pasted. You can specify the kinds of objects to remove in the Delete dialog box.

---

See:

[Moving and Copying Clips](#)

[Working with Partial Clips](#)

## Create Clips

Edit/Create Clips

This command lets you create new clips from existing ones.

See [Splitting and Combining Clips](#).

## Audio Submenu

Edit/Audio

The Audio submenu has the following commands:

{button ,AL('HID_AUDIO_COMBINE',1)}	<u>Combine</u>
{button ,AL('HID_AUDIO_GRAPHIC_EQ',1)}	<u>Graphic EQ...</u>
{button ,AL('HID_AUDIO_LOUDER',1)}	<u>3dB Louder</u>
{button ,AL('HID_AUDIO_SOFTEN',1)}	<u>3dB Quieter</u>
{button ,AL('HID_AUDIO_NORMALIZE',1)}	<u>Normalize</u>
{button ,AL('HID_AUDIO_REVERSE',1)}	<u>Reverse</u>

## **Combine command and Combine Audio Events dialog box**

Edit/[Audio](#)/Combine...

This command lets you combine selected audio clips into a single clip. If you combine overlapping clips, you need to specify how to deal with the overlap in the Combine Audio Events dialog box.

See [Combining Audio Events](#).

## Graphic EQ

Edit/[Audio](#)/Graphic EQ...

This command lets you equalize your audio over ten frequency bands, that is, ten octaves.

See [Equalizing Audio Data](#).

## 3dB Louder

Edit/[Audio](#)/3dB Louder

This command sets selected clips or tracks to play 3 [decibels](#) louder.

See [Basic Audio Processing](#).

## 3dB Quieter

Edit/[Audio](#)/3dB Quieter

This command sets selected clips or tracks to play 3 [decibels](#) more softly.

See [Basic Audio Processing](#).

## Normalize

Edit/[Audio](#)/Normalize

This command lets you increase the volume of the selected clips or tracks to the maximum level possible before clipping.

See [Basic Audio Processing](#).



## Reverse

Edit/[Audio](#)/Reverse...

This command makes selected audio events play backwards. It doesn't affect the order of events.

See [Basic Audio Processing](#).

## Plug-in

Edit/Plug-in

This command displays a submenu of all effects available to you.

See [Audio Effects](#).

## Slide

Edit/Slide...

This command lets you slide selected events and markers back and forth in time. You can specify events, markers, or both, and how far to move them, in the Slide dialog box.

See [Shifting Events in Time](#).

## Quantize

Edit/Quantize...

This command rounds off start times and durations of notes so they can display reasonably on a staff or play back with precision, rather than with irregularities, the way humans play them.

See [Changing the Timing of a Recording](#).

## Length

Edit/Length...

This command lets you stretch and shrink a selection by a fixed percentage, or to multiply the start times, durations of notes, or both by a percentage.

See [Stretching and Shrinking Events](#).

## Transpose

Edit/Transpose...

This command lets you transpose the selected notes, clips, tracks, or project up or down. Use the Transpose dialog box to specify how many half-steps up or down the selection should go. Twelve half-steps specifies an octave.

See [Transposing](#).

## File Menu

The File menu has the following commands:

```
{button ,AL('HID_FILE_NEW_TEMPLATE',1)}      New...
{button ,AL('HID_FILE_OPEN',1)}    Open...
{button ,AL('HID_FILE_CLOSE',1)}    Close
{button ,AL('HID_FILE_SAVE',1)}      Save
{button ,AL('HID_FILE_SAVE_AS',1)}    Save As...
{button ,AL('HID_FILE_INFO',1)}      Info...
{button ,AL('HID_FILE_PRINT',1)}      Print...
{button ,AL('HID_FILE_PRINT_PREVIEW',1)}    Print Preview
{button ,AL('HID_FILE_PRINT_SETUP',1)}    Print Setup...
{button ,AL('HID_FILE_SEND_MAIL',1)}    Send...
{button ,AL('HID_FILE_MRU_FILE1',1)}    Recent File
{button ,AL('HID_APP_EXIT',1)}      Exit
```

## New

File/New

This command lets you choose a template and open a file for a new project.

---

See:

[Creating a New Project File](#)



## Open

### File/Open

This command lets you open an existing project.

The following options let you specify which file to open:

#### **File name**

Type or select the filename you want to open. This box lists files with the extension you select in the List Files of Type box.

#### **Files of type**

Select the type of file you want to open:

- All Cakewalk.
- Cakewalk Project
- Cakewalk Template
- Cakewalk Bundle
- MIDI File
- RIFF MIDI File
- Play List
- StudioWare

#### **Look in**

Select the directory in which Cakewalk stores the file that you want to open.

## **Close**

File/Close

This command closes the current project.

It requests confirmation if you haven't saved your changes. To save your changes click Yes in the confirmation box. If you don't want to save your changes, click No.

## Save

File/Save

This command saves any changes you have made to the current project since the last time you saved.

---

See:

[Saving Your Work](#)

## Save As

File/Save As...

This command lets you save a project with the name, directory, and format you specify.:

### File name

Type or select the filename you want to open. This box lists files with the extension you select in the List Files of Type box.

### Save as type

Select the type of file you want to save your project as:

- All Cakewalk.
- Cakewalk Project
- Cakewalk Template
- Cakewalk Bundle
- MIDI File
- RIFF MIDI File
- Play List

### Save in

Select the directory in which you want to store the file.

- All Cakewalk. See
- Cakewalk Project
- Cakewalk Template
- Cakewalk Bundle
- MIDI File
- RIFF MIDI File
- Play List

---

See

[Saving Your Work](#)

## Info

File/Info...

This command and dialog box let you store information about the project.

---

See:

[Labeling Your Projects](#)

[To Display and Edit Project Information](#)

Press the Stats button to see file statistics.

---

See:

[File Statistics](#)

## **Print**

File/Print...

This command lets you specify how to print the staff view, the events list view, and the lyric view. It displays the Print dialog box.

### **Printer**

This is the active printer and printer connection. Choose the Setup option to change the printer and printer connection.

### **Print Range**

Specify the pages you want to print:

- |       |   |
|-------|---|
| All   | Prints the entire document.                                     |
| Pages | Prints the range of pages you specify in the From and To boxes. |

### **Copies**

Specify the number of copies you want to print for the above page range.

### **Collate**

Prints copies in page number order, instead of separated multiple copies of each page.

### **Properties button**

Opens a dialog box that lets you specify whatever your printer allows.

## **Print Preview**

File/Print Preview

This command lets you see what the selected staff, events list, or lyric will look like, printed.

For the staff view, the Configure button in the Print Preview dialog box lets you choose from a number of standard staff sizes. You can see which fits your needs best.

## **Print Setup**

File/Print Setup...

This command and dialog box lets you specify whatever options your printer can handle for printing the active view. It displays the Print Setup dialog box.

### **Printer**

This is the active printer and printer connection. Choose the Setup option to change the printer and printer connection.

### **Print Range**

Specify the pages you want to print:

- |       |   |
|-------|---|
| All   | Prints the entire document.                                     |
| Pages | Prints the range of pages you specify in the From and To boxes. |

### **Copies**

Specify the number of copies you want to print for the above page range.

### **Collate**

Prints copies in page number order, instead of separated multiple copies of each page.

### **Properties button**

Opens a dialog box that lets you specify whatever your printer allows.



## **Send...**

File/Send...

This command makes the project an attachment to a message in your mailer.

## Recent File

File/Recent File list

The recent file list at the bottom of the File menu lets you choose any file you have opened recently. Choosing a file in the list opens it immediately.

## **Exit**

File/Exit

This command closes Cakewalk.

It requests confirmation if you haven't saved your changes to any open projects. To save your changes click Yes in the confirmation box. If you don't want to save your changes, click No.

## Go Menu

The Go menu has the following commands:

```
{button ,AL('HID_GOTO_TIME',1)} Time...
{button ,AL('HID_GOTO_FROM',1)}From
{button ,AL('HID_GOTO_THRU',1)} Thru
{button ,AL('HID_GOTO_START',1)} Beginning
{button ,AL('HID_GOTO_END',1)} End
{button ,AL('HID_GOTO_PREV_MEAS',1)} Previous Measure
{button ,AL('HID_GOTO_NEXT_MEAS',1)} Next Measure
{button ,AL('HID_MARKER_PREVIOUS',1)} Previous Marker
{button ,AL('HID_MARKER_NEXT',1)} Next Marker
{button ,AL('HID_SEARCH',1)} Search...
{button ,AL('HID_SEARCH_NEXT',1)} Search Next
```

## Time...

Go/Time...

Puts the [Now time](#) in the position toolbar into editing mode, so you can type in a new Now time.

---

See:

[The Now Time and How to Use It](#)

[Other Ways to Set the Now Time](#)

## From

Go/From

This command sets the [Now time](#) to the [From time](#).

See [The Now Time and How to Use It](#).

## Thru

Go/Thru

This command sets the [Now time](#) to the [From time](#).

See [The Now Time and How to Use It](#).

## Beginning

Go/Beginning

This command sets the [Now time](#) to the beginning of the project.

See [The Now Time and How to Use It](#).



## End

Go/End

This command sets the [Now time](#) to the end of the project.

See [The Now Time and How to Use It](#).

## Previous Measure

Go/Previous Measure

This command sets the [Now time](#) to the beginning of the previous measure.

See [The Now Time and How to Use It](#).

## Next Measure

Go/Next Measure

This command sets the [Now time](#) to the beginning of the next measure.

See [The Now Time and How to Use It](#).

## Previous Marker

Go/Previous Marker

This command sets the [Now time](#) to the previous [marker](#).

See [The Now Time and How to Use It](#).

## Next Marker

Go/Next Marker

This command sets the [Now time](#) to the next [marker](#).

See [The Now Time and How to Use It](#).

## Search

Go/Search...

This command lets you find the next [event](#) (searching forward from the Now time) that meets criteria you specify in the Event Filter – Search dialog box.

See [Searching for Events](#).

## Search Next

Go/Search Next

This command lets you find the next [event](#) using the criteria for your previous, [Search](#) command.

See [Searching for Events](#).

## Help Menu

The Help menu has the following commands:

```
{button ,AL('HID_HELP_FINDER',1)}      Help Topics
{button ,AL('HID_HELP_README',1)}      View README.RTF
{button ,AL('HID_HELP_QUICKSTART',1)}   Quick Start...
{button ,AL('HID_TIP_OF_THE_DAY',1)}    Tip of the Day...
{button ,AL('HID_HELP_WEB',1)}          Cakewalk Web Site...
{button ,AL('HID_HELP_REGISTER',1)}     Register Online...
{button ,AL('HID_APP_ABOUT',1)}         About Cakewalk
```



## Help Topics

Help/Help Topics

This command opens the entire help system. You can look for topics in the table of contents, in the index, and in the finder.

## **View README.RTF**

Help/View README.RTF

This command tells you all about the current version of Cakewalk.

## Quick Start

Help/Quick Start...

This command gives you access to a number of ways to get started.

The Quick Start dialog box has several options:

Option	How to use it
Open a Song	Choose a project from the <a href="#">Open File</a> dialog box to open it.
Create a New Song	Choose a template for the new project in the <a href="#">New</a> dialog box, and click OK to create the project
Learn How to Use Cakewalk	Click here to display the on-line Cakewalk tutorials.
Find Out More about Cakewalk	Click here to visit Cakewalk on the World Wide Web

If you don't want to see the Quick Start dialog box in the future, uncheck the box at the bottom of the dialog box, and click **Close**. To see it again later, choose **Help-Quick Start**.

## Tip of the Day

Help/Tip of the Day...

This command offers you a tip on a good way of doing something in Cakewalk. You can see as many tips as you want.

## **Cakewalk Web Site**

Help/Cakewalk Web Site...

This command opens your web browser at the Cakewalk web site's home page.

## **Register Online**

Help/Register Online...

This command opens Cakewalk's on-line form so you can register your new product.

## **About Cakewalk**

Help/About Cakewalk...

This command displays copyright, version number of the product, and your licensing information.

## Insert Menu

The Insert menu has the following commands:

```
{button ,AL('HID_INSERT_BANK_PATCH',1)}      Bank/Patch Change...
{button ,AL('HID_INSERT_METER',1)}           Meter/Key Change...
{button ,AL('HID_INSERT_TEMPO',1)}           Tempo Change...
{button ,AL('HID_INSERT_TIME',1)}            Time/Measures...
{button ,AL('HID_INSERT_MARKER',1)}          Marker...
{button ,AL('HID_INSERT_WAVE',1)}            Wave File...
{button ,AL('HID_INSERT_CONTROLLER_SERIES',1)} Series of Controllers...
{button ,AL('HID_INSERT_TEMPO_SERIES',1)}     Series of Tempos...
```



## Bank/Patch Change

Insert/Bank/Patch Change...

This command lets you change a track's sound during playback or recording.

---

See:

[Choosing the Instrument Sound \(Bank and Patch\)](#)

[Track Properties](#)

## Meter/Key Change

Insert/Meter/Key Change...

This command lets you set the [meter](#) and [key signature](#) of a project or any part of a project.

---

See:

[Setting the Time Signature and Key Signature](#)

[Adding and Editing Meter/Key Changes](#)

## Tempo Change

Insert/Tempo Change...

This command lets you specify a new [tempo](#) at a specified point.

---

See:

[Using the Tempo Commands.](#)

## Time/Measures

Insert/Time/Measures...

This command lets you insert the amount of time you specify at the point you indicate in the music. You can specify what events to slide over to make room for the new amount of time.

## Marker

Insert/Marker...

This command lets you add a [marker](#) where you specify in the music.

See [Creating and Using Markers](#).

## Wave File...

Insert/Wave File...

This command lets you import [digital audio](#) information stored in wave file format into any track (or, for stereo, two tracks) of a project.

See [Importing Wave \(.WAV\) Files](#).

## **Series of Controllers...**

Insert/Series of Controllers...

This command lets you change controller event values smoothly over a specified time range.

## Series of Tempos

Insert/Series of Tempos...

This command lets you change [tempo](#) smoothly over a specified time range by inserting a series of tempo changes.

---

See:

[Using the Tempo Commands.](#)

[Controllers, RPNs, NRPNs, and Automation Data](#)



## Realtime Menu

The Realtime menu has the following commands:

```
{button ,AL('HID_REALTIME_PLAY',1)}      Play
{button ,AL('HID_REALTIME_RECORD',1)}    Record
{button ,AL('HID_REALTIME_REW',1)}       Rewind
{button ,AL('HID_REALTIME_STOP',1)}      Stop
{button ,AL('HID_REALTIME_PANIC',1)}     Reset
{button ,AL('HID_REALTIME_STEP_RECORD',1)} Step Record...
{button ,AL('HID_REALTIME_AUTO_SHUTTLE',1)} Loop and Auto Shuttle...
{button ,AL('HID_REALTIME_RECORD_MODE',1)} Record Options...
{button ,AL('HID_REALTIME_REJECT_LOOP_TAKE',1)} Reject Loop Take
{button ,AL('HID_REALTIME_PATCH_CACHE',1)} Update Patch Cache
{button ,AL('HID_REALTIME_TEMPO1',1)}    Tempo Ratio 1
{button ,AL('HID_REALTIME_TEMPO2',1)}    Tempo Ratio 2
{button ,AL('HID_REALTIME_TEMPO3',1)}    Tempo Ratio 3
```

## Play

Realtime/Play

This command starts playback.

See [Controlling Playback](#).

## Record

Realtime/Record

This command starts recording.

---

See:

[Recording Music from a MIDI Instrument](#)

## Rewind

Realtime/Rewind

This command rewinds to the start of the project.

See [Controlling Playback](#).

To rewind with looping, see [Loops](#).

## Stop

Realtime/Stop

This command stops playback.

---

See:

[Controlling Playback](#)

## Reset

Realtime/Reset

This command stops all notes from playing and clears stuck notes.

See [Handling Stuck Notes](#).

## Step Record

Realtime/Step Record...

This command lets you specify step size and not duration so you can record things that are hard to play a step at a time.

See [To Use Step Recording](#).

To specify a pattern of notes and rests for more efficient step recording, see [Step Pattern Recording](#).

## Loop and Auto Shuttle

Realtime/Loop and Auto Shuttle...

This command lets you specify start and stop times for [looping](#), and whether you want the loop to start over again.

---

See:

[Loops](#)

[To Set Up a Playback Loop](#)

[To Change the Loop Settings](#)

[To Cancel a Playback Loop](#)



## Record Options

Realtime/Record Options...

This command lets you specify the disposition of [clips](#) recording into tracks already holding other clips.

---

See:

[To Choose a Recording Mode](#)

The command also lets you specify whether to record [takes](#) in sequential tracks or stacked in a single track.

See [To Use Loop Recording](#).

## Reject Loop Take

Realtime/Reject Loop Take

This command erases the most recent [take](#) during loop recording.

See [To Use Loop Recording](#).

## **Update Patch Cache**

Realtime/Update Patch Cache

This command is enabled only if you're using one or more sound cards which require "patch caching". After making changes to your song which result in patch change events being added, changed, or deleted, you may need to choose Update Patch Cache to force the sound card to load the required sounds from disk storage.

## **Tempo Ratio 1**

Realtime/Tempo Ratio 1

This command changes the speed of playback.

See [Using the Tempo Toolbar](#).

## **Tempo Ratio 2**

Realtime/Tempo Ratio 2

This command changes the speed of playback.

See [Using the Tempo Toolbar](#).

## **Tempo Ratio 3**

Realtime/Tempo Ratio 3

This command changes the speed of playback.

See [Using the Tempo Toolbar](#).

## Tools Menu

The Tools menu has the following commands:

```
{button ,AL('HID_MIDI_PORTS',1)} MIDI Devices...
{button ,AL('HID_AUDIO_OPTIONS',1)} Audio Options...
{button ,AL('HID_INSTRUMENTS',1)} Instruments...
{button ,AL('HID_OPTIONS',1)} Project Options...
{button ,AL('HID_GLOBAL_OPTIONS',1)} Global Options...
{button ,AL('HID_COLORS',1)} Colors...
{button ,AL('HID_AUDIO_COMPACT',1)} Compact Audio Data...
{button ,AL('HID_AUDIO_CLEAN',1)} Clean Audio Disk...
{button ,AL('HID_AUDIO_EXPORT',1)} Export Audio...
{button ,AL('HID_SOUND_FONTS',1)} SoundFonts...
{button ,AL('HID_INIFILES',1)} Initialization File...
{button ,AL('HID_VIRTUAL_PIANO',1)} Virtual Piano...
{button ,AL('HID_VIRTUAL_JUKEBOX',1)} Virtual Jukebox...
```

You may or may not see some of these commands, depending on what tools you have installed.

## **MIDI Devices...**

[Tools](#)/MIDI Devices...

This command lets you choose the MIDI ports you want to use.

---

See:

[Setting up Output Devices](#)



## Audio Options and DirectShow Audio

[Tools/Audio Options...](#)

This command lets you configure your audio setup.

---

See:

[Setting the Audio Sampling Rate](#)

[Configuring the Console](#)

[Recording Audio](#)

[Scrubbing](#)

[Managing Audio Files](#)

## Instruments

[Tools](#)/Instruments...

This command lets you choose one or more port/channel configurations and assign an instrument to it or them.

See [Instrument Definitions](#).

## Project Options

[Tools/Project Options...](#)

This command gives you access to options you might want to set for a particular project.

### Metronome tab

This tab lets you set a metronome and tempo options.

See [Setting the Metronome and Tempo Settings](#).

### MIDI Input tab

This tab lets you control the echo of MIDI data from your MIDI inputs to your MIDI outputs.

See [MIDI Echo](#).

To work around local control problems, see [Local Control](#).

### MIDI Out tab

This tab lets you configure your equipment to use MIDI sync with Cakewalk Pro Audio as the master.

See [Pro Audio as the Master](#).

## Global Options

[Tools/Global Options...](#)

This command gives you access to options you might want to set for many projects.

### General tab

This tab lets you set project display and performance options.

For showing MIDI activity, see the Cakewalk manual, Appendix B.

For displaying times as SMPTE, see [The Now Time and How to Use It](#).

For asking before sending Sysx, see [System Exclusive Data](#).

For auto-saving, see [Saving Your Work](#).

For bass octave for pitches, see the Cakewalk manual, Appendix E.

### MIDI Filter tab

This tab lets you specify MIDI filter options.

---

See:

[Using the System Exclusive View](#)

[Real-Time Recording of System Exclusive](#)

To filter event types or to filter by channel, see [Input Filtering](#).

### Folders tab

This tab lets you specify and change directories for all your folders.

See [Templates](#).

### Drag and Drop tab

This tab lets you specify how you want drag and drop to work.

See [Moving and Copying Clips](#).

## Colors

[Tools/Colors...](#)

This command lets you choose and change the colors for most things that Cakewalk displays.

## Compact Audio Data...

[Tools](#)/Compact Audio Data...

This command puts all the [digital audio](#) used in a project into a single digital audio file.

See [Compacting Audio Files](#).

## **Clean Audio Disk...**

[Tools](#)/Clean Audio Disk...

This command lets you delete digital audio files which are no longer in use from the wavedata folder.

See [Deleting Unused Audio Files](#).

## Export Audio

[Tools](#)/Export Audio...

This command exports your [audio](#) data to the type of file you specify.

If you choose to export as RealMedia Metafile, it exports an entire project as [MIDI](#) and [audio](#) data.

See [Preparing Audio for Distribution](#).



## SoundFonts

[Tools](#)/SoundFonts...

This command lets you import SoundFont [banks](#).

SoundFont files contain data for [patches](#). They are available from vendors and you can create them using the Vienna editor from Creative.

To use SoundFonts, you must have a Creative Labs AWE 32 or AWE 64 sound card and have the SoundFont Management System installed.

When Cakewalk opens a WRK or MID file, it looks for a SF2 file in the same folder with the same base name. If one exists, Cakewalk uses it. Use the Locations button to specify folders where Cakewalk should look. Use the Attach button in the SoundFont Banks dialog box to override this behavior and specify a different SoundFont file to use with the song.

Cakewalk saves SoundFont file names in (WRK) files, but not in Standard MIDI (MID) files.

## Initialization File

[Tools](#)/Initialization File...

This command lets you specify which initialization file Cakewalk should use on starting up, with what options.

See [Initialization Files](#).

## Virtual Piano

[Tools](#)/Virtual Piano

This command lets you play the [virtual piano](#) to record MIDI in your projects.

---

See:

[Virtual Piano](#)

[Local Control](#)

## Virtual Jukebox

[Tools](#)/Virtual Jukebox

This command lets you open [Virtual Jukebox](#), a stand-alone application. It lets you load play lists (.PLY files) containing Cakewalk .WRK and .BUN files, .SET files, standard MIDI files, and digital audio .WAV files.

See [Virtual Jukebox](#).

## Track Menu

The Track menu has the following commands:

{button ,AL('HID_PROPERTY_SUBMENU',1)}	<u>Property Submenu</u>
{button ,AL('HID_TRACK_MUTE',1)}	<u>Mute</u>
{button ,AL('HID_TRACK_ARCHIVE',1)}	<u>Archive</u>
{button ,AL('HID_TRACK_SOLO',1)}	<u>Solo</u>
{button ,AL('HID_TRACK_ARM',1)}	<u>Arm</u>
{button ,AL('HID_TRACK_CLONE',1)}	<u>Clone</u>
{button ,AL('HID_TRACK_KILL',1)}	<u>Kill</u>
{button ,AL('HID_TRACK_WIPE',1)}	<u>Wipe</u>
{button ,AL('HID_TRACK_SORT',1)}	<u>Sort</u>

## Property Submenu

### Track/Property

The Property submenu has the following commands:

{button ,AL('HID_TRACK_NAME',1)}	<u>Name...</u>
{button ,AL('HID_TRACK_PORT',1)}	<u>Port...</u>
{button ,AL('HID_TRACK_SOURCES',1)}	<u>Sources...</u>
{button ,AL('HID_TRACK_CHAN',1)}	<u>Channel...</u>
{button ,AL('HID_TRACK_KEY',1)}	<u>Key+...</u>
{button ,AL('HID_TRACK_VEL',1)}	<u>Vel+...</u>
{button ,AL('HID_TRACK_TIME',1)}	<u>Time+...</u>
{button ,AL('HID_TRACK_BANK',1)}	<u>Bank...</u>
{button ,AL('HID_TRACK_PATCH',1)}	<u>Patch...</u>
{button ,AL('HID_TRACK_VOL',1)}	<u>Volume...</u>
{button ,AL('HID_TRACK_PAN',1)}	<u>Pan...</u>

## Name

Track/Property/Time...

This command lets you assign a name to a track for easy reference.

## Port

Track/[Property](#)/Port...

This command lets you specify the output device though which to play the selected track. It also specifies whether the track contains MIDI or audio data.

---

See:

[Setting up Output Devices](#)

[Assigning Tracks to Ports](#)



## Sources

Track/[Property](#)/Sources...

This command lets you specify the input source for a track for recording purposes.

See [Choosing a Source](#).

## Channel

Track/[Property](#)/Channel...

This command specifies the MIDI channel through which to play the notes.

See [Assigning a MIDI Channel \(Chn\)](#).

## Key+

Track/[Property](#)/Key+...

This command lets you specify how many half-steps the notes in this track should be transposed on playback. 12 half-steps make an octave.

See [Adjusting the Key/Transposing a Track \(Key+\)](#).

## Vel+

Track/[Property](#)/Vel+...

This command lets you designate the change in velocity (volume) to be applied to notes in this track on playback, ranging from -127 to +127.

See [Adjusting the Note Velocity](#).

## Time+

Track/[Property](#)/Time+...

This command lets you apply an offset to the start time of the events in the track.

See [Adjusting the Time Alignment of a Track \(Time+\)](#).

## Bank

Track/[Property](#)/Bank...

This command lets you choose the bank, or set of patch names, available for this track.

---

See:

[Choosing the Instrument Sound \(Bank and Patch\)](#)

## Patch

Track/[Property](#)/Patch...

This command lets you choose the patch, or instrument sound, to use for playback.

---

See:

[Choosing the Instrument Sound \(Bank and Patch\)](#)

[Track Properties](#)

## Volume

Track/[Property](#)/Volume...

This command lets you specify the starting volume level for the track, ranging from 0 (silent) to 127 (maximum volume).

See [Adjusting Volume and Pan](#).



## Pan

Track/[Property](#)/Pan...

This command lets you specify the stereo distribution of the output, ranging from 0 (hard left) to 127 (hard right), with a value of 64 indicating sound that is centered left-to-right.

See [Adjusting Volume and Pan](#).

## Mute

Track/Mute

This command silences the specified track for playback.

---

See:

[Track By Track Playback](#)

[Silencing Tracks](#)

## **Archive**

Track/Archive

This command silences the specified track for playback. You must stop playback to cancel the Archive command.

See [Silencing Tracks](#).

## Solo

Track/Solo

This command silences the specified track for playback.

---

See:

[Track By Track Playback](#)

[Soloing Tracks](#)

# Arm

Track/Arm

This command lets you specify a track or track for recording.

---

See

[Arming Tracks for Recording](#)

[Auto Arming](#)

[Track By Track Playback](#)

[Silencing Tracks](#)

## Clone

Track/Clone...

This command copies a track with either its properties, its clips and events, or both. You can specify a destination.

See [Copying Tracks](#).

## Kill

### Track/Kill

This command deletes one or more tracks entirely, including all its track properties and all its clips and events. Cakewalk does not put killed information on the clipboard for later copying.

See [Erasing Tracks](#).

To delete track contents but leave track properties, see [Wipe](#).

## Wipe

### Track/Wipe

This command deletes track contents but leaves track properties intact. Cakewalk does not put wiped information on the clipboard for later copying.

See [Erasing Tracks](#).

To delete both track contents and track properties, see [Kill](#).



## Sort

Track/Sort...

This command lets you arrange tracks in order according to any of these criteria:

- Name
- Muted
- Archived
- Selected
- Size
- Port
- Channel

You can sort by these criteria in ascending or descending order.

See [Changing the order of tracks](#).

## View Menu

The view menu has the following commands:

{button ,AL('HIDR_TRACK_VIEW',1)}	<u>Track view</u>
{button ,AL('HIDR_PIANO_ROLL_VIEW',1)}	<u>Piano Roll</u>
{button ,AL('HIDR_EVENT_LIST_VIEW',1)}	<u>Event List</u>
{button ,AL('HIDR_STAFF_VIEW_MAIN',1)}	<u>Staff</u>
{button ,AL('HIDR_AUDIO_VIEW',1)}	<u>Audio</u>
{button ,AL('HIDR_LYRICS_VIEW',1)}	<u>Lyrics</u>
{button ,AL('HIDR_PANEL_VIEW',1)}	<u>StudioWare</u>
{button ,AL('HIDR_CONSOLE_VIEW',1)}	<u>Console</u>
{button ,AL('HIDR_BIGTIME_VIEW',1)}	<u>Big Time</u>
{button ,AL('HIDR_MARKERS_VIEW',1)}	<u>Markers</u>
{button ,AL('HIDR_TEMPO_VIEW',1)}	<u>Tempo</u>
{button ,AL('HIDR_METERKEY_VIEW',1)}	<u>Meter/Key</u>
{button ,AL('HIDR_SYSEX_VIEW',1)}	<u>Sysx</u>
{button ,AL('HID_VIEW_LAYOUTS',1)}	<u>Layouts...</u>
{button ,AL('HIDR_PLAY_LIST_VIEW',1)}	<u>Play List</u>
{button ,AL('HID_TOOLBARS_SUBMENU',1)}	<u>Toolbars</u>

## Track view

The Track view is always visible. It is the main window you use to create, display, and work with a project. It consists of the track pane and the clips pane.

### Track pane

This pane lets you see and change the settings for each track.

---

See:

- [Track by Track Playback](#)
- [Changing Track Settings](#)
- [Assigning Tracks to Ports](#)
- [Silencing Tracks](#)
- [Soloing Tracks](#)
- [Arranging Tracks](#)
- [Choosing a Source](#)
- [Recording Channel by Channel](#)

### Clips pane

This pane shows the [clips](#) in your project on a timeline. You can select, move, and copy clips from place to place to change the arrangement of music and sound in your project.

---

See:

- [Arranging Clips](#)
- [Working with Partial Clips](#)
- [Working with Linked Clips](#)
- [Splitting and Combining Clips](#)
- [Markers and the Snap-To Grid](#)

## Piano Roll

View/Piano Roll

The Piano Roll view consists of the note pane and the controllers pane.

See [The Piano Roll View](#)

### Note pane

In this pane you can add, edit, and delete notes from a track.

You can also convert it for convenience in editing percussion.

See [Percussion, Drum Notes, and Note Names](#).

### Controllers pane

View/[Console](#)/right click on control/Display Automation Data/Controllers Pane

In this pane you can edit [controllers](#), [RPNs](#), [NRPNs](#), [automation](#), [velocity](#), [pitch wheel](#), and [aftertouch](#) data, during playback or recording, in real time.

---

See:

[Using the Controllers Pane](#)Using\_the\_Controllers\_Pane>normal

[Recording Automation Data](#)Recording\_Automation\_Data>normal

## Event List

[View](#)/Event List

The Event List view displays all the [events](#) project as a list. You can insert, delete, or change any kind of event.

See:

[Event List Overview](#)

[The Event List View](#)

## Staff

[View/Staff](#)

The Staff view lets you see and edit your composition in standard notation.

---

See:

[Notation and Lyrics](#)

[Adding and Editing Lyrics in the Staff View](#)

## Audio

View/Audio

The Audio view lets you edit, delete, copy, and move [audio](#) events during playback or recording, in real time.

See [Audio Editing](#).

## Lyrics

[View](#)/Lyrics

The Lyric view lets you edit a track's lyrics. You can use it to cue yourself or your group with the lyrics during playback and recording.

See [Working with Lyrics](#).



## StudioWare

[View](#)/StudioWare

The StudioWare view, a dynamic console strip, lets you manipulate the controls on any external MIDI device from graphical controls on your screen.

See [StudioWare](#)

## Console

[View/Console](#)

The Console view, a live digital mixer, gives you full track-by-track control over recording and playback of your project.

---

See:

[Mixing](#)

[Choosing a Source](#)

[Recording Channel by Channel](#)

To check [audio](#) levels before recording, see [Recording Audio](#).

## Big Time

View/Big Time

The Big Time view lets you see the Now time from a distance while recording. Right-click to edit font, style, size, and color. Drag on a corner to resize the view.

## Markers

[View](#)/Markers

The Markers view, lets you add, move, rename, or delete [markers](#) (labels) for places in your song. The markers make it easier to move from one point to another.

See [Markers and the Snap-To Grid](#).

## Tempo

View/Tempo

The Tempo view shows the [tempo](#) of your project. You can use the mouse to draw tempo changes directly onto the graph.

See [Using the Tempo View](#).

## Meter/Key

[View/Meter/Key](#)

The Meter/Key view lets you set and change the [meter](#) and [key signature](#) for any project or part of a project, over all its tracks.

See [Setting the Time Signature and Key Signature](#)

## Sysx

View/Sysx

The [Sysx](#) view gives you 256 [banks](#) to hold MIDI System Exclusive messages.

See [System Exclusive Data](#).

To read Sysx messages in real time, see [Input Filtering](#).

## **Layouts command and Window Layouts dialog box**

View/Layouts

This command lets you create, edit, save, and delete a global layout, to be applied either to a particular project or to any project you choose.

See [Layouts](#)



## Toolbars Submenu

### View/Toolbars

The Toolbars submenu has the following toolbars:

{button ,AL('HID_VIEW_TOOLBAR_STANDARD',1)}	<u>Standard</u>
{button ,AL('HID_VIEW_TOOLBAR_POSITION',1)}	<u>Position</u>
{button ,AL('HID_VIEW_TOOLBAR_TRANSPORT',1)}	<u>Transport</u>
{button ,AL('HID_VIEW_CONTROLBAR_TRANSPORT',1)}	<u>Transport (Large)</u>
{button ,AL('HID_VIEW_TOOLBAR_LOOP',1)}	<u>Loop</u>
{button ,AL('HID_VIEW_TOOLBAR_MARKERS',1)}	<u>Markers</u>
{button ,AL('HID_VIEW_TOOLBAR_RECORD',1)}	<u>Record</u>
{button ,AL('HID_VIEW_TOOLBAR_TEMPO',1)}	<u>Tempo</u>
{button ,AL('HID_VIEW_TOOLBAR_SELECT',1)}	<u>Select</u>
{button ,AL('HID_VIEW_TOOLBAR_VIEWS',1)}	<u>Views</u>

## Standard

View/Toolbars/Standard

This toolbar lets you use the standard file and editing commands. It has the following tools:

<b>New</b>	<a href="#"><u>New</u></a> command.
<b>Open</b>	<a href="#"><u>Open</u></a> command
<b>Save</b>	<a href="#"><u>Save</u></a> command
<b>Cut</b>	<a href="#"><u>Cut</u></a> command
<b>Copy</b>	<a href="#"><u>Copy</u></a> command
<b>Paste</b>	<a href="#"><u>Paste</u></a> command
<b>Undo</b>	<a href="#"><u>Undo</u></a> command
<b>Redo</b>	<a href="#"><u>Redo</u></a> command
<b>Print</b>	<a href="#"><u>Print</u></a> command
<b>About</b>	<a href="#"><u>About</u></a> command

## Position

View/Toolbars/Position

This toolbar lets you work with the Now time. It has the following tools:

**Now (Measure, Beat, Tick).** Displays and lets you change the Now time in MBT notation.

**Now (Hour, Minute, Second, Frame).** Displays and lets you change the Now time in SMPTE notation.

**Go to From.** From command

**Go to Thru.** Thru command

**Now.** Slider for moving the Now time graphically.

## Transport

View/Toolbars/Transport

This toolbar lets you hear how your piece sounds. It has the following tools:

**Rewind.** [Rewind](#) command

**Stop.** [Stop](#) command

**Play.** [Play](#) command

**Go to End:** Skip to the end of the project

**Record.** [Record](#) command

**Reset.** [Reset](#) command

See [Creating a New Project](#).

## Transport (Large)

[View/Toolbars/Transport \(Large\)](#)

This toolbar, the larger version of the [Transport toolbar](#), lets you hear how your piece sounds. It also displays and lets you set the meter and key signature. It has the following tools:

**Now (Measure, Beat, Tick).** Displays and lets you change the [Now time](#) in [MBT](#) notation.

**Now (Hour, Minute, Second, Frame).** Displays and lets you change the Now time in [SMPTE](#) notation.

**Now.** Slider for moving the Now time graphically.

**Rewind.** [Rewind](#) command

**Stop.** [Stop](#) command

**Play.** [Play](#) command

**Go to End:** Skip to the end of the project

**Record.** [Record](#) command

**Reset.** [Reset](#) command

**Meter/Key.** Displays the current [time](#) and [key signatures](#). Click it to edit its values. See [Meter/Key Change](#).

See [Creating a New Project](#).

## Loop

View/Toolbars/Loop

This toolbar lets you set and edit [looping](#) in your project. It has the following tools:

**Loop On/Off.** Enables looping

**Loop From.** Displays the [From time](#) for looping

**Loop Thru:** Displays the [Thru time](#) for looping

**Set Time.** Click to set the Loop From and Loop Thru times to the from and thru times set in the [Selection toolbar](#).

**Loop and Auto Shuttle properties.** [Loop and Auto Shuttle](#) command

See [Loops](#).

## Markers

[View/Toolbars](#)/Markers

The Markers toolbar lets you create, edit, and delete [markers](#). It has the following tools:

**Marker Menu.** Choose a marker from the list to set the [Now time](#) to it.

**Previous Marker.** [Previous Marker](#) command

**Next Marker.** [Next Marker](#) command

**Insert Marker.** [Marker](#) command

**Markers View.** [Markers](#) command

---

See:

[Other Ways to Set the Now Time](#)

[Markers and the Snap-To Grid](#)

## Record

View/Toolbars/Record

This toolbar lets you specify conditions for recording. It has the following tools:

**Punch Record On/Off.** Enables punch recording

**Punch In Time.** Displays the [From time](#) for punch in recording

**Punch Out time.** Displays the [Thru time](#) for punch in recording

**Set Time.** Click to set the punch in and punch out times to the from and thru times set in the [Selection toolbar](#).

**Step Record.** [Step Record](#) command

**Record Options.** [Record Options](#) command

---

See:

[To Use Step Recording](#)

[Punch-In Recording](#)



## Tempo

View/Toolbars/Tempo

This toolbar displays the current [tempo](#) and lets you change it, insert a new tempo at a specified time, change or erase it, and stretch the [audio](#) to fit a given tempo. It has the following tools:

Tempo. Displays the current tempo.

Insert Tempo. [Tempo Change](#) command.

Tempo Ratio 1. [Tempo Ratio 1](#) command

Tempo Ratio 2. [Tempo Ratio 2](#) command

Tempo Ratio 3. [Tempo Ratio 3](#) command

---

See:

[Using the Tempo Toolbar](#)

[Tempo Changes](#)

## Select

View/Toolbars/Select

This toolbar lets you select from and thru times which the loop and record toolbars can use. It contains the following tools:

**Set From = Now.** From command

**From.** From time

**Thru.** Thru time

**Set Thru = Now.** Thru command

## Views

View/Toolbars/Views

This toolbar lets you display all the views in Cakewalk. It contains the following tools.

- Piano Roll view.** [Piano Roll](#) command
- Events view.** [Events](#) command
- Staff view.** [Staff](#) command
- Audio view.** [Audio](#) command
- Lyrics view.** [Lyrics](#) command
- StudioWare view.** [StudioWare](#) command
- Console View.** [Console](#) command
- Big Time view.** [Big Time](#) command
- Markers View.** [Markers](#) command
- Tempo View.** [Tempo](#) command
- Meter/Key view.** [Meter/Key](#) command
- Sysx view.** [Sysx](#) command

## Play List

[File/Open](#)/Files of Type: Play List/choose .set file

File/New/--Play List set--

This view lets you set up a series of songs to play sequentially.

See [Playing Files in Batch Mode](#).

## **Cakewalk Empty View**

To start working in Cakewalk, choose File/New (to start a new project) or File/Open (to open a project).

See:

[New](#)

[Open](#)

## Window Menu

The Window menu has the following commands:

{button ,AL('HID\_WINDOW\_CASCADE',1)} Cascade

{button ,AL('HID\_WINDOW\_TILE\_HORZ',1)} Tile in Rows

{button ,AL('HID\_WINDOW\_TILE\_VERT',1)} Tile in Columns

{button ,AL('HID\_WINDOW\_ARRANGE',1)} Arrange Icons

## **Cascade**

Window/Cascade

This command lets you arrange multiple opened windows in an overlapped fashion.

## **Tile in Rows**

Window/Tile in Rows

This command arranges multiple opened windows from top to bottom down the screen.



## **Tile in Columns**

Window/Tile in Columns

This command arranges multiple opened windows from side to side across the screen.

## **Arrange Icons**

Window/Arrange Icons

Use this command to arrange the icons for minimized windows at the bottom of the main window.

## Tutorials

Now that you've learned some of the basics, it's time to put that knowledge to work. The three tutorials listed in the topics below will give you some hands-on practice learning how to play, record, and mix your projects. If you want to learn more about any particular topic, you'll find references to the appropriate part of the User's Guide.

---

See also:

[Tutorial 1 - Playing a Song](#)

[Tutorial 2 - Recording MIDI and Digital Audio](#)

[Tutorial 3 - Audio Editing and Mixing](#)

## **Tutorial 1 - Playing a Song**

The first tutorial teaches you the basics of playing MIDI with Cakewalk. You'll learn how to:

- open and play a project file
- make the song repeat automatically
- use markers
- speed up or slow down the tempo
- mute a track and play a track solo
- change a track's instrument
- play a track on a MIDI keyboard
- transpose the song to a different key

## **Rehearsal Time**

You're a member of a garage band preparing to make a demo tape. Although the band practices three nights a week, you'd like a little extra time to work on a solo in one of your songs. Fortunately, one of your fellow performers is also a Cakewalk owner, and has created a project file containing a portion of the song. So, on your off nights, rather than practicing your solo all by yourself, you can load the song into Cakewalk and play along with the other instruments.

So, it's rehearsal time. Let's go!

## Opening a Project File

Cakewalk stores MIDI and digital audio data in **project files**. The first thing you need to do is load the project file containing your band's song.

1. If you haven't already done so, start Cakewalk.
2. Choose File-Open.
3. In the Open dialog box, select the file TUTORIAL1.WRK. Then click the Open button.

Cakewalk loads the project and opens the Track and Console views. Feel free to move and resize these views to better fit on your screen; we'll be doing a little work in each of these views later in the tutorial. Right now, though, let's play the song!

## Playing the Song

Buttons in the Large Transport toolbar, shown below, can control most of Cakewalk's basic playback functions. If you don't see the Large Transport toolbar, then choose View-Toolbars and check off Transport (Large).



---

For step by step instructions:

[Starting Playback](#)

[Restarting the Song](#)

[Pausing Playback](#)

[The Now Time](#)

[Starting from a Marker](#)

## Starting Playback



To play the song, click the Play button , or press the space bar.

Do you hear music? Go ahead, get out your instrument and jam along! If you don't hear anything, see [Troubleshooting](#) for some troubleshooting tips.




## Restarting the Song

When Cakewalk gets to the end of the song, it will stop. To play the song again, do the following:

1. Click the Rewind button , or press W, to go back to the first measure.
2. Click the Play button , or press the space bar.

## Pausing Playback

To temporarily pause playback, click the Play button  or the Stop button



, or press the space bar. Click the Play button again to resume playback.

Certain Cakewalk functions can only be used when the song is paused. If a function or command does not seem to work, try pausing the song.

## The Now Time

The **Now Time** is the current time in the song. In the Clips pane of the Track view, the Now Time is indicated by a vertical line. The Now Time is also shown in the Transport toolbar, both in MBT (measure/beat/tick) format and in time code format (hour/minute/second/frame). During playback, the Now time increases in accordance with the progress of the song.

You can set the Now time of the song by clicking in the ruler in the Clips pane, or (when playback is paused) by dragging the Now slider in the Transport toolbar.

While you are playing along with the song, you may want to keep an eye on the Now time. The Big Time view displays the Now time in a large font, so that you can more easily see it from a distance. To open this view, choose View-Big Time. You can change the time format displayed in the Big Time window by clicking on it.





## Starting from a Marker

Markers make it easier to find certain points within the song. You may want to set markers at the beginning of each section of your song, or at times with which some event must be synchronized. The Markers toolbar lets you move the Now time to a marker, add a new marker at the Now time, and edit the marker list. If you don't see the Marker toolbar, then choose View-Toolbars and check off Markers.



The current song contains several markers. Let's try starting playback from the marker labeled C:

1. If the song is playing, pause playback by clicking the Stop button .
2. In the dropdown list in the Markers toolbox, select the marker labeled C. The Now time moves to the start of measure 17.
3. Click the Play button .

For more information about markers, see [Creating and Using Markers](#).

## Restarting the Song Automatically

Wouldn't it be easier to practice your solo if you didn't have to rewind and restart the song each time it ends? Rather than manually rewinding and restarting the song, you can make Cakewalk automatically jump back to the beginning and keep playing.

---

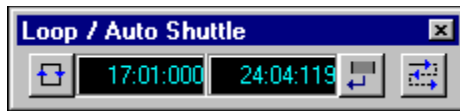
For step by step instructions:


[Looping over the Entire Song](#)

[Looping over a Section of the Song](#)

## Looping over the Entire Song

To control looping, you use the tools in the Loop/Auto Shuttle toolbar. If you don't see this toolbar, choose View-Toolbars and check off Loop.




To turn on looping, click the Loop button  in the Loop/Auto Shuttle. Cakewalk will loop over the section indicated by the loop start (From) and end (Thru) times. By default, these times are set to the start and end times of the song. In a moment, you'll see how to adjust these times.

To turn off looping, click the Loop button again.

## Looping Over a Section of the Song

Maybe you would like to practice one section of the song over and over. Or, maybe you'd like one section played repeatedly so that you can practice an extended solo. In either case, you need to set the start and end times of the loop section. Let's have Cakewalk loop over the section between markers C and D:

1. Click on the loop start time, just to the right of the Loop button. The time display changes to an edit box with spin controls.
2. You could at this point type a new loop start time (in MBT format), or use the spin controls to adjust the time. However, since we want to start at a marker, press F5 to open the Markers dialog box.
3. In the Markers dialog, select marker C and click OK. The loop start time is set to the marker time.
4. Click on the loop end time, just to the right of the loop start time.
5. Press F5.
6. In the Markers dialog, select marker D and click OK.
7. Click the Loop button to turn on looping.
8. Click Rewind. The song rewinds to the loop start time.
9. Click Play.

A quicker way of selecting the loop times in the above example would be to simply click in the area between the markers at the top of the Clips pane, and then click  to copy the selection time to the Loop/Auto Shuttle toolbar.



## Changing the Tempo

If the song is having trouble keeping up with you (or if you're having trouble keeping up with the song!), you can easily speed it up or slow it down. There are two ways to do it: you can change the tempo itself, or you can change the **tempo ratio**, which determines the tempo based by multiplying it by a user-defined amount. The controls for either of these methods are found on the Tempo toolbar. If you don't see this toolbar, choose View-Toolbars and check off Tempo.



---

For step by step instructions:

[Setting the Tempo](#)

[Changing the Tempo with the Tempo Ratio Buttons](#)

[Setting the Tempo Ratios](#)

[Advanced Tempo Control](#)






## **Setting the Tempo**

Let's pick up the pace a little. Do the following:

1. With the song playing, click on the tempo. The tempo will be highlighted and spin controls will appear.
2. Use the spin controls to increase the tempo to 100 beats per minute.
3. Press Enter. The song will play a little faster than before.

## Changing the Tempo with the Tempo Ratio Buttons

The Tempo Ratio buttons let you play the song at half or double tempo. Try this:

1. Click the first button . The song slows to half its normal tempo. Note that the actual song tempo (100.00) has not changed.
2. Click the third button . The song jumps to twice its normal tempo.
3. Click the middle button . The song returns to its normal tempo.

## **Setting the Tempo Ratios**

The tempo ratios can be changed by shift-clicking on them and entering a new number in the dialogue box. By default, they are set to 0.50, 1.00 and 2.00 respectively.

## Advanced Tempo Control

This song is a special case in that there is only one tempo for the entire song. If you need to vary the tempo, Cakewalk lets you insert tempo changes into the song. Tempo changes can be inserted individually, so that different sections can be played at different tempos, or can be inserted graphically in the Tempo view. For more information, see [Tempo Changes](#).

Tempo ratios affect the entire song, even if there are tempo changes. Cakewalk always multiplies the current tempo in the song by the tempo ratio to determine the playback tempo.

## Muting and Soloing Tracks

Frequently you will want to temporarily turn off one or more instruments in your ensemble. Cakewalk makes it easy to mute the parts you don't want to hear.

---

For step by step instructions:

[Muting a Track](#)

[Playing a Track Solo](#)

[Mute and Solo in the Console View](#)

## Muting a Track

For example, suppose that you are practicing the piano part for this song and want to hear only the other instruments. Let's mute the piano part. With the song playing, do the following:



1. In the Track pane, click on the Mute button in the Piano track (track 1). The button turns yellow and the piano part drops out of the song.
2. To turn the piano back on, click the Mute button again.

Note that the yellow MUTE indicator lights up in the status bar lights up whenever a track is muted. This can be very helpful if there are muted tracks that aren't currently visible on the screen.

Let's try using a different method to mute two tracks simultaneously:

1. In the Track pane, click the track number (the leftmost column) in the Piano track. The entire track is selected.
2. While pressing Ctrl, click the track number in the Sax track. Now, both the Piano and Sax tracks are selected.
3. Choose Track-Mute. Both selected tracks are muted.

You can also mute or un-mute tracks by using the inspector menu:

1. In the track pane, click the track number of the Piano track.
2. While pressing Ctrl, click the track number of the Sax track. Now they are both selected.
3. Right-click on either selected track. This will bring up the inspector menu.
4. Choose Mute (which should have a check mark beside it). The selected tracks are un-muted.

## Playing a Track Solo

If you want to hear one track played all by itself, you could mute all the other tracks. But there's a quicker way to do it - the Solo button. For example, to play the drum part by itself, do the following:



1. Click the Solo button in the Drum track (track 5). Voila, a percussion solo!
2. To let the other instruments back into the song, click the Drum track's Solo button again.

Solo is not exclusive - you can let as many instruments as you like into the solo. Note that the green SOLO indicator lights up in the status bar lights up whenever a track is soloed.

Let's use a different method to solo all three percussion tracks:

1. In the Track pane, click the track number in the Drums track. The entire track is selected.
2. While pressing Shift, click the track number in the Shaker and Triangle tracks. Now, all three percussion tracks are selected.
3. Choose Track-Solo.

When you want to let the entire ensemble back into the song, click all the selected (green) Solo buttons again to turn them off. Or, select all soloed tracks and choose Track-Solo, or right-click and bring up the inspector menu and turn off the solo from there

Note that Solo takes priority over Mute; if both buttons are selected in a track, the track will be played.

## **Mute and Solo in the Console View**

The Console view contains Mute and Solo buttons identical to those in the Track view. The two sets of buttons are synchronized. For example, do the following:

1. In the Console view, mute the Bass, Sax, and Drums tracks.
2. Now solo the Piano track.
3. In the Track view, check that the first track is soloed, and that tracks 2, 3, and 5 are muted. Click the selected Solo and Mute buttons to return the tracks to normal.



## Changing a Track's Instrument

If your sound card is like most, its internal synthesizer is capable of producing at least 128 different instrument sounds, plus several dozen percussion sounds. Now you'll find out how to get some of those other instruments into the act. Let's try changing the instrument playing the piano line.

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For step by step instructions:

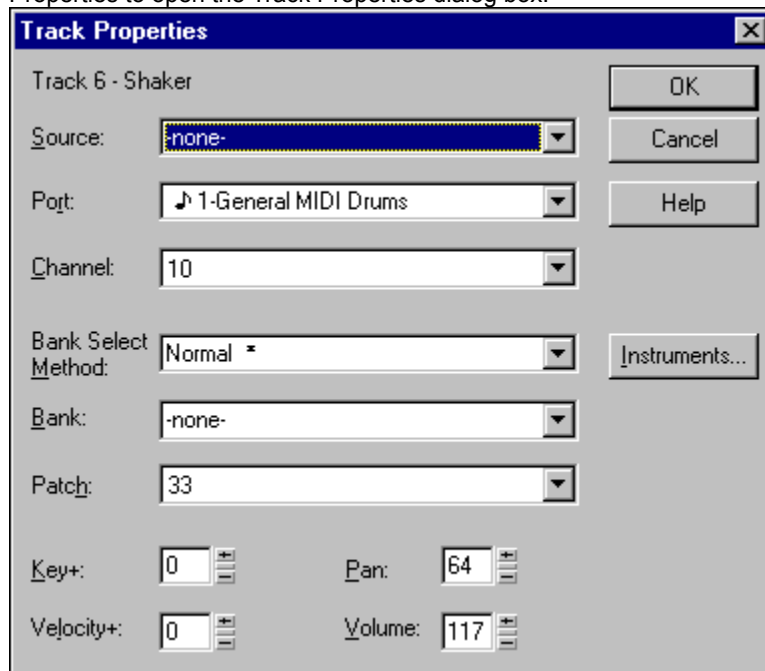
[Changing the Patch in the Track View](#)

[Changing the Patch in the Console View](#)

## Changing the Patch in the Track View

With the song playing, do the following:

1. First, solo the Piano track, so that you can hear the piano part more clearly. To do this, click on the Solo button  in the Piano track (track 1).
2. Now, right-click on any column in the Piano track. This opens the pop-up inspector menu. Choose Track Properties to open the Track Properties dialog box.



3. Find the Patch setting. This setting indicates which patch, or instrument, is used by this track. Right now, the Piano track uses the patch called Acoustic Grand Piano.
4. To change the patch, select a new patch from the dropdown list.
5. As soon as you select a patch, Cakewalk immediately starts playing the piano part with that new instrument. Go ahead and have fun trying all the different patches!
6. When you're done, click OK if you want to keep the patch you have selected at that moment, or click Cancel to go back to the original patch.
7. Click the Solo button in track 1 again to un-solo the Piano track.

You can also change the patch by clicking in the Patch field and using the + and – keys to increment through the different patches. To do so:

1. Solo the Piano track, by clicking on the solo button in track 1.
2. Click in the Patch field in the Piano track, moving the highlight to that field.
3. Press the + or – keys on the computer's numeric keypad, located to the left of most computer keyboards.

You may want to experiment with changing all the different instruments used by the song. One thing you should know: changing the instrument on a percussion track (such as the Drum, Shaker, and Triangle tracks in this song) will have no effect. They are played on MIDI channel 10, which in General MIDI is dedicated to percussion; the note determines the instrument, and the patch is irrelevant.

## **Changing the Patch in the Console View**

It's easier to change a track's patch in the Console view. For example, to change the Piano track's patch, click the Patch button (the fourth button from the top, under the track name). Select a new patch from the menu.

## Playing Music on a Keyboard

If you've connected a MIDI keyboard (or other instrument) to your external MIDI interface or the MIDI interface of your sound card, you can play one or more parts of the song on the keyboard instead of the sound card's internal synthesizer. For the purposes of this tutorial, we assume that you want to connect the keyboard to the MIDI in and out of your sound card.

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For step by step instructions:

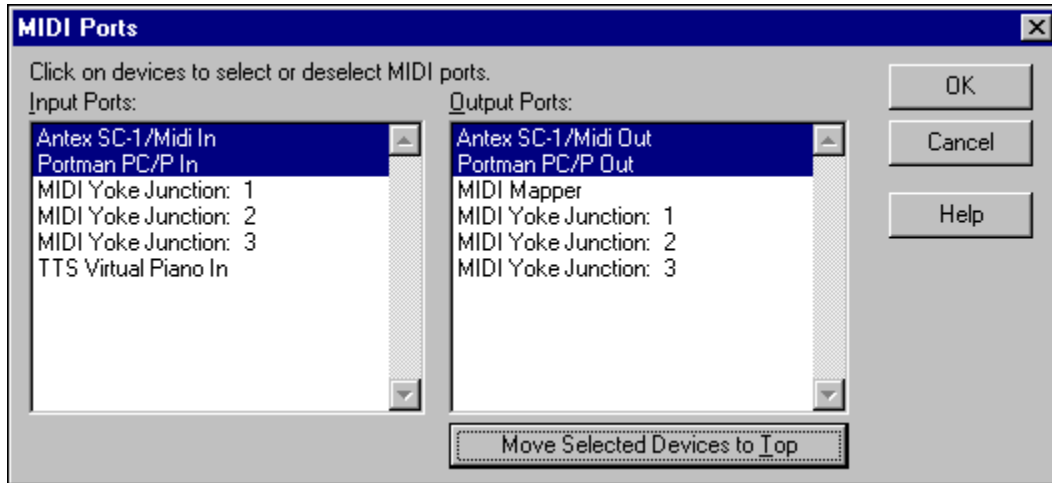
[Checking your MIDI device settings](#)

[Routing MIDI data to the keyboard](#)

## Checking your MIDI device settings

First, let's make sure that Cakewalk is set up to send MIDI output to your keyboard.

1. Choose Tools-MIDI Devices.
2. In the Output Ports column, two devices should be selected. The first should be your sound card synthesizer device; the second should be your MIDI out device. The uppermost selected device will correspond to Port 1, the second device to Port 2, etc. For help with these settings, see [Setting up Output Devices](#).



3. Click OK.

## Routing MIDI data to the keyboard

Let's play the Piano track on the MIDI keyboard. First, turn your keyboard on and make sure that it is set up to receive MIDI input on channel 1. Then, do the following:

1. In the Track view, right-click anywhere in the Piano track (track 1).
2. From the pop-up menu, choose Track Properties.
3. For Port, select your MIDI out device.
4. Click OK.

Or, if you prefer, the procedure is a little easier in the Console view:

1. In the Console view, click the Port button (the first button under the track name) in the Piano column.
2. Select your MIDI out device from the menu.

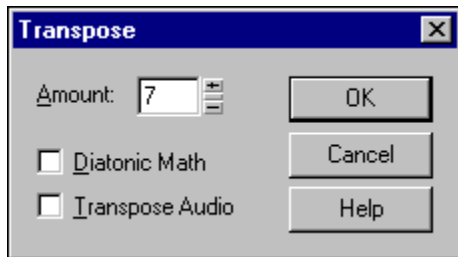
If you don't hear anything on your keyboard, see [Troubleshooting](#) for some hints on troubleshooting.

## Transposing to a Different Key

Sometimes it's useful to move the pitch of the song up or down. You may want to bring the song into someone's vocal range, make the song easier to play along with on your instrument, or simply make an aesthetic adjustment.

Let's raise the pitch of the song by a fifth. With the song playing, do the following:

1. In the Track pane, drag over the track number for tracks 1 through 4 to select them.
2. Choose Edit-Transpose.
3. In the Transpose dialog box, enter the number 7 in the Amount box. You can either type it, or use the spin controls.



4. Click OK.

Cakewalk raises all the notes in the selected tracks by seven half steps (for example, C is raised to G, D to A, and so on). The Transpose dialog also has an option for transposing by diatonic steps; see [Transposing](#) for more information.

To undo your transposition, choose Edit-Undo, or press Ctrl-Z.

If you want to transpose to a lower key, do the same thing, except enter a negative number in the Transpose dialog's Amount box. For example, to lower the pitch of the song by a fifth, you'd enter "-7".

Note that you do not have to transpose entire tracks at one time; when you learn more about selecting smaller sections of music, you will be able to transpose individual clips, or parts of clips.

---

For step by step instructions:

[Transposing Percussion](#)

[Transposing with Key+](#)

## Transposing Percussion

You may be wondering why we did not transpose the percussion tracks. As mentioned earlier, in General MIDI each note in the percussion channel is mapped to a particular percussion instrument: a snare, a kick drum, a cymbal, a triangle, etc. Transposing the percussion tracks will not change the pitch of each note, but rather will change the instrument used to play each note! This is not usually the desired effect, so in general you would not use the transpose command on percussion tracks.

On the other hand, when a track contains events for only one percussion instrument (that is, all the notes are the same pitch), you can change the instrument by transposing the track. For example:

1. With the song playing, solo the Triangle track (track 7).
2. To hear the triangle more clearly, click in the Triangle track's Vel+ column and enter a value of 127. This increases the velocities of the triangle notes, which increases their volume. Press Enter.
3. Select the entire Triangle track by clicking the track number.
4. Choose Edit-Transpose to open the Transpose dialog box.
5. In the Amount box, enter -25.
6. Click OK.

The triangle sound is replaced with the sound of a cow bell.

To undo your transposition, choose **Edit-Undo**, or press Ctrl-Z.



## Transposing with Key+

Another way to transpose a track is to use the Key+ column in the track view. For example, let's raise the Sax track by an octave:

1. Click in the Sax track's Key+ column.
2. Enter a value of 12. This raises all the notes in the track by 12 half-steps, or an octave.
3. Press Enter.

That completes the first tutorial. In the next tutorial, you'll learn to record MIDI and digital audio tracks into Cakewalk.

## **Tutorial 2 - Recording MIDI and Digital Audio**

The second tutorial teaches you how to record with Cakewalk. You'll learn how to:

- set up the metronome
- record MIDI tracks
- use loop recording
- use punch-in recording
- record digital audio tracks

## **Rehearsal Time, Part 2**

In the previous tutorial, you used Cakewalk to help you rehearse a solo in one of your band's songs. Cakewalk played the backup parts of the song while you played your solo. Now that you've had some time to practice, you'd like to record your solo with Cakewalk so that you can play it back and see how you sound.

Cakewalk lets you record two different types of data: MIDI and digital audio. If you have a MIDI instrument connected to the MIDI In port of your sound card or external MIDI interface, you'll probably want to record your performance as MIDI. Otherwise, you'll need to hook your instrument, preamp, effects rack, mixer, or microphone to the appropriate audio input of your sound card, and record your performance as digital audio.

## Opening the Project File

If you haven't already done so, the first thing you need to do is load the project file containing your band's song.

1. Start Cakewalk.
2. Choose File-Open.
3. In the Open dialog box, select the file TUTORIAL1.WRK. Then click the Open button.

Cakewalk loads the project and opens the Track and Console views.

## Recording MIDI

Let's record a new MIDI track in the song. If you have no MIDI device to connect to your computer, you can use Cakewalk's Virtual Piano (included with Cakewalk) as a MIDI source. For more information about this tool, see [Virtual Piano](#).

---

For step by step instructions:

[Setting Up the Metronome](#)

[Checking Your MIDI Device Settings](#)

[Setting Up Playback](#)

[Recording MIDI](#)

[Listening to the Recording](#)

[Recording Another Take](#)

[Fine Tuning](#)

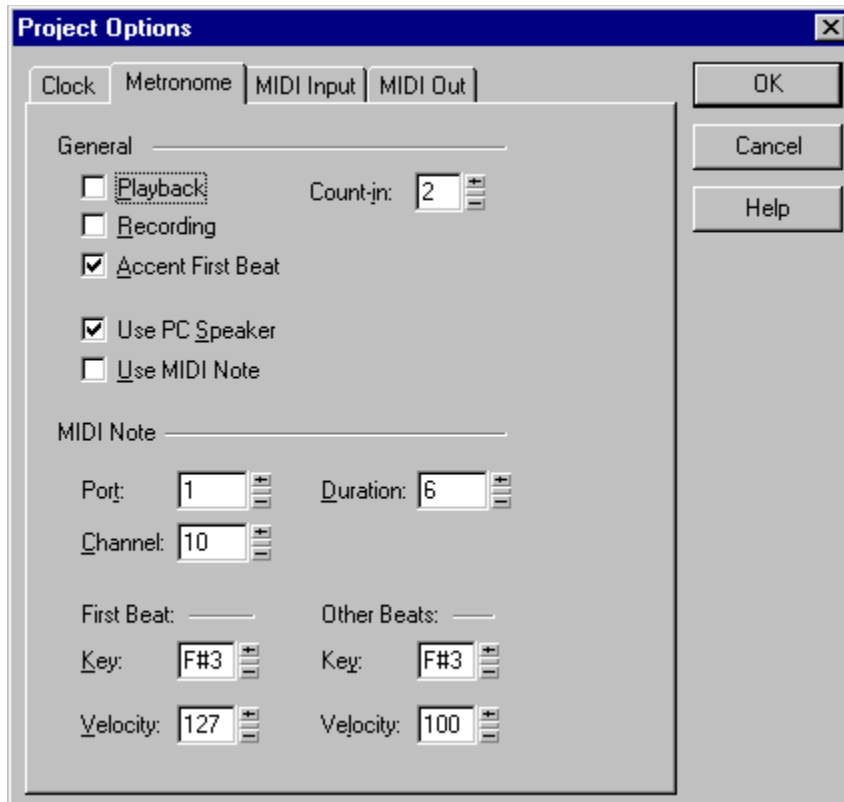
[Saving your Work](#)

## Setting Up the Metronome

Musicians often use a metronome to keep track of the beat. Cakewalk's metronome is more versatile than most real metronomes. It can be configured to sound on playback or recording; it can count off any number of lead-in measures; it can use the PC speaker or a MIDI note; and it can accent the first beat of each measure. It will also quickly and accurately follow any tempo changes that happen in the song.

Let's set up the metronome to play two count-in measures on the PC speaker when recording. Here's what to do:

1. Choose Tools-Project Options to open the Options dialog box.
2. Click the Metronome tab.
3. Set the Count-in value to 2.
4. Deselect the Playback and Recording options.
5. Select the Accent First Beat option.
6. Select the Use PC Speaker option and deselect the Use MIDI Note option.




7. Click OK.

By disabling the Recording option, you cause the metronome to turn off after the count-in measures. If you would prefer to hear the metronome during the entire song while recording, enable this option instead.

## Setting Up Playback

During recording, Cakewalk will play the rest of the song as usual. Depending on what instrumental part of the song you are going to record, you may want to mute one or more tracks, or solo certain tracks. For example, if you are going to record a new piano part, you might want to mute Track 1 so that you're not competing with the old piano part


while recording. To mute any track, click the track's Mute button .


You can also set other playback options, such as the Tempo ratio, to make your recording session easier.

## Recording MIDI


Now you'll record a new track in the song. Do the following:

1. Turn on your instrument and make sure that it is set up to transmit MIDI data.
2. Double-click the Name column in Track 8 and type a name for your new track.
3. Make sure that the Source column in Track 8 is MIDI Omni. If it isn't, double-click the Source column and set the Source to MIDI Omni in the Track Properties dialog box.

4. In Track 8, click the Arm button , or press A.

5. In the Transport toolbar, click Record .



You'll hear two measures counted in by the metronome, then playback and recording will begin. Go ahead and start playing!

When you finish recording, click the Stop button , or press the space bar. If you've played any notes, a new clip will appear in the Clips pane in Track 8. If no new clip appears, see [I Can't Record from My MIDI Instrument](#) for some troubleshooting hints.



## Listening to the Recording

Let's play back your performance on your sound card. For an added dimension, we'll open a few other views in the process. Do the following:

1. Double-click in the Source, Port, Channel, or Patch column in Track 8 to open the Track Properties dialog box.
2. For Port, select your sound card's MIDI synthesizer.
3. For Channel, select an unused channel, such as 7.
4. For Patch, select any instrument you like.
5. Click OK.
6. Choose View-Piano Roll to open the Piano Roll view.
7. Choose View-Staff to open the Staff view.
8. Choose View-Event List to open the Event List view.
9. Choose Window-Tile in Rows to tile the views.
10. To return to the start of the song, click the Rewind button .
11. Click Play .



It's almost as easy to listen to your performance on your MIDI instrument. For instructions on how to play a track on a MIDI keyboard, refer to the first tutorial.

The Piano Roll, Staff, and Event List views all show the same basic information - the notes in Track 8. The Piano Roll view displays the track as a player piano roll. The Staff view shows notes in traditional music notation. The Event List view lists all MIDI events for the track. When you need to edit a track, you can work in any of these views; on different occasions you may have reason to use different views.

When you're ready to continue, close the Piano Roll, Staff, and Event List views.

## Recording Another Take

Maybe your first attempt at recording resulted in a perfect performance, but maybe not. If you'd like to remove your first take and try again, do the following:

1. Choose Edit-Undo Recording to undo your recording, or press Ctrl-Z.
2. Click Rewind , or press 'W'.
3. The track is still armed for recording, so you don't need to re-arm it.
4. Click Record  or press 'R'.

Alternatively, you could record your next attempt on a new track. That way you can keep all the takes and select the best one later (or combine the best parts of each!) If you record on a new track, be sure to arm the new track for recording, and disarm the previous track.

The "Loop Recording" section (below) shows you a more convenient method for recording multiple takes.


## Fine Tuning

After you've recorded a MIDI track, you can use Cakewalk to make automatic adjustments to the timing of notes. For example, the Quantize command rounds off the start times and durations of notes to evenly-spaced note boundaries (quarter notes, eighth notes, sixteenth notes, etc.). Quantize lets you select full or partial rounding, and even lets you distort the timing into a "swing" beat. For more information on Quantize and other related commands, see [Changing the Timing of a Recording](#).

## **Saving your Work**

When you have something you'd like to keep, you can save the project:

1. Choose File-Save As.
2. In the File Name box, type a new file name, such as My Project.
3. Click OK.

The project is saved under the new name. From now on, you can click the Save button  to save your work.

## Loop Recording

If you'd like to record several takes successively, you can set up Cakewalk to loop over the song, or just some section of it. Cakewalk will record a new take during each loop, storing it in a new clip. You can set Cakewalk to place each clip in a new track, or to pile them all in one track.

Let's try recording a few takes of the section between markers A and B, placing each take in a new track.

---

For step by step instructions:



[Setting Up Looping](#)

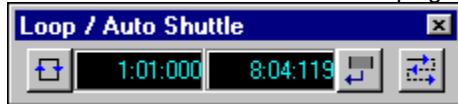
[Setting Up the Tracks](#)

[Loop Recording](#)

## Setting Up Looping


First, let's set up Cakewalk to loop over the section between markers A and B:

1. In the Clips pane, click in the ruler between marks A and B. This selects the range of time from marker A to marker B.
2. In the Loop/Auto Shuttle toolbar, click  to set the From and Thru times.
3. Click the  to turn on looping.



## Setting Up the Tracks

Now let's set up the first of the tracks where the takes will be stored:

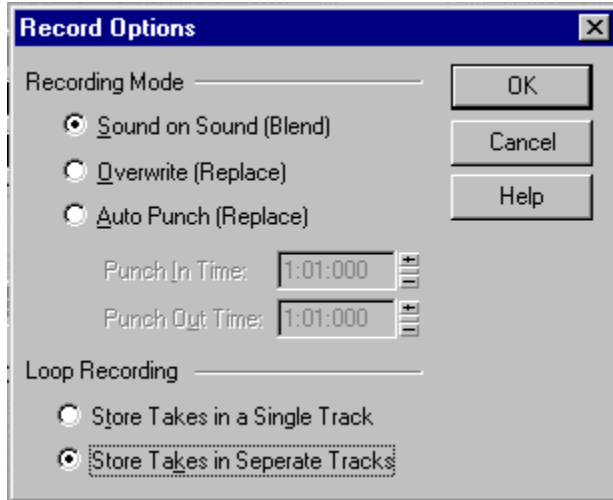
1. In Track 9 (or the first available empty track), double-click the Name column and give the track a name.
2. Click the Arm  button.
3. Double-click in the Source, Port, Channel, or Patch column to open the Track Properties dialog box.
4. Set the Source to MIDI Omni.
5. Set the Port to your sound card's MIDI synthesizer.
6. Set the Channel to an unused channel, or to the channel you used for your earlier take(s).
7. For Patch, select any patch you like.
8. Click OK.

As usual, you could set the tracks to play back on your MIDI instrument instead by specifying the appropriate Port and Channel.

## Loop Recording

Finally, let's record our takes:

1. Choose Realtime-Record Options to display the Record Options dialog box.
2. Choose the “Store Takes in Separate Tracks” option to store each new take in a separate track. Each time a new take starts, the settings from the first track will be copied to the new track.



4. Click OK.

5. Click Rewind .

6. Click Record .

Cakewalk will loop over the designated section and record your takes to successive tracks. If you want to erase the most recent take during loop recording, choose **Realtime-Reject Loop Take**, or press Ctrl-spacebar.

To stop recording, click Stop  or press the space bar.




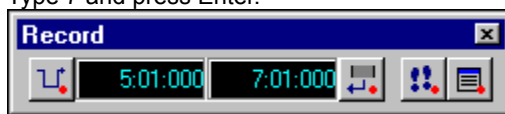
## Punch-In Recording



Imagine that one of your takes was close to ideal, except for one or two notes in one measure. Rather than recording another full take, you'd prefer to keep the take but replace that measure.


Punch-in recording lets you replace a section of a track. The way it works is this: First, you set the start and end times of the punch to the section you want to replace, and turn on punch recording. Then, you arm the track and start recording. You can play along with the original take to get the rhythm and feeling. However, nothing will actually be recorded until the punch start time. During the punch, the material already in the track will be replaced with what you record. When the punch ends, the song will continue to play, but recording will stop.

Let's try it. Suppose you want to replace measures 5 and 6 in the take in Track 8.

1. In the Record toolbar, click the Punch Record button .
2. Click on the punch in time, just to the right of the Punch Record button.
3. Type 5 and press Enter.
4. Click on the punch out time, just to the right of the punch start time.
5. Type 7 and press Enter.



6. Arm Track 8 and disarm any other tracks that are armed.
7. If you like, you can mute the tracks containing your other takes, or even solo Track 8.
8. If looping is still on, click the Loop button to turn it off.
9. Click Rewind .
10. Click Record .

Play along until you are past the punch end time, then click Stop . Replay your take to hear the difference. If it's still not right, try again! You can combine loop recording with punch-in recording; see [Punch-In Recording](#) for details.

## Recording Digital Audio

If your instrument is not MIDI-compatible, you must record your solo as digital audio data. To record digital audio, you need some sort of device hooked up to your sound card's line or mic input - an electric guitar, a preamp, a mixer, etc. If nothing else, try playing or singing into a microphone!

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For step by step instructions:

[Setting the Sampling Rate](#)

[Setting Up an Audio Track](#)

[Checking the Input Levels](#)

[Recording Digital Audio](#)

[Listening to the Recording](#)

[Recording Another Take](#)

[Loop and Punch-in Recording](#)

## **Setting the Sampling Rate**

Each Cakewalk project has a parameter that specifies the sampling resolution for all digital audio data in the project. You should set this rate before recording any digital audio.

1. Choose Tools-Audio Options, and click the General tab.
2. Select a Default Sampling Rate. For CD quality sound, use 44100 Hz.
3. Click OK.

Lower sampling rates will save disk space, but will result in lower-quality audio. Before embarking on any major project, try sampling at different rates to determine which one best suits your needs.

## Setting Up an Audio Track


Let's set up a track for digital audio.

1. In the Track pane, in the first available empty track, double-click the Name column and enter a name for your new track.
2. Make sure that the Source column in your new track set to your sound card's audio input. If it isn't, double-click in the Source column and set the Source in the Track Properties dialog box.

## Checking the Input Levels

Before trying to record, you need to check and adjust the audio input levels. If your audio input is too soft, it will be lost in the background noise. If it is too loud, it will overload the input channel and be distorted/ clipped.

Here's how to check the audio input levels:


1. Open the Console view and click the Arm button  in your new audio track. An audio meter will appear next to the track's volume fader.
2. Perform as you would during recording. Watch the meters respond to the sounds you produce.
3. If the meters never come even close to the maximum, increase the input level.
4. If the meters even occasionally reach the maximum, decrease the input level.

The idea is to try to get the input level to rise as high as possible, but without ever reaching the maximum. That way, you get the strongest possible signal without distortion.


If you don't see any movement of the audio meters, you may have an audio input problem. Refer to [I Can't Record Any Audio](#) for troubleshooting hints.

## Recording Digital Audio

It's time to record!



1. If you haven't already set up the metronome, follow the directions in the section "Setting Up the Metronome" (earlier in this tutorial) to set the metronome for a two-measure count-in.
2. Mute any tracks you don't want to hear while recording, or solo the tracks you do want to hear.
3. The track is already armed for recording.
4. In the Transport toolbar, click Record .

You'll hear two measures counted in by the metronome, then playback and recording will begin. Go ahead and perform!

When you finish recording, click the Stop button , or press the space bar. A new clip will appear in the Clips pane. If no new clip appears, see [I Can't Record Any Audio](#) for some troubleshooting hints.



## Listening to the Recording

Let's play back your performance. Do the following:

1. Double-click in the Source, Port, Channel, or Patch column in the new track to open the Track Properties dialog box.
2. For Port, select your sound card's audio output device.
3. Click OK.
4. To return to the start of the song, click the Rewind button .
5. Click Play .

## Recording Another Take

If you'd like to delete your performance and try again, do the following:

1. Choose Edit-Undo Recording to undo your recording, or press control-Z (Undo).
2. Click Rewind .
3. The track is still armed for recording, so you don't need to re-arm it.
4. Click Record .

Alternatively, you could record your next attempt on a new track.



## **Loop and Punch-in Recording**

Loop and Punch-in work the same for digital audio recording as they did for MIDI recording. For more information, refer to the relevant sections above, or to [Loop Recording](#) or [Punch-In Recording](#).

## **Recording Multiple Channels**

If you can gather the entire band around your computer, and if you have the proper equipment, you can record a full performance all at once. If you have several MIDI instruments, you can route their input into your sound card through a MIDI merger; data that arrives on different MIDI channels can be routed to different tracks. Likewise, a typical sound card can record audio on both right and left channels; each can be recorded on a different track.

That completes the second tutorial. Now you've learned the basics of playing and recording material for your projects. In the next tutorial you'll learn about basic audio editing techniques, audio effects, and mixing with the Console view.

## **Tutorial 3 - Audio Editing and Mixing**

The third tutorial teaches you how to edit digital audio and apply audio effects. You'll learn how to:


- stretch or compress music to fit into a certain period of time
- edit and rearrange audio data
- apply effects to audio data
- apply real-time effects in the Console view
- control the mix during playback
- save a project as a Cakewalk Bundle file
- export a project as a RealMedia file

## **Audio Engineering**

You're an audio engineer. One of your clients has an idea for a 20-second radio spot, and has sent you a script and a project containing some raw material from which to start. Your task is to finish the radio spot.

## Opening the Project File

First let's load and play the project file from your client. Do the following:

1. Start Cakewalk.
2. Choose File-Open.
3. In the Open dialog box, select the file RADIOSPOT.BUN. Then click the Open button.
4. Click Play .

The project contains several tracks. Tracks 1 through 6 are MIDI tracks that have an edited version of Boston Rain, which we'll use as background music for the radio spot.

## The Plan

Let's talk about what you need to do to transform this into a 20-second radio spot.

[Music](#)

[Script](#)

## **Music**

Your client likes the edited version of “Boston Rain” as background music, but it is too long for the 20 second spot. There are two choices: you could fade the volume down as you approach the 20-second mark, or you could speed up the music to stretch it out. In this tutorial, we'll use the second option.

## Script

Your client has supplied the following script:

### Music:

(Edited “Boston Rain”)

### Announcer:

>From Cakewalk, makers of the world’s number-one selling music and sound software, comes Cakewalk Version 7 - the most powerful release yet for Windows 95 and NT.

(Pause)

With Cakewalk, you can produce complete music and audio projects in one integrated system.


(Pause)

Cakewalk is available at finer music and computer stores worldwide, or by calling 1-888-CAKEWALK.

## Saving your Work

Since we are going to do some serious editing later in the tutorial, you may want to save your work as you go along:

1. Choose File-Save As.
2. In the File Name box, type an unused file name, such as My RadioSpot.
3. For Save as Type, select Normal.
4. Click OK.

The project is saved under the new name. From now on, you can click the Save button  to save your work.



## Adding the Announcer

Your next task is to record the announcer track. The procedure is similar to the one we used in the last tutorial, although you don't need to set the sampling rate (since it is already set) and you don't need to turn on the metronome (the music will give you timing cues for the beginning and ending of the spot).

To record the announcer track, you'll need a microphone.

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For step by step instructions:

[Setting Up the Announcer Track](#)

[Checking the Input Levels](#)

[Recording](#)

## **Setting Up the Announcer Track**

Let's create a new track for the announcer.



1. In the Track view, select Track 1 by clicking the track number.
2. Right-click the track number and Choose Insert Track from the pop-up menu to insert a new track.
3. Double-click the Name column and type “Announcer” for the name of the new track.
4. Double-click in the Source column to open the Track Properties dialog box.
5. Set the Source to your sound card's audio input.
6. For Port, select your sound card's audio output.
7. Click OK.


## **Checking the Input Levels**

Before trying to record, you need to check and adjust the audio input levels. If your audio input is too soft, it will be lost in the background noise. If it is too loud, it will overload the input channel and be distorted/ clipped. You can do this by using the Console view, as we did in the previous tutorial. Please refer to that section if you need to know how to do this.

## Recording

Let's record the announcer track.

1. Make sure that the Announcer track is armed for recording.
2. In the Transport toolbar, click Rewind , then click Record .
3. Read the script, with feeling.

When you finish recording, click the Stop button , or press the space bar. A new clip will appear in Track 1 in the Clips pane.

Play back what you've recorded and see how it sounds! If you don't like the results, choose Edit-Undo Recording (or Ctrl-Z) and try again. It's OK if the announcer voice over doesn't fit exactly...we will be editing it to make it shorter soon.

When you have a recording you like, remember to disarm Track 1 and save your work.

## Trimming the Announcer

Our next task is to edit the announcer segment in order to make it fit within the 20 seconds. There are two parts to this. First, we'll trim the beginning of the audio and move the entire voice-over so that it starts at the beginning. Then, we'll remove the pauses or breaths and slide the segments around in time until it fits.

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For step by step instructions:




[Opening the Audio View](#)

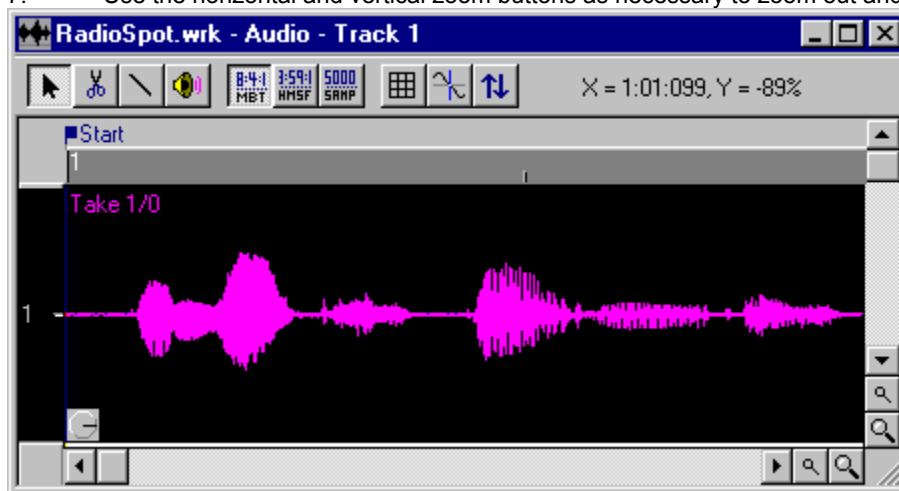
[Trimming the beginning of the Announcer](#)

[Renaming audio clips](#)

## Opening the Audio View


We'll perform our editing work in the Audio view. To set up the Audio view, do the following:

1. Solo the Announcer track, so that we don't hear the music while we edit.
2. Select the Announcer track (Track 1) by clicking on the track number.
3. Choose View-Audio to open the Audio view. The audio data in Track 1 is displayed.
4. If selected, deselect the Snap to Time option .
5. Select the Snap to Zero Crossing option . With this option, any selections we make will snap to the nearest zero crossing in the audio waveform. This prevents unwanted pops and clicks resulting from any edits we make.
6. Click the H:M:S:F button  to display the ruler in SMPTE time.
7. Use the horizontal and vertical zoom buttons as necessary to zoom out and in on the waveform.



## Trimming the beginning of the Announcer

Now we'll see how to trim the beginning of the announcer's read. This will eliminate any unwanted silence at the beginning. Do the following:

1. In the Audio view, select the Scrub tool .
2. Use the horizontal zoom buttons until you can see enough of the clip to identify the 3 separate sections.
3. Click on the clip to hear the audio near the beginning of the voice-over. Let go when you have reached the point directly before the first word.
4. Right-click on the clip and select Split from the pop-up menu. Click OK in the dialogue box that appears.

The clip has now been split into two clips, each of which has the same name. The first portion, which should only be silence, is currently selected.

1. Right-click on the first portion of the audio clip (the one that is only silence) and select Delete from the pop-up menu.
2. In the dialogue box that appears, make sure that only "Events in tracks" is selected. This means that other items, such as tempo changes and markers will not be deleted.
3. Click OK.

The silence that existed before the announcer is now gone, and now, we can move the remaining piece of voice-over so that it begins right at the start of the spot.

1. Click on the announcer's audio clip.
2. While holding down the mouse button, drag the clip so that it starts closer to the beginning of the music. Let go of the mouse button.
3. In the dialogue box that opens, choose the "Replace Old with New" option and click OK.
4. Rewind to the beginning of the project and hit play. Listen to where the voice-over begins. If you need to move it earlier, follow steps 1-3 again.

## **Renaming audio clips**

Now that we've got the announcer starting in the right place, let's rename that single audio clip:


1. Right-click on the announcer audio clip.
2. Choose Event Properties from the pop-up menu.
3. In the Name field, enter the name "Edited V/O".
4. Click OK

Now, our audio clip bears the name Edited V/O, which is more descriptive. Next, we will remove the pauses between sections of the script. You may want to save your work before continuing.



## Editing the Announcer

Now that the announcer's read begins at the correct time, we will remove any pauses or breaths that exist. This will allow us to fit the entire read into the allotted time. To do so, we will split the audio and delete the silence in the same way that we trimmed the clip above

1. In the Audio view, choose the Scrub tool .
2. Find the beginning of the silence. Right-click and choose Split. Click OK in the dialogue.
3. Find the end of the silence. Right-click and choose Split. Click OK in the dialogue.
4. Right-click on the newly defined clip that is comprised entirely of silence. Choose Delete from the pop-up menu and make sure that only "Events in tracks" is selected. Click OK.
5. Repeat this so that all of the silence has been deleted.

The silence has been deleted, and now we should move the audio that followed it earlier.

1. Click on the middle section of voice-over and drag it earlier in the track - so that a more natural pause exists between the two sections. Release the mouse button.
2. In the dialogue that appears, choose either "Blend Old with New" or "Replace Old with New", then click OK.
3. Listen to the read. If the pause seems natural, do the same to the last section. If not, try moving the middle section until the pause is correct.

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For step by step instructions:

[Combining Audio Clips](#)

## Combining Audio Clips

After you have moved the audio around and finished tightening pauses, you may want to have a single, continuous audio event - instead of three separate ones. To do this:

1. Select all of the clips by holding down Shift while clicking on each of them.
2. Right-click on any of the clips and select Combine from the pop-up menu. The clips will combine into a single audio event.

If you overlapped any of the clips when you moved them, you will be presented with a dialogue asking how to treat the overlapping parts. For more on this see [Moving and Copying Clips](#).

## Mixing the Radio Spot

Now let's go to the console view and finish the project. We'll apply real-time audio effects to the announcer track, then automate the faders in real time.

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For step by step instructions:

[Preparing the Console](#)







[Applying Real-Time Audio Effects](#)

[Real-time Mixing Control](#)

[Grouping Controls](#)

## Preparing the Console

Before starting, let's make sure the Console view is set up correctly.

1. If the Console view is not open, choose View-Console.
2. Select all four Show options (Show Audio Tracks , Show MIDI Tracks , Show Aux Buses , and Show Mains )  
().
3. Click the Manage Strips button  to open the Manage Strips dialog box. Make sure all options are selected and click OK.



## **Applying Real-Time Audio Effects**

It's quite simple to apply real-time effects to a track. Let's add a small amount of equalization to the announcer track.

1. In the Effects section, right-click and choose Cakewalk-FX Reverb/Chorus.
2. Double-click an effect to see the settings
3. Double-click the effect to display the settings.
4. Make sure that the Current Filter is set to 1.
5. Adjust the Center Frequency knob to around 2500 Hz.
6. Adjust the Q to 6.
7. Adjust the Gain to +3.6 dB
8. Change the Current Filter to 2.
9. Adjust the Center Frequency knob to around 7500 Hz.
10. Adjust the Q to 6.
11. Adjust the Gain to +3.6 dB

Play the project and hear what it sounds like. At this point we are nearly finished; all that's left is to balance the mix.

## Real-time Mixing Control

The Console view is a live mixer. During playback, you can control the main volume and the volume and panning of each track. You can mute and solo tracks. You can turn routing to Aux buses on and off, and change the send levels. And, on MIDI tracks, you can control the Chorus and Reverb and change patches on the fly. Try it now! To learn more about how to use the controls in the Console view, see [Mixing](#).

## Grouping Controls

To assist in manipulating the controls, you can tie faders to one another. For example, if you want to increase the volume level on three tracks together, you can assign them to a group. Then, when you move one volume fader, you move them all. You can even have the controls move in opposite directions - for example, to fade one track in and another out.

To group faders:


1. Right-click on the fader for track 2 (Piano).
2. In the pop-up menu, choose Group and select A from the drop-down list. This assigns the fader to Group A.
3. Repeat this for all of the MIDI tracks.

Now, you've grouped all of the MIDI tracks together. When you move one fader, all of the others follow that movement. If you want to move a single fader independently of the others, hold down the Ctrl key while moving the fader. For more on creating and using control groups, see [Using Control Groups](#).

## Automating your Mix

Finally, you can record the movements and settings of the mix, or **automate** them. To do so:

1. Rewind to the beginning of the spot.
2. Move the faders, pans and any other controls to the initial settings you desire. You should set up a good balance between voice and music.


3. Enable Automation recording by clicking on the Record Automation button .


4. Begin playback, and move the faders as needed so that the balance between voice-over and music is maintained through the entire spot. If you want, adjust the pan controls, too.

Near the end of the spot, you may want to fade the music out. To do this:

1. Grab any of the faders for the MIDI tracks and pull it down. Because they are grouped, all faders for the music tracks will lower.

You've now automated your radio spot. Now let's listen to it again, and watch the faders move automatically:

1. Rewind to the beginning.
2. To make sure the faders show their current value, enable Update by making sure the Update button  is pressed in the Console view toolbar.
3. Press play.

You'll see the faders move just the way they moved when you recorded their movements. When you're done tweaking the mix, disable the Record Automation  button.

For more information about automation and the Console view, see [Recording Automation Data](#).



## **Saving the Project**

If you've been good, you've been saving your work all along. So far, though, you've been saving the project as a normal Cakewalk project file (extension.WRK). The normal Cakewalk file contains all the project's musical data, as well as screen layout and other project information. However, this file does not contain the project's digital audio data – those data are managed automatically by Cakewalk and stored in a different location. By managing the digital audio data, Cakewalk is able to store the data more efficiently and save disk space. If you work with large samples, this can be quite significant.

If you would like to send your Cakewalk project to other people, though, you need to create a file containing all the project's data, including the digital audio data.

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For step by step instructions:

[Saving the Project as a Bundle File](#)

[Saving the Project as a RealMedia File](#)

## **Saving the Project as a Bundle File**

A Bundle file (extension .BUN) is similar to a normal project file, but it also contains the project's digital audio data. Bundle files must be opened and played with Cakewalk. To save the project as a Bundle file, do the following:

1. Choose File-Save As.
2. Choose Cakewalk Bundle from the Save as Type list.
3. Enter a file name in the File Name box.
4. Click Save.

## **Saving the Project as a RealMedia File**

RealMedia is a format intended for publishing audio content on the World-Wide Web. A RealMedia metafile (extension .RTS) contains file references and instructions for playing audio, video, text, and other content in real time across an Internet connection. When you save your project as RealMedia, Cakewalk writes up to three files: the RealMedia metafile, a MIDI file (extension .MID) containing the project's MIDI tracks, and a RealAudio file (extension .RA) containing the project's audio tracks.

To save your project as RealMedia, do the following:

1. Select all the tracks in your project by dragging over the track numbers.
2. Choose Tools-Export Audio.
3. Choose RealMedia Metafile from the Save as Type list.
4. Enter a file name. This name will be used as a base for all three files.
5. Click Save.
6. Since the project contains audio data, the RealAudio Settings dialog box opens.
7. For Title, type RadioSpot.
8. For Author, type your name.
9. Consult the online help for assistance in deciding what other options are suitable for publishing RealMedia on your web site.
10. Click OK.

That's it! You've finished all three tutorials, and learned quite a bit about how to use Cakewalk in the process. Now you're ready to move on. Here are some ways to proceed:

1. Reading. Chapters 3 through 9 cover the core features of Cakewalk in a lot more detail than you've seen here.
2. Learn by trying. Now that you've covered the basics, there's a lot you can learn simply by experimenting with the software. Go ahead and try it out; you can always use Undo if you make a mistake.
3. Use the on-line help. If you need information on a particular topic, look in the on-line help (either the contents or the index) to find the information you need. Or, simply look in the Index at the back of the User's Guide.

## Playing Sound and Music

When you play your song, you have full control over the tempo or speed of playback, which tracks are played, which sound cards or other devices are used to produce the sound, and what the tracks sound like.

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See also:

[The Now Time and How to Use It](#)

[Controlling Playback](#)

[Track by Track Playback](#)

[Changing Track Settings](#)

## The Now Time and How to Use It

Every project has a current time, known as the **Now time**, which keeps track of where you are in a project. The Now time appears in both the large Transport toolbar and the Position toolbar, in two formats:



The measure, beat, and tick number (MBT) identify the Now time in musical time units. Ticks are subdivisions of quarter notes, and indicate the timebase of the song. For more information about the timebase, see [Setting the MIDI Timing Resolution](#)

Times expressed in measure, beat, and tick (MBT) format:

Time...	What it means...
1:01:000	First beat of the first measure
9:04:000	Fourth beat of the ninth measure
4:02:060	The 60th tick of the second beat of the fourth measure

The second time format is commonly referred to as the SMPTE time. SMPTE is the acronym for the Society of Motion Picture and Television Engineers. In this format, time is measured in hours, minutes, seconds, and frames. It's not necessary for a project to begin at time zero in this format — any arbitrary time can be used to represent the start of a project.

Times expressed in SMPTE format (assuming that zero is the start time):

Time...	What it means...
00:00:00:00	The beginning of the project
00:05:10:00	Five minute and ten seconds from the beginning of the project
01:30:00:00	One hour and thirty minutes into the project
00:00:00:05	Five frames into the project

Pro Audio provides many ways to set the Now time.

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For step by step instructions:

[How to Change the Now Time](#)

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See also:

[Displaying the Now Time in Large Print](#)

[Other Ways to Set the Now Time](#)

## To Change the Now Time

Change the Now time in one of these ways:

- Click at the desired time in the time ruler in the Track, [Piano Roll](#), [Staff](#), or [Audio](#) view
- Click on the Now time in the transport toolbar, enter the desired time, and press Enter
- Choose Go-Time or press F5, enter the desired time, and click OK
- Click on an event in the Event List view

When entering a time in MBT format, the beat and tick value are optional. You can use a colon, space, or vertical bar to separate the parts of the Now time:

You enter...	The Now time is set to...
2	2:00:000
2 1	2:01:000
4 2 0	4:02:000
9:1	9:01:000
5 1:30	5:01:030

When entering a time in SMPTE format, you can enter a single number (hours), two numbers (hours and minutes), three numbers (hours, minutes, and seconds) or all four numbers.

If you click in the time ruler while the snap grid is enabled, the Now time snaps to the nearest point in the grid. By setting the grid size to a whole note or quarter note you can easily set the Now time to a measure or beat boundary.

You can also use the buttons and the scroll bar in the Transport toolbar to adjust the time, as shown here:



## Displaying the Now Time in Large Print

Home Studio can display the Now time in large print, so that it's easier to see when you are far away from your monitor (for example, when you're at your keyboard or other MIDI instrument), or when several people need to read the Now time from a distance.

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For step by step instructions:

[How to Display the Big Time View](#)

## To Display the Big Time View

1. Choose View-Big Time to display the Big Time view.
2. Change the settings according to the table:

To do this...	Do this...
Switch time format	Click on the view to toggle between MBT and SMPTE time
Change font or color	Right-click on the view, choose the font and color you want, and click OK
Change the size of the view	Drag any corner of the view to change its size
Home Studio ignores font styles and effects such as strikeout and underline.	





## Other Ways to Set the Now Time

There are a variety of commands and keyboard shortcuts you can use to set the Now time:

Command	Shortcut	What it does
Go-Time	F5	Lets you enter the Now time in the toolbar or in a dialog box
Go-From	F6	Sets the Now time to the From time
Go-Thru	F7	Sets the Now time to the Thru time
Go-Beginning	Ctrl-Home	Sets the Now time to the begin ning of the project
Go-End	Ctrl-End	Sets the Now time to the end of the project
Go-Previous Measure	Ctrl-PgUp	Sets the Now time to the start of the previous measure
Go-Next Measure	Ctrl-PgDn	Sets the Now time to the start of the next measure

If your project has markers, you can use the [Marker toolbar](#) to set the Now time.

To do this...	Do this...
Skip to the next marker	Click  on the Marker toolbar (or press Ctrl-Shift-PgDn)
Skip to the previous marker	Click  on the Marker toolbar (or press Ctrl-Shift-PgUp)
Jump to any marker	Choose the marker name from the list in the Marker toolbar, or press F5 when typing a Now time in the Transport tool bar

For more information about markers, see [Creating and Using Markers](#).

## Controlling Playback

Home Studio is very simple, and you have your choice of tools, menu commands, or shortcut keys for most common operations:

When you start playback, the Now time updates continuously to show the current time. When you stop playback, the Now time stops at the point in time where you stopped. When you start playback again, it continues from the same point in time.

If the Now time is advancing but you don't hear any sound, see [Troubleshooting](#). If you are using MIDI sync or MIDI time code sync, Pro Audio waits to receive external timing data before it begins playing. For more information, see [Synchronization](#).

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For step by step instructions:

[How to Start and Stop Playback](#)

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See also:

[Handling Stuck Notes](#)


[Loops](#)

## To Start and Stop Playback

### To do this...

### Do this...


Start playback

Press the spacebar, click , or choose [Realtime-Play](#)

Stop playback

Press the spacebar, click , or choose [Realtime-Stop](#)

Rewind to the start of the project

Click , press the W key, or choose [Realtime-Rewind](#)

Skip to the end of the project

Click 

## Handling Stuck Notes

Under MIDI, the events that turn notes on are separate from the events that stop notes from playing. Normally, when you stop playback, Home Studio attempts to turn off all notes that are still playing. Depending on how your equipment is configured, it's possible for notes to get stuck in the "on" position. Realtime-Reset stops all notes from playing.


**Note:** You can control the MIDI messages that are set by Realtime-Reset. See [Initialization Files](#) for more information.

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For step by step instructions:

[How to Clear Stuck Notes](#)

## To Clear Stuck Notes

- Choose Realtime-Reset, or click  in the toolbar.

## Loops

Sometimes you want to listen to one portion of a project over and over, either so you can play along and rehearse, or because you want to edit that section of the project while it is playing, and hear the results as you make changes. Home Studio has a playback loop feature that makes this simple.

Loops are defined in the Loop/Auto Shuttle toolbar, as shown here:



To set up a loop, you do three things:

- Set the start time of the loop
- Set the end time of the loop
- Enable looping

That's all there is to it. From then on, Home Studio will automatically jump back to the start of the loop when it reaches the end. There are three additional settings that affect the details of how looping operates:

Option...	How it works...
Rewind to Start Time on Stop	Whenever you stop playback for any reason, Home Studio rewinds immediately to start of the loop (this option is off by default)
Stop at the end time	Playback does not proceed beyond the end of the loop
Loop continuously	When playback reaches the end of the loop and rewinds to the start, playback continues automatically (this option is on by default)

With the default option settings, Home Studio will play the loop over and over again, continuously. You can stop and resume playback at any point during the loop.

If you start playback before the loop start time, Home Studio will play until the loop end time is reached, and then jump back to the loop start time. If you start playback after the loop end time, the loop is ignored.

The Rewind command operates slightly differently when looping is in effect. The first time you Rewind, the Now time is set to the start of the loop. If the Now time is already at the start of the loop, Rewind takes you to the beginning of the project. From then on, Rewind switches back and forth between the loop start time and the start of measure 1.

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For step by step instructions:

[How to Set Up a Playback Loop](#)


[How to Change the Loop Settings](#)

[How to Cancel a Playback Loop](#)

## To Set Up a Playback Loop


1. Set the loop start and end times in one of the following ways:
  - Drag the mouse between two points in the time ruler of the Track, Piano Roll, Staff or Audio view to select a range of times, and then click {bmc c3p9n1.bmp to copy the selection time to the loop time
  - Click between two markers in the Track, Piano Roll, Staff or Audio view to select a range of times, and then click  to copy the selection time to the loop time
  - Type the loop start and end times directly into the toolbar
  - Hold the Alt key and drag the mouse across one or more clips.
2. Click  to turn on looping.

## To Change the Loop Settings

1. Click  or choose Realtime-Loop and Auto Shuttle to display the Loop Settings dialog box.
2. Check the options you want to use.
3. Click OK when you are done.



## To Cancel a Playback Loop

- Click  in the toolbar to disable looping.

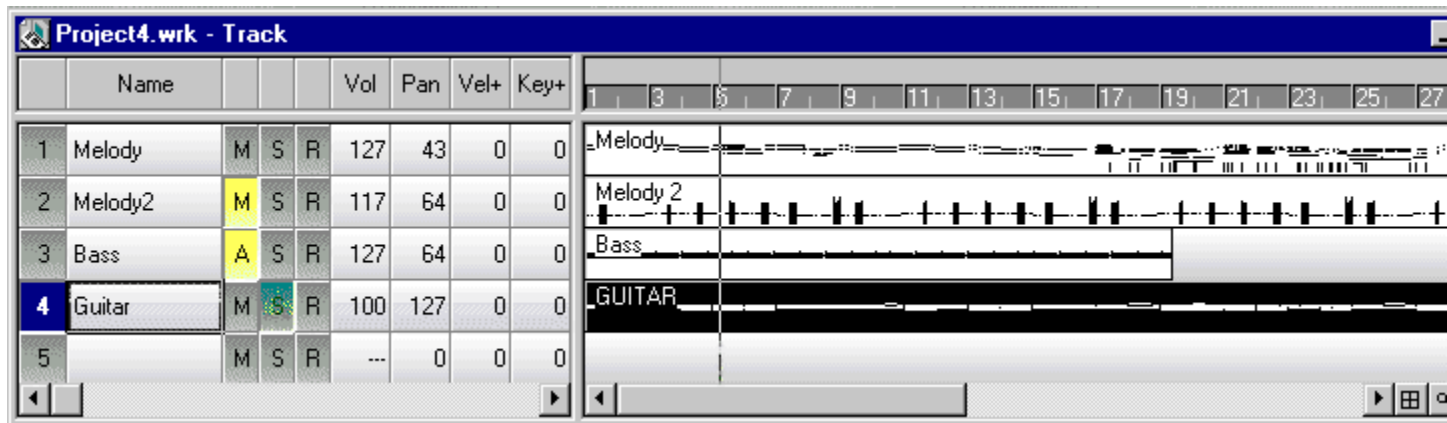
## Track by Track Playback

Home Studio lets you play back any combination of tracks at one time by changing the track **status**. There are four different status settings that are available for each track:

Status...	What it means...
Normal	The track is played as usual
Mute	The track is not played, but you can turn it back on while playback is in progress
Archive	The track is not played, and you must stop playback to re-enable it
Solo	Only those tracks which are designated as solo tracks are played; all others are muted.

While playback is in progress, you can mute and un-mute tracks in any combination, so you can hear only the tracks that you want. You can change the status of a track in the Track view, in the Console view, or using commands on the Track menu.

The status of each track is shown in the Track and Console views:



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The track status is saved with the Home Studio project file. If you save a Home Studio project as a standard MIDI file, however, all tracks are saved without any mute, solo, or archive indicators.

See also:

[Silencing Tracks](#)

[Soloing Tracks](#)

## Silencing Tracks

When a track is muted, Home Studio processes the track while playback is in progress so that you can un-mute the track without stopping playback. If you have lots of muted tracks, this can place a heavy load on your computer. Archived tracks, on the other hand, don't place any load on your computer. Therefore, if there are tracks you want to keep, but don't need to play, you should archive them instead. Archived tracks are indicated by the letter A in the Mute button that is displayed in the Track and Console views.

0 When you mute or un-mute a track while playback is in progress, there may be a slight delay before you hear the effect of the change. This is to be expected, and does not indicate a hardware or software problem.

1 For step by step instructions:

[How to Mute or Un-mute Tracks](#)

0 [How to Archive or Un-archive Tracks](#)

### **To Mute or Un-mute Tracks**

- To mute or un-mute an individual track, click the Mute button in the Track or Console view
- To mute or un-mute several tracks at once, select the tracks and choose Track-Mute; or select the tracks, right-click, and choose Mute from the menu

### **To Archive or Un-archive Tracks**

1. Select one or more tracks in the Track view
2. Choose Track-Archive, or right click and choose Archive from the menu to toggle the archive status of selected tracks

## Soloing Tracks

Sometimes you want to hear a single track, or a few tracks at once, without having to go to the effort of muting all the other tracks. You can do this by soloing the tracks you want to hear.

As soon as any track is marked as a solo track, Home Studio ignores all mute settings and plays *only* the track or tracks that are set to solo. Any number of tracks at one time can be marked as solo tracks. All of these tracks will play together. As soon as the solo status of the final solo track is turned off, Home Studio once again plays back tracks based on their mute settings.

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For step by step instructions:

[How to Solo or Un-solo Tracks](#)

### **To Solo or Un-solo Tracks**

- To solo or un-solo an individual track, click the Solo button in the Track or Console view
- To solo or un-solo several tracks at once, select the tracks and choose Track-Solo; or select the tracks, right-click, and choose Solo from the menu

## Changing Track Settings

Each track in a project contains either MIDI or audio information, and has a variety of settings that determine how the track sounds. By changing these settings, you can change the sound of your project. For audio tracks, you control the volume, the stereo panning, and the output device that is used to produce the sound. For MIDI tracks, you control many additional settings, including the type of instrument sound that is used to play the notes stored in the track.

Here is a summary table of the different track parameters and how they are used. The following parameters apply to all types of tracks:

Setting...	What it means...	See...
Number	A sequential track number, ranging from 1 to 256, used only for reference.	<a href="#">Changing the Order of Tracks</a>
Name	A name that you assign to the track for easy reference	
Source	The input source for the track, used in recording	<a href="#">Choosing a Source</a>
Port	The output device through which this track is played. Also indicates whether the track contains MIDI or audio data	<a href="#">Assigning Tracks to Ports</a>
Volume	The starting volume level for the track, ranging from 0 (silent) to 127 (maximum volume)	<a href="#">Adjusting Volume and Pan</a>
Pan	The stereo distribution of the output, ranging from 0 (hard left) to 127 (hard right), with a value of 64 indicating sound that is centered left-to-right	<a href="#">Adjusting Volume and Pan</a>
Vel+	The change in velocity (volume) that will be applied to notes in this track on playback, ranging from 127 to +127	<a href="#">Adjusting the Note Velocity (Vel+)</a>

The following parameters apply only to MIDI tracks:

Setting...	What it means...	See...
Channel	The MIDI channel through which the notes will be played	<a href="#">Assigning a MIDI Channel (Chn)</a>
Bank	The set of patch names available for this track	<a href="#">Choosing the Instrument Sound (Bank and Patch)</a>
Patch	The instrument sound that will be used for playback	<a href="#">Choosing the Instrument Sound (Bank and Patch)</a>
Key+	The number of steps by which the notes in this track are transposed on playback (e.g., 12 to transpose up one octave)	<a href="#">Adjusting the Key</a>
Size	The total number of MIDI events stored in the track	



Time+      An offset applied to the start time of the events in the track [Adjusting the Time Alignment](#)

Track settings are shown in the track pane – the left half of the Track view. Here's what the track pane looks like:



You can rearrange and resize the columns of the track pane as shown below:

<b>To do this...</b>	<b>Do this...</b>
Change the size of the track pane	Drag the divider that separates the track pane and clips pane to the left or right
Resize a column	Move the mouse to the top of the column and drag the column divider to the right or left
Move a column	Click on the column name and drag it to the left or right

See also:

- [Changing Values in the Track Pane](#)
- [Setting up Output Devices](#)
- [Assigning Tracks to Ports](#)
- [Choosing the Instrument Sound \(Bank and Patch\)](#)
- [Another Way to Assign a Patch to a Track](#)
- [Adjusting Volume and Pan](#)
- [Assigning a MIDI Channel \(Chn\)](#)
- [Adjusting the Key/Transposing a Track \(Key+\)](#)
- [Adjusting the Note Velocity \(Vel+\)](#)
- [Adjusting the Time Alignment of a Track \(Time+\)](#)

## Changing Values in the Track Pane

You can change the values in the Track pane in a number of ways.

- Move the highlight to the cell you want to change (using either the mouse or the arrow keys) and type the new value
- Double-click on the cell, and then type the new value

You can also change numeric values as shown below:

To do this...	Do this...
Change the value by one	Press the gray - or + key, or click on the spinner control
Change the value by 10	Press the [or] key, or right-click on the spinner control
Enter a new value	Type the new value from the keyboard and press Enter

Finally, you use the mouse to change values in the track pane. Click and hold the mouse button on the value you want to change, and then move the mouse forward or back until you reach the value you want. For numeric fields, you can press and hold both mouse buttons to change the value by 10 at a time.

There are a few special shortcuts for setting certain parameters:

Parameter...	Shortcut...
Source	Hold the Shift key and click in the cell to cycle through the available sources
Key+	Right-click and the [and] keys change the value by 12 (a full octave) instead of 10

You can change the value of a track parameter for several tracks at once using commands on the Track-Property menu. For example, to assign a group of tracks to the same output port, select the tracks you want to assign, and then choose Track-Property-Port. These menu commands can also be used to change the settings for individual tracks.

All track parameters are saved with a Home Studio project. However, if you export a project to a standard MIDI file, several of the parameters (Key+, Vel+, Time+, and Chn) are applied to the MIDI data as the file is exported. Other parameters, including Source, Port, Mute, Solo, and Archive, are lost when you export the project to a MIDI file. For more information, see [MIDI Files](#)

The following sections contain more information about many of the parameters in the Track view. For more information about the track source and the track Arming button, see [Preparing to Record](#).

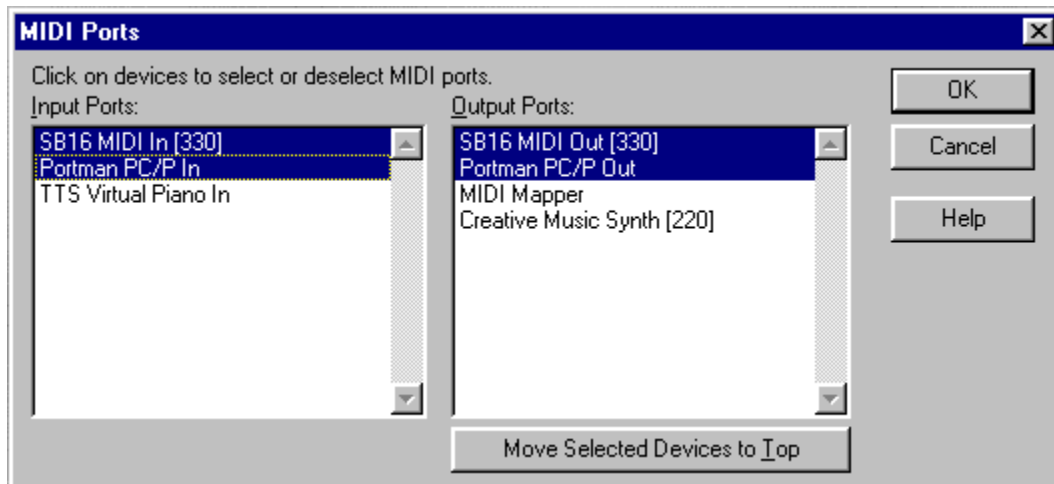
## Setting up Output Devices

The port setting for a track determines which piece of hardware will be used to produce the sound stored in your project. In a very simple equipment setup, you might have only a computer equipped with a basic sound card. In this case, you want to play all MIDI and audio output through the sound card on your computer.

If your equipment setup also includes a MIDI keyboard attached to the MIDI port on your sound card, you can choose to route MIDI data directly to the sound card, or through the sound card MIDI port to the keyboard. If you choose the former, the music will play from your computer speakers. If you choose the latter, the sound will play from the speaker attached to your keyboard. You can even choose to send some MIDI information to each of these devices so that they both play at once.

You can purchase MIDI interfaces that plug into your parallel or serial port that add additional MIDI ports to your computer. For more information on complex system configurations, see [Advanced Setup](#).

If your computer has several MIDI ports, you choose the ones you want to use and put them in a particular order using the Tools-MIDI Devices command. From then on, MIDI Port 1 refers to the first selected MIDI output, MIDI Port 2 to the second selected MIDI output, and so on. The port number is based solely on the order in which the selected ports appear in the MIDI Devices dialog box. As a result, the port numbers used in Home Studio may not match the port numbers that appear on your external multiport MIDI device.



When Home Studio is installed, a single MIDI output device is selected – the best available MIDI synthesizer that Home Studio can locate. This is usually an internal synthesizer on your computer's sound card. You may have other devices that sound better, so experiment by selecting different devices in the MIDI Devices dialog box.

Your computer is usually equipped with at least one audio device – your computer sound card. Your own setup may have several different audio output devices. Or, you may have a multi-channel sound card that presents itself to your computer as though it was several different devices, one for each stereo pair. In Home Studio, every audio device represents an output port. You use the port setting to assign each track in a project to the output device you want to use.

While you need to choose the MIDI output devices you want to use before you assign them to tracks, all of your audio devices can be assigned to tracks freely. You do not need to configure them the way you do MIDI devices. If you have a voice modem or speakerphone in your computer, however, you might want to set up Home Studio so that it won't use those devices. Also, note that some dedicated audio equipment has specific setup requirements. For more information, see [Managing Audio Files](#).

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For step by step instructions:

[How to Choose MIDI Devices](#)

### **To Choose MIDI Devices**

1. Choose Tools-MIDI Devices to display the MIDI Devices dialog box.
2. Click on any MIDI device in the Output Devices list.
3. Click Move to Top to move the selected devices to the top of the list.
4. When all devices are selected in the order you want, click OK.

The first selected MIDI output device is assigned to Port 1, the second to Port 2, and so on.

## Assigning Tracks to Ports

You assign each track to a MIDI or audio port using the Port column in the Track view. From then on, material on that track will be sent to the appropriate output device. In the above example, you could send tracks 1 through 8 to the MIDI synthesizer on your computer sound card, tracks 9 through 12 to your MIDI keyboard, and tracks 13 through 16 to different audio outputs.

Port
3-Creative Music Synth [2]
3-Yamaha SY-99
3-Creative Music Synth [2]
3-Creative Music Synth [2]
3-Creative Music Synth [2]
3-Creative Music Synth [2]
3-Creative Music Synth [2]
3-Creative Music Synth [2]
2-Yamaha SY-99
3-Yamaha SY-99

**Note:** If you rearrange your MIDI output devices after making port assignments, you may find MIDI information going to instruments other than ones you expect. Also, Home Studio allows you to define instruments that are associated with certain output ports and channels. If you use this feature, the name of the port changes to reflect the instrument you have chosen. For more information about instrument definitions, see [Instrument Definitions](#).

---

For step by step instructions:

[How to Assign a Track to a Port](#)

## **To Assign a Track to a Port**

1. Move the highlight to the Port column of the track you want to assign.
2. Press the + or - key until the port you want is displayed.

You can also change the port value in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the port setting for more than one track at a time, select the tracks you want to change and choose Track-Property-Port.

## Choosing the Instrument Sound (Bank and Patch)

Electronic keyboards and synthesizers often contain hundreds or thousands of different sounds. Each sound is known as a **patch**. The name comes from the early days of synthesizers, where you physically rewired (using patch cords) the oscillators and modulators to produce different sounds. Patches are normally organized into groups of 128, called **banks**. Most instruments have between 1 and 8 banks, though MIDI supports up to 16,384 banks of 128 patches each (that's over 2 million patches).

The bank and patch settings in the Track view control the initial bank and patch of a track during playback. Every time Home Studio starts playback at the beginning of a song, the bank and patch settings for the track are set to these initial values.

Patch
Acoustic Grand Piano
Rhodes Piano
Electric Guitar (clean)
Fretless Bass
Guitar Harmonics
Cello
Pizzicato Strings
Muted Trumpet

Many instruments have descriptive names for the banks and patches. Home Studio stores these names in an instrument definition. For more information about instrument definitions, see [Instrument Definitions](#). If you are using an instrument that supports general MIDI, your patch list contains the 128 sounds that are defined by the general MIDI specification.

**Note to Experts:** Different MIDI instruments use different types of commands to change banks. Cakewalk supports four different methods for changing banks. For information about the bank selection method that should be used with your MIDI gear, see the User's Guide for your MIDI equipment.

A single MIDI channel can only play one patch at a time on each instrument assigned to that channel. Therefore, if two or more MIDI tracks are set to the same port and channel but have different bank and patch settings, the patch of the highest-numbered track will be used for all of the tracks.

In some projects you want the sound played by a track to change while playback is in progress. You can accomplish this using the Insert-Bank/ Patch Change command. When you start playback in the middle of a song, Home Studio searches back through the track to find the correct patch to use – either the initial bank and patch, or the most recent bank/patch change. Note that the track view only shows the initial bank and patch, even while a different bank and patch are being played back. The only way to see and edit a bank/patch change is in the Event List view. For more information, see [The Event List View](#).

When a track contains audio, Home Studio interprets the patch as an indicator of the type of audio information contained in the track, such as vocals, drums, or woodwinds. When you do certain types of audio editing, Home Studio uses this information to try to preserve the quality of the audio.

---

For step by step instructions:

[How to Assign a Bank and Patch to a Track](#)

[Another Way to Assign a Patch to a Track](#)

[How To Insert a Bank/Patch Change](#)

**To Assign a Bank and Patch to a Track**

1. Move the highlight to the track you want to change.
2. Press Enter to display the Track Properties dialog box.
3. Choose the desired bank and patch from the drop-down lists.
4. Click OK when you are done.



### **Another Way to Assign a Patch to a Track**

1. Move the highlight to the Patch column of the track you want to assign.
2. Press the + or - key until the patch you want is displayed, or press Enter and choose the patch from the Track Properties dialog box.

You can also change the patch and bank values in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the bank and patch settings for more than one track at a time, select the tracks you want to change and choose Track-Property-Bank or Track-Property-Patch.

### **To Insert a Bank/Patch Change**

1. Set the Now time to the time at which you want the bank and/ or patch to change.
2. Choose Insert-Bank/Patch Change to display the Bank/Patch Change dialog box.
3. Choose the Bank and patch from the lists.
4. Click OK when you are done.

Home Studio inserts a change in bank and patch. When you play back the song, the initial bank and patch shown in the track view will be used up to the point where the bank/patch change takes place. You can remove a bank/patch change in the Event List view.

## Adjusting Volume and Pan

The Volume and Pan settings control the initial volume and pan of a track during playback. Every time Home Studio starts playback, the volume and pan settings for the track are set to these initial levels.

Vol	Pan
127	64
120	64
127	0
95	127
95	45
127	75
115	64
75	127
---	---

In some projects you want the volume or panning of a track to change while playback is in progress. You can accomplish this using the Console, Piano Roll, or StudioWare views. For more information, see [Mixing](#), [More About Editing](#), or [StudioWare](#).

Home Studio processes the volume and pan settings by transmitting MIDI volume and pan events (controllers 7 and 10, respectively) when playback starts. For these controllers to work, you must assign a channel to the track using the Chn parameter. If two or more MIDI tracks are set to the same port and channel but have different volume or pan settings, the settings for the highest-numbered track will prevail.

Note also that not all keyboards and synthesizers respond to these events. Check the manual that came with your keyboard or synthesizer for more information.

---

For step by step instructions:

[How Set the Initial Volume and Pan Settings](#)

## **To Set the Initial Volume and Pan Settings**

1. Move the highlight to the Volume or Pan column of the track you want to change.
2. Press the + or - key or the [up] or [down] keys to increase and decrease the value by 10, until the value you want is displayed

You can also change the pan and volume settings in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the volume or pan setting for more than one track at a time, select the tracks you want to change and choose Track-Property-Volume or Track-Property-Pan.

## Assigning a MIDI Channel (Chn)

MIDI transmits information on 16 channels, numbered 1 through 16. Every MIDI event is assigned to a particular channel. Some MIDI equipment can accept MIDI information on only a single channel. This channel may be pre-assigned, or you may be able to change it. Other MIDI equipment, including many electronic keyboards and synthesizers, can accept information on several different MIDI channels at once. Usually, these devices use a different instrument sound for each channel.

On playback, the channel number is used to direct the MIDI information to a particular piece of equipment. A single track can contain events on many different MIDI channels. The Chn parameter in the Track view redirects all events in the track to the specified channel, ignoring the actual channel number stored with each event. If this parameter is left blank, all events in the tracks are sent to their original channels.

Chn
1
2
3
4
5
6
7
8

This parameter does not affect the channel information that is stored with each MIDI event. When the track is displayed in other views, like the Piano Roll or Event List view, you will see the original channel that is stored in the file. You can edit the actual channel values in those views.

---

For step by step instructions:

[How to Set the Channel for a Track](#)

## **To Set the Channel for a Track**

1. Move the highlight to the Channel (Chn) column of the track you want to change.
2. Press the + or - key until the channel you want is displayed.

You can also change the channel setting in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the channel assignment for more than one track at a time, select the tracks you want to change and choose Track-Channel.

## Adjusting the Key/Transposing a Track (Key+)

Each MIDI note event has a key number, or pitch. On playback, the **key offset** (Key+) parameter transposes all notes in the track by the designated number of half-steps. The value can range from -127 to +127. A value of 12 indicates that notes will be played back one octave higher than they are written.



Key+
2
-1
0
-1
-2
0
2
1

This parameter does not affect the actual note number that is stored for each note event. When the clip is displayed in other views, like the Piano Roll, Staff, or Event List view, you will see the original notes as they are stored in the file. To permanently change the pitches, you can either edit them individually or use the Edit-Transpose command.

If the key offset value transposes the key number (MIDI note) outside the allowable MIDI range (0–127), the key number will be transposed to the lowest or highest octave within that range.

You can use the Key+ parameter to assist in preparing scores for instruments whose music is written in other than “concert” key (such as Bb trumpet). For more information, see [Music Notation for Nonconcert Key Instruments](#).

When you edit the Key+ parameter, pressing [or] or right-clicking on the spinner control changes the value by 12 instead of by 10. This makes it easy to transpose by octaves.

---

For step by step instructions:

[How to Set the Key Offset for a Track](#)

## **To Set the Key Offset for a Track**

1. Move the highlight to the Key column of the track you want to change.
2. Press the + or - key to change the key by a single semitone, or press the [or] key to change the key by 12 semitones (one octave).

You can also change the key offset in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the key offset for more than one track at a time, select the tracks you want to change and choose Track-Key+.



## Adjusting the Note Velocity (Vel+)

Each MIDI note event has a velocity, which represents how fast (or how hard) the key was struck when the track was recorded. On playback, the **velocity offset** parameter adjusts the velocity data for all notes in the track by the designated amount. The value can range from -127 to +127. The effect of changing velocities depends on the synthesizer. Some synthesizers do not respond to velocity information at all. On others, the effect varies depending on the sound or patch you have chosen. Normally, higher velocities result in louder or brighter sounding notes.

Vel+
6
0
-6
0
-24
4
7
0

This parameter does not affect the velocity that is stored for each note event. When the clip is displayed in other views, like the Piano Roll, Staff, or Event List view, you will see the original velocities as they are stored in the file. You can edit the actual velocity values in those views.

Velocity is also meaningful for digital audio tracks — those that are assigned to an audio output port. Every audio clip consists of one or more audio events. Each audio event has an associated velocity — a number between 0 and 127 — which represents an amount by which the event's volume will be boosted or cut on playback. A velocity of 0 mutes audio events; a velocity of 127 represents +18 dB; a velocity of 103 represents +0 dB. The track velocity functions as a master volume for all audio clips in the track.

Velocity is different from volume in that it is an attribute of each individual event, rather than a controller that affects an entire MIDI channel. Here's an example of where this distinction might be important. Suppose you have several tracks containing different drum parts. All of these parts would probably be assigned to MIDI channel 10 (that's the default channel for percussion in General MIDI). If you change the volume setting for any track that uses channel 10, all of the different drum parts — regardless of what track they're in — would be affected. If you change the note velocity for one of the drum tracks, it will be the only one whose volume is affected.

---

For step by step instructions:

[How to Set the Velocity for a Track](#)

## **To Set the Velocity for a Track**

1. Move the highlight to the Vel+ column of the track you want to change.
2. Press the + or - key until you reach the value you want.

You can also change the velocity offset in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the velocity offset for more than one track at a time, select the tracks you want to change and choose Track-Property-Vel+.

## Adjusting the Time Alignment of a Track (Time+)

Each event takes place at a known time point in the project. On playback, the **time offset** (Time+) parameter adjusts the time for events in the track by the designated amount. The value can be as small as a single clock tick, or as large as you want.

Time+
+6
-11
+2
+2
+1
0
0
+5

This parameter can be used to make a part play behind the beat or in front of it, or to compensate for tracks that sound rushed or late. The time shift can be used to create a chorus or slap echo effect, by making a copy of a track and then applying a small offset to the copy. You can use larger time offsets to shift a track earlier or later by several beats or measures.

Note that you cannot shift any event earlier than 1:01:000. For example, if the first event in the track starts at 2:01:000, you cannot shift the start time earlier by more than one measure.

This parameter does not affect the time that is stored for each note event. When the clip is displayed in other views, like the Piano Roll, Staff, or Event List view, you will see the original times as they are stored in the file. You can edit the actual time values in those views, or use the Edit-Slide command.

---

For step by step instructions:

[How to Set the Time Offset for a Track](#)

## **To Set the Time Offset for a Track**

1. Move the highlight to the Time+ column of the track you want to change.
2. Press the + or - key until you reach the value you want.

You can also change the time offset in a variety of other ways, as described in [Changing Values in the Track Pane](#). To change the time offset for more than one track at a time, select the tracks you want to change and choose Track-Property-Time+.

## Creating a Project

You can add sound or music to a Cakewalk project in many different ways. You can record your own material using a MIDI-equipped instrument, use a microphone or other audio input to record digital audio information, or import sound or music data from an existing digital data file.

You can also input new material using your computer keyboard or mouse. For more information on entering music using musical notation, see [Notation and Lyrics](#).

For more information on entering music using the Piano Roll view, see [The Piano Roll View](#). For more information using the Event List view, see [The Event List View](#).

---

See also:

[Creating a New Project](#)

[Preparing to Record](#)

[Recording Music from a MIDI Instrument](#)

[Recording Audio](#)

[Loop Recording](#)

[Punch-In Recording](#)

[Step Recording](#)

[Importing Music and Sound](#)

[MIDI Input and Echo Controls](#)

## Creating a New Project

You can add music and sound to an existing project or to a new project. Just as in any Windows program, you open an existing project file using the File-Open command, and create a new project file using the File-New command.

When you create a new Cakewalk project, there are some additional parameters you can set to make it easier to work on your project. These include:

- Meter and Key signature
- Metronome and tempo settings
- Audio sampling rate
- MIDI timing resolution

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See also:

[Creating a New Project File](#)

[Setting the Time Signature and Key Signature](#)

[Setting the Metronome and Tempo Settings](#)

[Setting the Audio Sampling Rate](#)

[Setting the MIDI Timing Resolution](#)

## Creating a New Project File

Cakewalk includes a set of templates you can use to create a new project. These templates include common types of ensembles, such as Rock Quartets, Jazz Trios, and Classical Full Orchestra. When you create a new project using one of these templates, Cakewalk creates a project that has MIDI settings predefined so that one track is set up for each of the instruments in the ensemble. Cakewalk also includes an empty template (called the Normal template) which is completely blank. If you are creating a new project that will contain only audio material (and no MIDI material), use the Normal template.

You can create your own template files, and use them as the basis for other new projects. For more information, see [Using Layouts and Templates](#).

---

For step by step instructions:

[How to Create a New Project](#)

**To Create a New Project**

1. Choose File New to display the New Project File dialog box.
2. Choose a template from the list.
3. Click OK.

Cakewalk creates the new project and displays it in the Track view.



## Setting the Time Signature and Key Signature

By default, a new Cakewalk project is in 4/4 time and in the key of C major. You can change these settings to use any desired time signature or key. These settings apply to all the tracks in a project. You cannot set different time or key signatures for different tracks.

The time or key signature of a project can change at any measure boundary. To insert changes in the time or key signature, use the View-Meter/ Key command to display the Meter/Key view, or use the Insert-Meter/ Key Change command.

If you are creating a new project that will contain only audio material (and no MIDI material), you do not need to set the time and key signature.

The key signature controls how Cakewalk displays notes in the Staff view, the Event view, and elsewhere. The time signature, or **meter**, tells Cakewalk the number of beats per measure and the note value of each beat. Common meters include:

- 2/4 (two beats per measure, each quarter note gets a beat)
- 4/4 (four beats per measure, each quarter note gets a beat)
- 3/4 (three beats per measure, each quarter note gets a beat)
- 6/8 (six beats per measure, each eighth note gets a beat)

The top number of a meter is the number of beats per measure, and can be from 1 through 99. The bottom number of a meter is the value of each beat; you can pick from a list of values ranging from a whole note to a thirty-second note.

The meter determines the following:


- Where the metronome accents are placed
- How the Now time is displayed
- How the Staff view is drawn
- How grid lines are displayed in the Piano Roll view.

---

For step by step instructions:

[How to Set the Meter and Key Signature](#)

## To Set the Meter and Key Signature

1. Click  to display the Meter/Key Signature dialog box.
2. Enter the top and bottom meter values in the two boxes.
3. Choose the key signature from the Key Signature list.
4. Click OK when you are done.

The meter and key signature are set and displayed in the Large Transport toolbar.

## Setting the Metronome and Tempo Settings

The metronome counts off each beat in a measure, so you can hear the tempo of your project. You can choose to have the metronome sound during recording, during playback, or both. When you start recording, Cakewalk can play one or more measures of metronome clicks before recording actually begins. This can help you “get in the groove” before you actually start performing. These measures are called the count-in. By default, there is a one-measure count-in.

When you create a new project, you should set up the metronome to play during the count-in and while recording. If you are adding material to an existing project, you might only need the metronome for the count-in.

You can customize the metronome sound to use your PC speaker or any note on a MIDI instrument. By default, Cakewalk uses a hi-hat cymbal sound from a general MIDI drum kit for the metronome, but you can change this setting to anything you like by changing the MIDI port, MIDI channel, and duration. You can also choose the note and velocity (volume) to use for the first beat of each measure and for all other beats. The metronome settings are stored separately with each project, so you can use different settings for each one.

**Note:** If you are synchronized to an external clock source, you cannot use the count-in feature. For more information, see [Synchronization](#).

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For step by step instructions:

[How to Set the Tempo and Metronome for a New Project](#)

[How to Change your Metronome Settings](#)

[How to Audition MIDI Metronome Sounds](#)

## To Set the Tempo and Metronome for a New Project

1. Choose Tools-Project Options and click the Metronome tab to display the Metronome Settings dialog box.
2. Make sure that the Recording and Playback options are checked.
3. Set the count-in to 1 or more if you want to hear a count-in before recording begins.
4. Click OK.
5. Press R or click  to start recording. The count-in will play, and the Now time will start to advance.
6. Adjust the tempo using the tempo controls in the toolbar until the metronome plays the tempo you want.
7. Press the Spacebar or click  to stop recording
8. Press W or click  to rewind back to the beginning of the piece.

Your tempo and metronome settings are now ready. When you save the project file, the metronome and tempo settings will be saved as well.

## To Change your Metronome Settings

1. Choose Tools-Project Options and click the Metronome tab to display the Metronome Settings dialog box.
2. Change the metronome settings as indicated in the table:

To do this...	Do this...
Enable the metronome during	Check the Record box recording
Enable the metronome during	Enter the number of measures playback for the count-in in the Count-in box
Enable the count-in	Enter the number of measures for the count-in in the Count-in box
Use the PC Speaker sound	Check the Use PC Speaker box
Use a MIDI note as the sound	Check Use MIDI Note and choose the port, channel, and other settings

3. Click OK when you are done.

Your metronome settings will be saved with the project file.

## **To Audition MIDI Metronome Sounds**

1. Select a track in the Track view that is assigned to the MIDI device that you want to use for the metronome sound.
2. Choose Tools-Project Options and click the Metronome tab to display the Metronome Settings dialog box.
3. Make sure the Port and Channel settings match those for the current track in the Track view.
4. Click on the Key item in either the First Beat or the Other Beats section.
5. Play a note on your MIDI instrument. The note number and velocity are entered automatically.
6. Click OK when you are done.

Your metronome settings will be saved with the project file.

## Setting the Audio Sampling Rate

Each Cakewalk project has an audio sampling rate that indicates the level of accuracy with which audio data are stored. The same sampling rate is used for all of the digital audio in a project. When you create a new project, you must choose a sample rate before you start recording audio.

Cakewalk lets you choose from four different sampling rates: 11025 Hz, 22050 Hz, 44100 Hz, and 48000 Hz. The default is 44100 Hz, the same rate as audio CDs. A higher sampling rate produces better quality sound. However, a higher sampling rate also means that each audio clip takes up more memory and disk space, and requires more intensive processing by your computer. If you have an older computer, or a slow hard drive, you might be better off with a lower sampling rate. For more information, see [Improving Performance with Digital Audio](#).

If you are creating a new project that will contain only MIDI material (and no audio), you do not need to set the audio sampling rate. If you import audio from a wave file or other digital audio file, the sampling rate will be set automatically to your default setting.

**Note for Experts:** If you are planning to move your project to a DAT or some other media via a digital transfer, set your sampling rate to match the target unit. For example, use 44100Hz for a project that will be mastered to a CD, so that no sample rate conversion is required.

---

For step by step instructions:

[How to Set the Sampling Rate for a Project](#)

### **To Set the Sampling Rate for a Project**

1. Choose Tools-Audio Options to display the dialog box that is appropriate for your hardware.
2. Select the desired sampling rate from the Default Sampling Rate list.
3. Click OK when you are done.

The sampling rate will be saved with the project file.



## Setting the MIDI Timing Resolution

Each Cakewalk project has a setting for the timing resolution, or **timebase**, that indicates the resolution of MIDI data. This resolution is measured in ticks or pulses per quarter note, and is often abbreviated as PPQ. The default resolution is 120PPQ, which is accurate enough for most applications. In this timebase, each quarter note is represented by 120 ticks, each eighth note by 60 ticks, each eighth-note triplet by 40 ticks, and so on.

In some projects you may need a different or even more detailed timebase. For example, if you wanted to use eighth note septuplets (7 eighth-notes per quarter note) and represent them accurately, you would need to have a timebase that is divisible by 7, such as 168PPQ. Cakewalk uses the timebase you choose for a project to determine the range of tick values in the Now time.

## Preparing to Record

To prepare for recording you need to do the following:

- Set the recording mode
- Choose your input source or sources
- Arm one or more tracks for recording
- Check your recording levels (Audio only)
- Set the Now time to the point where recording should start
- Start recording

After you record, you can use the Undo command to erase the most recently recorded material. You can use the Redo command to restore the recording, and toggle between Undo and Redo as many times as you like.

---

See also:

[Recording Modes](#)

[Choosing a Source](#)

[Arming Tracks for Recording](#)

[Auto Arming](#)

## Recording Modes

Any material you record is stored in a new clip. If you record into several tracks at once, one clip is created in each track. If you record into a track that already contains clips, you can choose one of two **recording modes** that determine what happens to those existing clips:


Recording Mode	How it Works
Sound on Sound	The new material is merged with any existing material. This means that any existing clips on the track are left unchanged, and all newly recorded material is stored in brand new clips. While recording, you will be able to hear material from existing clips.
Overwrite	The new material replaces (overwrites) any existing material. This means that portions of existing clips may be "wiped clean" to make room for newly recorded material. While recording, you will not be able to hear material from existing clips.

---

For step by step instructions:

[How Choose a Recording Mode](#)

## To Choose a Recording Mode

1. Choose Realtime-Record Mode or click  to display the Record Mode dialog box.
2. Choose the desired recording mode
3. Click OK.

## Choosing a Source

To record into a track, you must choose a source for the music or sound to be recorded. Usually, you choose MIDI Omni to record material from a MIDI instrument, or the left or right channel of a digital audio device (such as a sound card) to record audio material. The source for each track is displayed in the Source column of the Track window, and at the bottom of each module in the Console window.

When you choose MIDI Omni as the input source for a track, Cakewalk merges together material from all MIDI sources (ports) and instruments. This means you don't have to worry about port, channel, or other MIDI settings. Sometimes, you may want to record different MIDI channels into different tracks. To learn how to do this, see [Recording Channel by Channel](#).

While each track can have a different source, it is also possible for several tracks to have the same source. If you record the same material into several different tracks at once, the resulting material will be stored in linked clips. For more information about linked clips, see [Working with Linked Clips](#).

---

For step by step instructions:

[How to Choose a Source in the Track View](#)

### **To Choose a Source in the Track View**

1. Double click in the Source column of a track to display the Track Properties dialog box.
2. Choose a source from the Source list, and click OK

OR

1. Click in the source column of the track you want to set.
2. Press the + or - key until you reach the source you want.

## Arming Tracks for Recording

Cakewalk lets you record any number of tracks at one time. You indicate the tracks you want to record by arming the tracks. You can arm a single track, or several tracks at one time. Each track records material received through its own input source.

---

For step by step instructions:

[How to Arm a Track for Recording](#)

### **To Arm a Track for Recording**

- In the Track view, click the track arm button (labeled R)
- In the Console view, click the track arm button (labeled R)
- Select one or more tracks in the Track view, then right-click and choose Arm from the menu.

The track arm buttons in both the Track view and Console view are displayed in red to indicate that the track is armed for recording. The indicators will change to solid red when you start recording.



## Auto Arming

As a convenience feature, and for compatibility with earlier versions, Cakewalk automatically arms the current track to record using MIDI Omni as the source if no other source is specified and no other track is armed. As you move the highlight from track to track in the track pane, you will see that the MIDI Omni source is displayed in red for the current track only when no other source has been specified. This indicator shows that the track is auto-armed.

This feature lets you start recording a new track simply by making it the current track and pressing R or clicking the Record button in the toolbar. When you do so, Cakewalk automatically activates the Arm indicator for that track. Auto-arming makes it possible to inadvertently record over existing material in the current track. To prevent this, simply assign a source to each track before recording. If a source is assigned to a track, Cakewalk will not record on that track unless the track has been armed.

## Recording Music from a MIDI Instrument

Once you have set your tempo, metronome, source, and armed one or more tracks, you are ready to start recording.

---

For step by step instructions:



[How to Record MIDI](#)


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See also:

[Virtual Piano](#)

## To Record MIDI

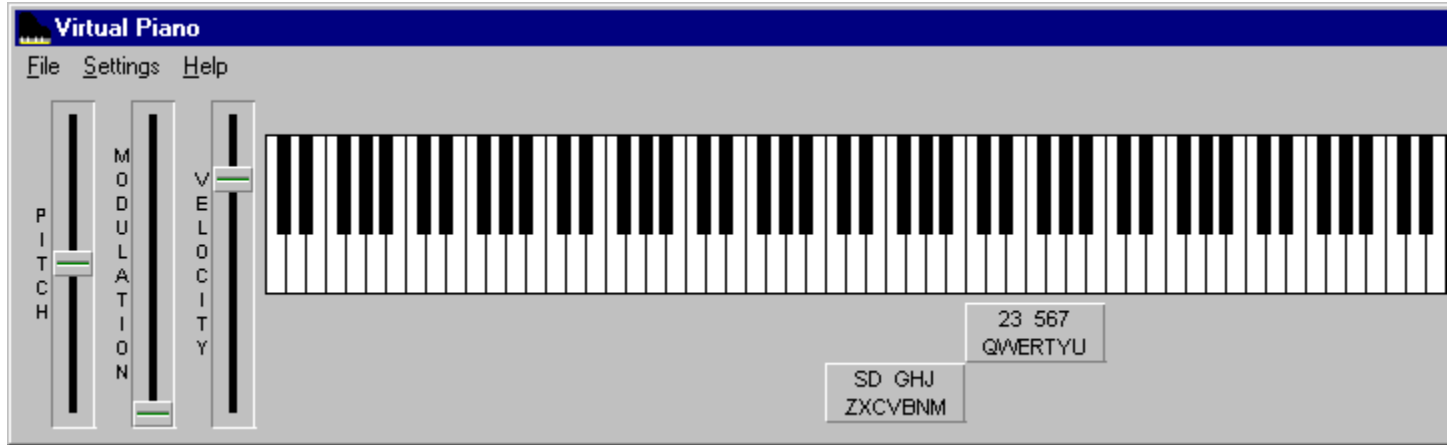
1. Set the Now time to the point in the project where you want to start recording.
2. Click , press R, or choose Realtime-Record. If your metro nome count-in is turned on, it will play the count-in.
3. Play or perform the material you want to record.
4. Click , press the space bar, or choose Realtime-Stop to stop recording.

Cakewalk displays a clip containing the new material in the Track window. To listen to the new material, set the Now time to the start of the clip and press the space bar or click . If you're not happy with the recording, use Undo to erase the new material and Redo to restore it.

If you do not see a new clip in Track window, you may have a problem with MIDI input. See [Troubleshooting](#), for more information.

## Virtual Piano Utility

Even if you don't have a real MIDI instrument, you can still record MIDI in your projects using the Virtual Piano. The Virtual Piano is a utility that lets you use your computer keyboard and mouse to make music. The Virtual Piano looks like this:



When you click on the keys with the mouse or play notes using your computer keyboard, the Virtual Piano converts the information to MIDI data and sends it to Cakewalk. for complete information about the virtual Piano, use the on-line help system.

---

For step by step instructions:

[How to Use the Virtual Piano](#)

### **To Use the Virtual Piano**

1. Choose Tools-MIDI Devices to display the MIDI Ports dialog box.
2. Make sure that Virtual Piano is highlighted in the Input Ports box.
3. Click OK to close the MIDI Ports dialog box.
4. Choose Tools-Virtual Piano to start the Virtual Piano.
5. To read the on-line documentation, choose Help-Contents.

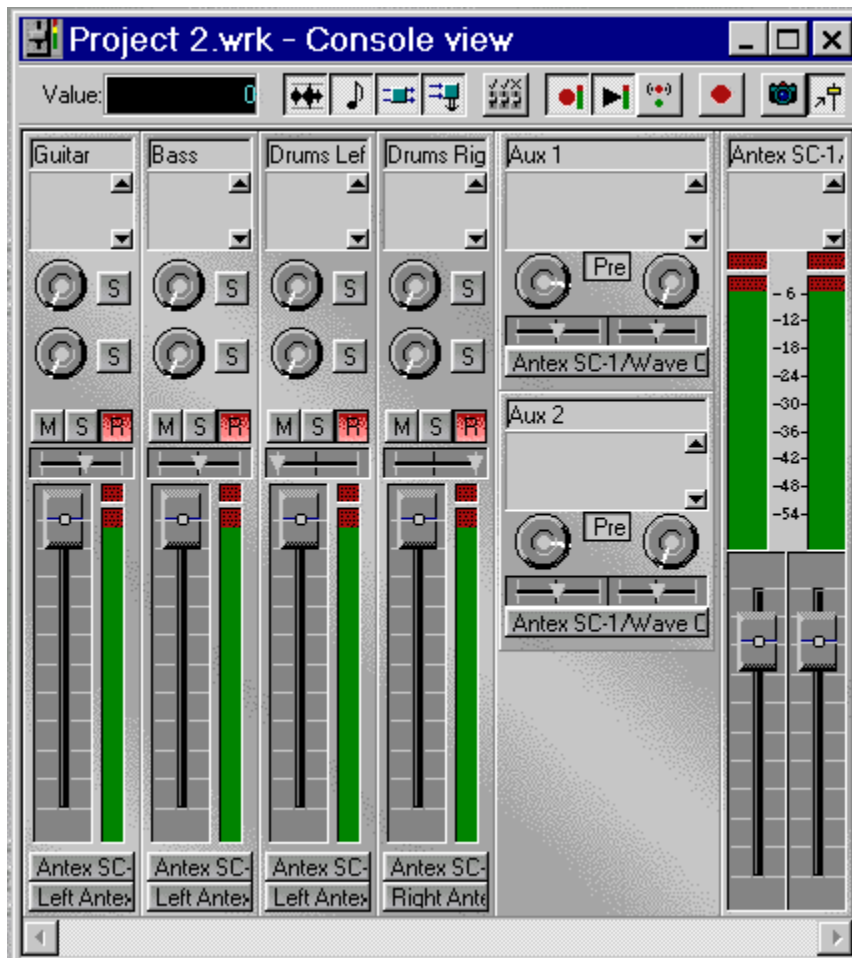
## Recording Audio

There are a couple of other important considerations in recording audio. First, many popular audio cards that come with personal computers are **non-duplex** sound cards. If you are recording audio with a non-duplex sound card, you won't be able to hear any existing audio while recording additional audio. This is a limitation of the sound card – a non-duplex card can record audio or play back audio, but it cannot do both at once.

If you have full-duplex sound card, and you "drop into" overwrite recording on the fly, there may be some slight delay until existing material is muted, due to buffering latency. To enable full-duplex operation on a sound card that supports it, choose Tools-Audio Options, and click Advanced.

Before you record audio, you should check your input levels. If the levels are too soft, you may end up with too much hiss and background noise in your recording. If the level is too loud, your recording will be inaccurate or distorted. To check your audio levels, use the audio meters in the Console view. To adjust the input levels, you must use your sound card's software mixer program (or the Windows 95 mixer), or an external hardware mixer for certain sound cards.

The audio meters indicate the volume at which the audio will be recorded in units called decibels (dB). The meter values range from -96dB (soft) to 0dB (loud). In order to maximize the dynamic range of your recording, you want to set the levels as high as possible without exceeding 0dB.



When the audio level exceeds 0dB, some of the audio information is lost. This is known as an **overload**. Many sound cards use clipping to deal with an overloaded signal, which can result in distortion of the audio signal. As a result, you should avoid letting the meter level exceed 0dB.

**Note to Experts:** Since Cakewalk is a digital recorder, a level of 0dB indicates digital zero. Digital distortion will occur at 0dB. You will not get analog compression or warmth from "pushing" the input levels. If you are transferring data

from a DAT or other device, you may want to calibrate the input levels of your sound card with the output levels of other devices in your studio. This will ensure that 0dB on one unit will appear as 0dB in Cakewalk


---

For step by step instructions:

[How to Check the Input Levels](#)

[How to Record Audio](#)

## To Check the Input Levels



1. In the track view, set the sources for the tracks you want to record, and arm the tracks for recording.
2. Choose View-Console or click  on the toolbar to display the Console view meters will be displayed for the tracks that are armed.
3. Perform as you plan to while recording at the same volume, with the same attack, and so on.
4. As you perform, watch the meters respond. If they are always hovering near -48 dB, then you should turn up the input volume. On the other hand, if they move all the way to 0 dB, even for an instant, then you need to turn down the input level.
5. When you are satisfied that your input level is correct, you are ready to record.


Once you have set your sampling rate and input levels, you are ready to start recording. If the meters do not move, check your sound card software's mixer program and make sure that you have the proper source enabled for recording.

When you record audio, Cakewalk actually stores each audio clip in a separate file. These files have the same format as a wave (.WAV) file, but have special names and are stored in a separate directory on your hard disk. Cakewalk automatically manages these audio files for you, making it easier for you to manage your projects. If you want to work with these files directly, or to learn more about how Cakewalk stores audio data, see [Digital Audio Data Management](#).



## To Record Audio

1. Set the audio sources for the track or tracks you want to record.
2. Arm the tracks for recording
3. Set the Now time to the point in the project where you want to start recording.
4. Click , press R, or choose Realtime-Record. If your metro nome count-in is turned on, it will play the count-in measure.
5. Play or perform the material you want to record.
6. Click , press the space bar, or choose Realtime-Stop to stop recording.

Cakewalk displays a clip containing the new material in the Track window. To listen to the new material, set the Now time to the start of the clip and press the space bar or click . If you're not happy with the recording, use Undo to erase the new material and Redo to restore it.


If you do not see a new clip in Track window, you may have a problem with audio input. See [Troubleshooting](#), for more information.

## Loop Recording

In recording a vocal or instrumental section, you might want to record several different takes, so that you can choose the one you like best. You might even want to record several takes so that you can combine them to double up a part, or to merge together the best parts of each one.

Normally, to record each take you would have to arm a track, start recording, perform the take, and then stop recording. You can record multiple takes more easily using a feature called **loop recording**. Loop recording lets you start recording once, and record as many takes as you like all in a single step.

To use loop recording, you follow these steps:

- Enable looping
- Set the start and end time of the loop
- Start recording by pressing R or clicking  in the toolbar

Cakewalk then loops between the start and end time, allowing you to record one take on each pass. Cakewalk creates a clip for each take. You have two choices for where these takes are stored:

- All clips can be stored in a single track, where they are “stacked” on top of one another in the Track view.
- Each clip can be stored in a different track. Cakewalk automatically places each take into a new, empty track. No existing tracks are changed in any way.

When you stack takes, you hear all the previous takes as you record each new take. When you store takes in different tracks, each take is automatically muted as you record the next one. You choose the option you want from the Record Options dialog box.




When you finish recording, the Undo command erases all of your takes in a single step.

---

For step by step instructions:

[How to Use Loop Recording](#)

## To Use Loop Recording

1. Choose the source for the track or tracks you want to record, and arm the tracks for recording.
2. Set the loop start and end time.
3. Choose Realtime-Record Options or click  in the Record toolbar to display the Record Options dialog box.
4. Choose either to stack all takes, or store them in sequential tracks. Make your choice from the Loop Recording list.
5. Set the Now time to the point in the project where you want to start recording.
6. Click , press R, or choose Realtime-Record. If your metro nome count-in is turned on, it will play the count-in measure.
7. Play or perform the material you want to record. At the end of the loop, Cakewalk will return to the start of the loop and you can record the next take.
8. If you want to erase the most recent take while loop recording is underway, choose Realtime-Reject Loop Take or press Ctrl-Spacebar
9. Click , press the space bar, or choose Realtime-Stop when you want to stop recording.


The takes are stored in the manner you requested.

## Punch-In Recording

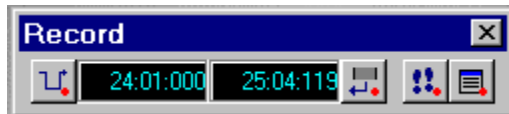
Suppose you are happy with most of a track, but want to replace one small section — perhaps as small as a couple of notes — because you made a mistake. This is where punch-in recording comes in handy, because it lets you record new material only within a specified range of times.

For example, suppose you recorded a 32-bar keyboard solo, but made some mistakes in the 24th and 25th bar. With punch-in recording, you play the entire solo again, so you make sure you can get the feel you want. However, only the bars you want to correct are actually recorded. That way, you don't have to worry about introducing new mistakes elsewhere in the recording. When you punch in, Cakewalk deletes any existing material between the start and end time of the punch.

To use punch-in recording, you follow these steps:

- Enable punch-in recording
- Set the start and end time of the punch
- Start recording by pressing R or clicking the  button in the toolbar

The Recording toolbar shows the punch-in settings, as shown here:



After you punch in, choosing Undo both discards any new material you recorded and restores the original material that had been deleted.

You can also combine loop and punch-in recording to record several takes of a punch-in. Say you are working on that perfect take of a guitar solo, and you need to hear a couple of bars of the song as “pre-roll” before you punch in. By combining looping with punch-in, you can have each take begin before you start to play, and still have the solo cut-in at the appropriate instant.

In the example mentioned above, you could loop from bar 17 to bar 26, but record only bars 24 and 25. Here's what this looks like:






---

For step by step instructions:

[How to Punch-In](#)



[How to Use Punch-In While Looping](#)

## To Punch-In

1. Choose the source for the track or tracks you want to record, and arm the tracks for recording.
2. Click XXX in the Recording toolbar to enable punch-in recording.
3. Set the start and end times in one of the following ways:
  - Enter the times directly in the toolbar
  - Select a range of time and click  in the recording toolbar
4. Set the Now time to a point where you want to start playback.
5. Click , press R, or choose Realtime-Record. If your metro nome count-in is turned on, it will play the count-in measure.
6. Play or perform the material you want to record.
7. Click , press the space bar, or choose Realtime-Stop to stop recording.

The material you play during the punch-in time will be recorded in the chosen track, replacing any existing material.

## To Use Punch-In While Looping

1. Choose the source for the track or tracks you want to record, and arm the tracks for recording.
2. Set the loop start and end time.
3. Set the punch-in start and end time, as described above.
4. Choose Realtime-Loop Settings to display the loop settings dialog box.
5. Choose either to stack all takes, or store them in sequential tracks. Make your choice from the Record Takes list.
6. Set the Now time to the beginning of the loop.
7. Click , press R, or choose Realtime-Record. If your metro count-in is turned on, it will play the count-in measure.
8. Play or perform the material you want to record. At the end of the loop, Cakewalk will return to the start of the loop and you can record the next take.
9. If you want to erase the most recent take while loop recording is underway, choose Realtime-Reject Loop Take or press Ctrl-Spacebar.
10. Click , press the space bar, or choose Realtime-Stop when you want to stop recording.

The takes are stored in the manner you requested.

## Step Recording

Sometimes you want to record material from a MIDI instrument, where the material you want to perform is difficult to play. One way to make this easier is to slow the tempo of the piece while you are recording until it is slow enough to play. Step recording is another method that lets you record from a MIDI instrument without having to worry at all about your timing.

To use step recording, you set a step size, such as a quarter note. Then, you simply record one step at a time, taking as much time as you need to play each step. You can also set a note duration that is independent of the step size. If the duration is shorter than the step size, rests will be inserted between each note and the next step. If the duration is longer than the step size, the notes will overlap with the notes recorded at the next step. You use the Step Record dialog box to perform step recording:



The step size and the duration can each be set to one of three things:

Setting...	How to use it...
------------	------------------

A particular note value	Simply choose the note value from the list
-------------------------	--

A dotted note value	Choose the note value and check the Dotted option
---------------------	---

A number of MIDI ticks	Click Other, enter the number of MIDI ticks, and click OK
------------------------	---

When you choose the Dotted option, the note durations applies to both the step size and the duration if the Follow Step Size option is enabled.

The Auto Advance option automatically advances recording to the next step when all MIDI input stops. For example, if you press the three keys that make up a C major chord, as soon as you release all three keys, Cakewalk automatically advances to the next step. This makes it very easy to record a series of chords that are spaced at regular intervals.

With Auto Advance disabled, you must click Advance each time you want to advance to the next step. While this requires some more effort, it also provides you with even more flexibility. For example, with Auto Advance disabled,

you do not even need to play the notes at a single step at the same time! You can play any number of notes one at a time, and they will all be recorded at the same step, until you click the Advance button. You can even record notes of different durations at the same step – simply record the notes of one duration, change the duration, and play more notes, without clicking Advance.

You can click Delete to erase the notes you recorded in a single step. If Auto Advance is enabled, the Delete button deletes the notes played at the prior step, and it also backs up a step so you can re-record the notes at that step. With Auto Advance disabled, the Delete button erases any notes you have recorded at the current step.

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For step by step instructions:

[How to Use Step Recording](#)

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See also:

[Step Pattern Recording](#)

[Recording Channel by Channel](#)



## To Use Step Recording

1. Choose the source for the track or tracks you want to record, and arm the tracks for recording.
2. Set the Now time to the point in the project where you want to start recording.
3. Choose Realtime-Step Record or click  in the Record toolbar to display the Step Record dialog box.
4. Follow the instructions in the table:

To do this...	Do this...
Record the next step	Play the note(s) you want on your MIDI instrument
Erase the most recent step	Click Delete
Skip a step (add rests)	Click Advance without playing any notes
Move forward or backward one step	Click the scroll arrows in the scroll bar
Move forward or backward	Drag the indicator in the scroll bar one measure
Jump to a particular Now time	Enter the measure, beat, and tick number next to the scroll bar
Change the step size	Pick the step size you want from the Step Size list
Change the note duration	Pick the duration you want from the Duration list
Stop recording and save your work	Click Keep or press Enter
Stop recording and discard	Click Close or press Esc your work
Advance to the next step	With Auto Advance disabled, click the Advance button

5. Click OK when you are finished step recording.

As always, you can use the Undo and Redo commands after you have finished recording. Note that these commands erase or restore all the material you recorded while in step record mode.

## Step Pattern Recording

The Pattern option lets you define a repeating rhythmic pattern of notes and rests so that you can use step recording more efficiently. For example, suppose your project is in 4/4 time, and one track has a pattern that is two measures long: quarter notes in the first measure and on the first 2 beats of the second measure, followed by a half-note rest on the last two beats. This pattern has 6 quarter notes followed by two quarter-note rests.

When you use step recording with auto advance, you can play the six quarter notes, and Cakewalk will automatically advance to the next step. However, to skip over the rests, you need to click the Advance button two times.

With pattern recording, you define a pattern that indicates where the rests appear in the pattern. Cakewalk will then skip over the rests automatically, so you don't need to click the Advance button at all.

Cakewalk displays patterns as a combination of digits (which represent beats that contain notes) and dots (which represent beats that contain rests). The pattern described above looks like this:

**1 2 3 4 5 6 . .**

Here is another example:

**1 2 . 4**

This pattern automatically skips over every third beat; Cakewalk interprets this pattern as “one, two, rest, four.”

Here is one final example based on 4/4 time, with a step size of eighth note triplets (twelve steps per measure):

**1 2 3 4 . 6 7 . 9 0 . 2**

No matter how you enter a pattern, Cakewalk display the digits in sequence, with periods replacing digits at each step where a rest would occur. You can create patterns with up to 64 steps.

---

For step by step instructions:

[How to Use Pattern-Based Step Recording](#)

## **To Use Pattern-Based Step Recording**

1. Choose the source for the track or tracks you want to record, and arm the tracks for recording.
2. Set the Now time to the point in the project where you want to start recording.
3. Choose Realtime-Step Record to display the Step Record dialog box.
4. Click in the Pattern box
5. Press any number key to indicate a beat at which notes will be played.
6. Press the spacebar, period, or the letter R to indicate a beat on which there is a rest.
7. When the pattern is complete, click elsewhere in the dialog box.
8. Step record as before.

From now on, after you record each step, Cakewalk automatically advances past all rests to the next step on which notes will be played. To stop pattern-based step recording, simply delete the pattern from the pattern box.

## Recording Channel by Channel

Most MIDI instruments are capable of sending information on several different channels at once. When you choose MIDI Omni as the input source for a track, Cakewalk records into that one track MIDI data from all the different MIDI devices and channels that are hooked up to your computer. However, you have the option to be more selective, recording material from different MIDI channels into different tracks. You can even group some of the channels together, or record some channels in several different tracks at once.

Here are some examples of when this feature might be useful:

- There are several performers, each playing a different MIDI instrument. By setting each instrument to transmit MIDI n a different channel, you can record each player's performance into a separate track, even though they are all playing at the same time.
- You are using a MIDI guitar controller and want to record the notes played on each string on a separate track.
- Your electronic keyboard has a built-in auto accompaniment feature that plays a drum part and an accompaniment while you play lead. You want to record each of these three parts into a different track in a Cakewalk project.
- You have a MIDI sequence stored on a floppy disk or on your synthesizer's built-in sequencer, and you want to record each channel onto a different track.

The [Track Sources dialog box](#) is used to set individual MIDI channels or groups of channels as the source for one or more tracks. Once you have set specific channels as the source for a track, you can change back to MIDI Omni or some other source using the + and – keys in the track view, or by using the Track Sources dialog box.

---

For step by step instructions:

[How to Assign Channels to Different Tracks](#)

## To Assign Channels to Different Tracks

1. Choose Track-Property-Sources to display the Track Sources dialog box.
2. Select one or more tracks by highlighting them in the list. Use the Shift or Ctrl keys to select more than one track.
3. Set the source for the selected tracks as follows:

### To do this...

### Do this...

Leave the source empty

Check the None box

Use MIDI Omni as the source

Check the MIDI Omni box

Use an audio source

Check the Audio box and choose an audio source from the list

Use one or more MIDI channels as the source

Check the MIDI Channels box, and check off the channels you want to include.

4. Click OK when you are done.

Cakewalk shows new track sources in the Source column of the track view.

## Importing Music and Sound

While recording is perhaps the most common way of adding material to a Cakewalk project, there are several other methods you can also use. Cakewalk lets you import music into a project from several different types of digital data files, including MIDI files, audio files in wave (.wav) format, and other Cakewalk project files.

---

See also:

[Importing Wave \(.wav\) Files](#)

[Importing Material from Another Cakewalk Project](#)

[Importing MIDI Files](#)

[Saving Your Work](#)

[Labeling your Projects](#)

[File Statistics](#)

## Importing Wave (.WAV) Files

Cakewalk lets you insert digital audio information stored in wave file format into any track of a project. If the wave file you are importing is in stereo, then the left channel will be stored in one track, and the right channel in the following track.

If the wave file is the first piece of digital audio in your project, then the sampling rate for the project is set based on your default sampling rate. If the sampling rate from the wave file does not match the sampling rate in your project, then it will be converted to the current project's sampling rate.

If the file is stereo, you have the options to import the left and right channels into separate tracks, or to merge them into a single mono track.

---

For step by step instructions:

[How to Insert a Wave File](#)

## **To Insert a Wave File**

1. Set the Now time and current track to indicate where the audio should be placed.
2. Choose Insert-Wave File to display the Open dialog box.
3. Choose the wave file you want to import. Cakewalk displays information about the file at the bottom of the dialog box.
4. Click Play to listen to the wave file before importing.
5. If the file is stereo, check the Stereo Split box if you want to split the channels into separate tracks.
6. When you are done, click Open.

Cakewalk loads the audio data from the wave file and places it in the selected track at the Now time.



## Importing Material from Another Cakewalk Project

You use the Edit-Copy and Edit-Paste commands to import material from one project to another using the Windows clipboard. The project that contains the material you want to import is the **source project**. The project into which the material is imported is the **target project**.

Normally, if you copy material from several different tracks to the Windows clipboard, the information will be pasted back into separate tracks. You can, as an option, choose to paste all the material from the clipboard into a single destination track in the target project.

You can also copy material from one project to another by displaying the Track view for both projects side by side, and then using drag-and-drop editing.

---

For step by step instructions:

[How to Import Material from Another Project](#)

### **To Import Material from Another Project**

1. Open the source project, or click in the Track view for that project.
2. In the Track view, select the material you want to import.
3. Choose Edit-Copy to display the Copy dialog box
4. Make sure that Events in Tracks is checked, and click OK.
5. Open the target project, or click in the Track view for that project.
6. Set the Now time and current track to indicate where the material should be placed.
7. Choose Edit-Paste to display the Paste dialog box.
8. Check Paste to One Track if you want all material imported into the current track.
9. Click OK.

Cakewalk imports the material and displays it in the Track view.

## Importing MIDI Files

You can create a new Cakewalk Project from a MIDI file simply by opening the file. Cakewalk takes material from the file and places it into one or more tracks in the Track view. For more information about MIDI files and how Cakewalk works with them, see [MIDI Files](#).

---

For step by step instructions:

[How to Import Information from a MIDI File Into an Existing Project](#)

### **To Import Information from a MIDI File Into an Existing Project**

1. Open the MIDI file as a new, separate project.
2. Choose Edit-Select-All.
3. Choose Edit-Copy to display the Copy dialog box
4. Make sure that Events in Tracks is checked, and click OK.
5. Open the target project, or click in the Track view for that project.
6. Set the Now time and current track to indicate where the material should be placed.
7. Choose Edit-Paste to display the Paste dialog box.
8. Check Paste to One Track if you want all material imported into the current track.
9. Click OK.

Cakewalk imports the material and displays it in the Track view.

## Saving Your Work

Like most Windows programs, you use the File-Save and File-Save As commands to save your work. Normally, you save your projects in the standard project file format, with a file extension of .WRK. This file contains all of your MIDI data and all of your project settings. Any digital audio that is part of your project is stored in a separate file, as described in Digital Audio Data Management.

Cakewalk also lets you save files in two other formats, as described in the table:

File type...	Extension...	Explanation...
Standard MIDI	.mid	Used to transfer MIDI-only songs to other software products that support Standard MIDI files. See <a href="#">MIDI Files</a> for more information.
Bundle	.bun	A single file that includes all the material in your project: MIDI data, projects that contain digital audio, when you want to back up your work or transfer a project to a different computer. See <a href="#">Backing up Projects with Digital Audio</a> for more information.

If you have made changes to a project and then attempt to close the project, either by closing the Track view or by choosing File-Close, Pro Audio asks if you want to save the changes you have made. This prevents you from accidentally losing your work. You can tell whether changes have been made to a project by looking for an asterisk (\*) after the project name in the Pro Audio title bar.

Pro Audio has an Auto Save feature that periodically saves your work into a special backup file. You can request automatic backups at fixed time intervals or every time a certain number of changes have been made to the file. When the limit is reached, the file is saved automatically. If your original project is called MYPROJECT.WRK, the Auto Save version is called AUTO SAVE VERSION OF MYPROJECT.WRK.

If there is a power failure or if you make a significant mistake, you can recover the last-saved version of your project by opening this file. You should then save your song under a different name by using the File-Save As command

---

For step by step instructions:

[How to Save a Project](#)

[How to Change the Auto Save Settings](#)

## **To Save a Project**

1. Choose File-SaveAs to display the Save As dialog box.
2. Choose the type of file you want to save from the Save as Type list.
3. Enter a file name and click Save.

Cakewalk saves the file.

### **To Change the Auto Save Settings**

1. Choose Tools-Global Options and click the General tab.
2. To enable Auto Save, set either the number of minutes or the number of changes between saves.
3. To disable Auto Save, set both values to zero.
4. Click OK.

From now on your projects are saved automatically according to the settings you entered.

## Labeling your Projects

Cakewalk lets you attach subtitles, composer credits, copyright, and other information to your projects, as shown in the table:

Title	The title for your song; prints automatically at the top of a Staff view printout.
Subtitle	For a subtitle or dedication; prints directly below the title in a Staff view printout.
Instructions	Use for performance instructions; prints flush left in a Staff view printout.
Author	Put your name here if you are the composer. Prints flush right in a Staff view printout.
Copyright	Copyright information prints flush right, under the author name, in a Staff view printout.
Key Words	Put key words describing the song here for future reference.
Comments	Free text comments. Type as much as you like. You can enter approximately the same amount of text as you can in Windows Notepad.

This information is displayed in the File Info window, which is displayed using the File-Info command. If the File Info window is open when you save a file, then this window is displayed automatically the next time the file is opened. This is useful if:

- You share files with others and want them to see special instructions when they open the file
- You want your copyright information to be displayed automatically

If the File Info window is closed when you save the file, it will not be automatically displayed the next time the file is opened.

Although you cannot use Edit menu commands while working in the File Info window, standard Windows hot keys like Ctrl-X, Ctrl-C, and Ctrl-V can be used to cut, copy, and paste text. Ctrl-Z can be used to undo your last edit.

---

For step by step instructions:

[How to Display and Edit Project Information](#)



### **To Display and Edit Project Information**

1. Choose File-Info to display the File Info window.
2. Edit the information as desired.
3. If you want the File Info window to display automatically, save the file.
4. Click Statistics to see statistics about the contents of the file.
5. Choose File-Print Preview if you want to print the project information
6. Close the File Info window.

## File Statistics

The File Statistics dialog box displays the following information about the contents of the project file:

Statistic...	What it means...
Created	The date the project was first saved.
Editing time	The total time that you've had the project open from the time it was created to the last time it was saved. This does not include time spent editing the project since you last saved it, if you want to update this value, save the project.
Revision	Each time you save a file that has been changed, this number is incremented. If you open a project, make no changes, and then save it, the revision number is not changed. The total number of events in the project.
Events	The total number of events in the project.

## MIDI Input and Echo Controls

Cakewalk gives you fine control over a variety of MIDI settings. You can filter out MIDI input information to eliminate information you don't want to record, and you can control the way that Cakewalk echoes MIDI input to any connected output devices.

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See also:

[Input Filtering](#)

[MIDI Echo](#)

[Local Control](#)

## Input Filtering

Cakewalk lets you filter out specific types of MIDI messages, or filter the MIDI input stream channel by channel. Any MIDI information that is filtered out is neither recorded nor echoed to any other MIDI devices.

You can use the message type filter to screen out resource-intensive MIDI messages like key and channel aftertouch. By default, Cakewalk records all types of events except these two.

You can use message type filtering to record short System Exclusive (Sysx) messages in real-time. These will end up in the track as Sysx data events, which can hold System Exclusive messages up to 255 bytes long. Leave the Buffers setting at 128 unless you experience data not being recorded. For more information about Sysx, see [System Exclusive Data](#).

---

For step by step instructions:

[How to Filter Event Types](#)

[How to Filter by Channel](#)

### **To Filter Event Types**

1. Choose Tools-Global Options and click the MIDI Filter tab.
2. Check the message types that you want to have recorded.
3. Click OK when you are done.

From now on, Cakewalk records only the types of events you have chosen.

### **To Filter by Channel**

1. Choose Tools-Project Options and click the MIDI Input tab.
2. Check the channel numbers from which you want to record.
3. Click OK when you are done.

Cakewalk records events from the channels you have chosen, and excludes events from the other channels.

## MIDI Echo

Cakewalk lets you control the echo of MIDI data from your MIDI inputs to your MIDI outputs — that is, from your master keyboard to one or more of your sound modules. This function is known as **MIDI thru**, and is configured using the Project Options dialog box.

There are three different echo modes, as shown in the table:

Mode...	How it works...
None	Disables MIDI echo entirely
Manual	Enables MIDI echo, and lets you manually control the mapping of inputs to outputs, as described below
Auto (default)	Enables MIDI echo and maps data automatically by following the parameters of the current track view. The Auto mode allows you to use the Track view as a list of selectable MIDI echo mapping destinations.

If you choose the manual echo mode, you can control the routing and processing of MIDI echo data, as shown in the table:

Setting...	What it means...
Port	The desired destination port. Blank means that the port is not mapped.
Channel	The desired destination channel. Blank means that the channel is not mapped.
Key	The desired note transposition, if any.
Velocity	The desired velocity transposition, if any.

---

For step by step instructions:

[How to Configure MIDI Echo](#)

## **To Configure MIDI Echo**

1. Choose Tools-Project Options and click the MIDI Input tab.
2. Choose the echo mode you want (None, Manual, or Auto) from the Echo Mode list.
3. If you chose Manual as the echo mode, configure the mapping the way you want.
4. Click OK when you are done.

From now on, Cakewalk echoes MIDI according to these settings.



## Local Control

As described in [My Keyboard Doubles Every Note I Play](#), you should normally disable the Local Control setting on your master keyboard to prevent notes from being doubled. Notes you play on the keyboard are then transmitted to Cakewalk, echoed back to the synthesizer, and played only once.

When Cakewalk starts, it sends a special MIDI message that attempts to disable Local Control automatically. Most modern synthesizers respond to this message. If yours does not, you will need to disable Local Control every time you turn it on for use with Cakewalk.

If your synthesizer does not let you disable Local Control (this is rare), you can use the Local On Port setting in the Project Options dialog box to indicate the number of the output port connected to your synthesizer. Cakewalk will then refrain from sending MIDI echo data to that port. In this configuration you may need to turn your synthesizer's volume control up and down from time to time, to avoid hearing it play along with your other modules. If this situation doesn't apply to you, the Local On Port should be set to 0. Note that the Virtual Piano will not record if the Local On Port is set to any value other than zero.

## Basic Editing and Arranging

The Track view makes it easy to arrange your songs and other projects. From one location, you can select, copy, move, and rearrange the parts of your project, using menu commands or drag and drop tools. Markers provide easy-to-use reference points and labels for the different parts of your project, and the Snap-To Grid makes it easy to align your clips to the desired time points. Home Studio also has a variety of tools and commands for changing the tempo of your song.

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See also:

[Arranging Tracks](#)

[Arranging Clips](#)

[Working with Partial Clips](#)

[Markers and the Snap-To Grid](#)

[Working with Linked Clips](#)

[Splitting and Combining Clips](#)

[Tempo Changes](#)

## Arranging Tracks

Cakewalk provides a variety of commands that let you work with the tracks in your project. Here are some of the things you can do:

### You can...

### Here's why...

Rearrange the tracks in the track view so that they appear in a different order

This makes it easier to see and work with a subset of tracks, like the rhythm section, or the vocals and vocal backing tracks, or all muted tracks.

Make copies of a track.

Copying a track and then adding a time offset or changing the patch is an easy way to double a part. You can also copy and then transpose a track to add harmony.

Erase or delete a track.

Tracks and clips that you are no longer using in your project are distracting and takes up space in your project file.

All the commands you use to arrange tracks work on selected tracks. The current track (the one containing the highlight) is always selected. You can select additional tracks as shown in the table:

### To do this...

### Do this...

Select a track

Click on the track number in the track view. The track is selected, and all other tracks except the current track -- are deselected

Select several adjacent tracks

Press and hold the left mouse button on the first track in the group, drag the mouse to the last track in the group, and release the mouse button

Select all tracks

Click in the gray button above the track numbers

Add or remove a single track from the selection

Hold the shift key and click on the track number to add it to the selection; hold the Ctrl key and click on the track number to toggle its selection status

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See also:

[Changing the Order of Tracks](#)

[Copying Tracks](#)

[Erasing Tracks](#)

## Changing the Order of Tracks

There are several ways you can change the order of tracks in the Track view

- Drag a track to a new position in the Track view
- Use the Track-Sort command to rearrange the tracks in order based on the track name, status, or other setting
- Insert new, blank tracks between existing tracks

---

For step by step instructions:

[How to Drag a Track to a New Position](#)

[How to Sort the Tracks](#)

[How to Insert a Blank Track](#)

## To Drag a Track to a New Position

1. Position the mouse over the Name column for the track you want to move
2. Press and hold down the mouse button. The cursor changes to an up/down arrow.
3. Drag the track to its new location, and release the mouse button.

Cakewalk rearranges and renumbers the tracks.

You can sort the tracks in a project based on several parameters, in either ascending or descending order:

Sort by...	What happens...
Name	Ascending puts track in alphabetic order, descending puts them in reverse order
Size, port, or channel	Ascending puts them in increasing numeric order, descending puts them in decreasing numeric order
Muted, archived, selected	Ascending puts qualifying tracks at the end, descending puts them at the beginning

No matter how you sort, blank tracks are always moved to the end of the list.

Note that track numbers are used for reference only. When you rearrange the order of tracks, they are automatically assigned sequential numbers based on the order in which they are displayed in the Track view.

### **To Sort the Tracks**

1. Choose Track-Sort to display the Sort Tracks dialog box.
2. Choose the attribute by which to sort from the Sort By list.
3. Choose the order in which to sort from the Order list.
4. Click OK when you are done.

Cakewalk sorts the tracks according to the settings you chose.

## **To Insert a Blank Track**

1. Move the highlight to any track.
2. Press the Insert (Ins) key.

Cakewalk shifts the current track and all other tracks down by one, and inserts a blank, new track at the location of the highlight. You can also insert tracks using the Insert-Track command. Right-click on any track in the track pane to access this command from the Inspector menu

## Copying Tracks

When you copy a track using the Track-Clone command, you can choose to copy the track properties, the clips and events in the track, or both. You can also choose the destination track. By default, Cakewalk copies the entire track to the next open track.

Cakewalk also lets you copy entire tracks and individual clips in a track using the Cut, Copy, and Paste commands, and using drag and drop editing. For more information, see [Moving and Copying Clips](#).

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For step by step instructions:

[How to Copy the Current Track](#)



**To Copy the Current Track**

1. Move the highlight to any track.
2. Choose Track-Clone to display the Clone dialog box.
3. Check the Events or Properties box to indicate which items you want to copy.
4. Enter the destination track number in the To Track box.
5. Click OK when you are done.

## Erasing Tracks

You can easily delete, or **kill**, an entire track, including all of the track properties and all of its clips and events. Sometimes, you only want to erase, or **wipe**, the contents of a track, leaving the track properties as they are. If you kill or wipe a track by mistake, you can use Undo to restore the deleted material.

When you kill or wipe a track, the track information is not placed on the Windows clipboard. To remove material from a track and place it on the clipboard, use the Edit-Cut command instead.

---

For step by step instructions:

[How to Delete a Track](#)

[How to Delete Several Tracks at Once](#)

[How to Wipe One or More Tracks](#)

## **To Delete a Track**

1. Select the track (or tracks) you want to delete.
2. Press the Delete (Del) key.

Cakewalk deletes the current track, and renumbers the other tracks accordingly. You can also delete a track using the Delete Track command. Right-click on any track in the track pane to access this command from the Inspector menu.

### **To Delete Several Tracks at Once**

1. Select the tracks you want to delete.
2. Choose Track-Kill or press the Delete (Del) key.

Cakewalk deletes the selected tracks. It does not move or relocate existing tracks.

### **To Wipe One or More Tracks**

1. Select the tracks you want to wipe.
2. Choose Track-Wipe. (If you have selected more than one track, you can press the Delete (Del) key instead.)

Cakewalk deletes all clips and events from the selected tracks, but leaves the track properties intact.

## Arranging Clips

The Track view provides many ways for you to rearrange, copy, and paste clips to arrange your music the way you want. The easiest is to select the clips or portions of clips you want to arrange, and then drag and drop them wherever you want. You can drag and drop clips in the Track view even while playback is in progress. You can also arrange clips via the clipboard using the Edit-Cut, Edit-Copy and Edit-Paste commands, which work like those in almost all Windows programs.

---

See also:

[Displaying Clips](#)

[Moving and Copying Clips](#)

## Displaying Clips

Clips are displayed as rectangles in the clips pane. Their position and length show you at a glance their starting times and lengths. You can control three aspects of their appearance:

- **Color** - By default, clips containing MIDI and audio information are drawn in different colors, so that you can easily distinguish them. You can change these default colors, or customize the color of any individual clip.
- **Name** - You can also assign each clip a descriptive name, which is displayed in the upper-left corner of the clip.
- **Contents** - At your option, clips can be displayed with a graphical representation of the events in the clip. The effect is slightly different for MIDI and audio information, as shown below:

{bml c5p6n1.bmp{

To inspect the clip contents more closely, use the zoom tools to increase the size in which clips are displayed. Note that displaying the contents of each clip makes your computer work a little harder. As a result, if your computer has an older, slower CPU you may want to turn off the display of clip contents.

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For step by step instructions:

[How to Display Clip Names and Contents](#)

[How to Change Clip Names](#)

[How to Change Clip Colors](#)

### **To Display Clip Names and Contents**

1. Right-click in the clips pane, and choose View Options from the menu.
2. Check the Display Clip Names option to show clip names, or leave it unchecked to hide them.
3. Check the Display Clip Contents option to show clip contents, or leave it unchecked to hide them.
4. Click OK when you are done.

Cakewalk modifies the clips pane to show the information you want.



### **To Change Clip Names**

1. Select the clips you want to rename.
2. Right-click on one of the selected clips and choose Properties. Cakewalk opens the Clip Properties dialog box.
3. Enter a name for the selected clips, and click OK.

Cakewalk renames the selected clips.

## To Change Clip Colors

1. Select the clips whose color you want to change.
2. Right-click on one of the selected clips and choose Properties. Cakewalk opens the Clip Properties dialog box.
3. Choose a color as follows:

To do this	Do this...
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Use the default color	Check the Default Color box
-----------------------	-----------------------------

Use a custom color	Click the Choose Color button, pick a color from the Color dialog box, and click OK
--------------------	---

4. Click OK when you are done.

Cakewalk changes the color of the selected clips.

## Selecting Clips

Before you move, copy, edit, or delete clips you need to select them. There are several ways to select whole clips, as shown in the table:

To do this...	Do this...
Select a single clip	Click on the clip in the Track view
Select several clips at once	Drag a rectangle around the clips
Select all the clips in a track	Click on the track number in the Track view
Select a portion of one or more clips	Press and hold the Alt key and drag across the clips
Add clips to the selection	Hold the Shift key and either click on the clips or drag a rectangle around the clips
Add or remove clips from the selection	Hold the Ctrl key and either click on the clips or drag a rectangle around the clips
Add or remove all clips in a track from the selection	Hold the Ctrl key and click on the track number

## Moving and Copying Clips

You can copy or move clips using drag and drop editing or the Cut, Copy and Paste commands. If you copy or move clips into tracks that contain existing material, you need to let Cakewalk know how to combine the two. You have three options:

Option...	How it Works...
Blend Old and New	Events in the copied or moved clip are placed into a new clip that overlaps with the existing clip. This is the same effect as sound-on-sound recording
Replace Old with New	Events in the copied or moved clip are placed into a new clip, and any overlapping events in the existing clip are erased. This is the same effect as over write recording
Slide Over to Make Room	The existing clips are shifted in time to make room for the new clips, so they will not overlap. If you check the Align to Measures option, shifted clips are always aligned to measure boundaries; otherwise the clips are placed end to end

When you use the Edit-Paste command to add information to a track that contains existing material, there is one final option you can choose.

Option...	What it means...
Paste as New Clips	New clips are created containing the events on the clipboard, exactly as described in the preceding table
Paste into Existing Clips	The events on the clipboard are merged into any existing clips that occupy the same region of time. This means you will never end up with clips that overlap

Note that if you copy or move clips to new, empty tracks, you don't have to worry about these settings. In this case, the track properties that go with the clips are automatically applied to the new track.

When you use drag and drop editing:

- You can set the above options every time you perform an edit, or set them once and have the same settings carry over automatically. Check or uncheck the Ask This Every Time box to indicate your preference.
- If you drag to the edge of the clips pane, it will scroll automatically in the direction you drag.
- If you change your mind while dragging clips, press the Escape key to cancel the operation.

Cakewalk also lets you move and copy clips between projects.

---

For step by step instructions:

[How to Change the Drag and Drop Settings](#)

[How to Move Clips Using Drag and Drop](#)

[How to Move Clips Using Cut and Paste](#)

[How to Move a Clip to a Specific Start Time](#)

[How to Copy Clips Using Drag and Drop](#)

[How to Copy Clips Using Copy and Paste](#)

[How to Delete Clips](#)

## **To Change the Drag and Drop Settings**

1. Right-click in the clips pane and choose Drag and Drop Options from the menu. Cakewalk displays the Drag and Drop Options dialog box.
2. Choose the options you want.
3. To display this dialog box every time you drag and drop, check the Ask This Every Time box.
4. Click OK when you are done.

Cakewalk sets your drag and drop settings accordingly.

### **To Move Clips Using Drag and Drop**

1. Select the clips you want to move.
  2. Position the mouse over one of the selected clips.
  3. Press and hold down the left mouse button. A rectangle is displayed around the selected clips.
  4. Drag the clips to their new location, and release the mouse button.
  5. If necessary, choose the options you want from the Drag and Drop Options dialog box, and click OK.
- Cakewalk moves the clips to their new location.

## **To Move Clips Using Cut and Paste**

1. Select the clips you want to move.
2. Choose Edit-Cut to display the Cut dialog box.
3. Choose the options you want and click OK. Cakewalk cuts the clips from the project and places them on the Windows clip board.
4. Click in the track pane to set the current track to be the one where clips should be pasted.
5. Set the Now time to be the time at which the clips should be pasted.
6. Choose Edit-Paste to display the Paste dialog box.
7. Choose the options you want and click OK.

Cakewalk places the clips in their new location.

### **To Move a Clip to a Specific Start Time**

1. Select the clip you want to move.
2. Right-click on the selected clip and choose Properties. Cakewalk opens the Clip Properties dialog box.
3. Enter a new start time, or use the spinners or keyboard to change the start time.
4. Click OK when you are done.

Cakewalk moves the clip to the start time you chose.



### **To Copy Clips Using Drag and Drop**

1. Select the clips you want to copy.
2. Position the mouse over one of the selected clips.
3. Press and hold down the Ctrl key.
4. Press and hold down the left mouse button. A rectangle is displayed around the selected clips.
5. Drag the clips to their new location, and release the mouse button.
6. If necessary, choose the options you want from the Drag and Drop Options dialog box, and click OK.

Cakewalk copies the clips to their new location.

## **To Copy Clips Using Copy and Paste**

1. Select the clips you want to copy.
2. Choose Edit-Copy to display the Copy dialog box.
3. Choose the options you want and click OK. Cakewalk copies the clips to the Windows clipboard.
4. Click in the track pane to set the current track to be the one where clips should be pasted.
5. Set the Now time to be the time at which the clips should be pasted.
6. Choose Edit-Paste to display the Paste dialog box.
7. Choose the options you want and click OK.

Cakewalk copies the clips to their new location.

**To Delete Clips**

1. Select the clips you want to delete.
2. Choose Edit-Delete or press the Delete (Del) key.

Cakewalk deletes the selected clips.

## Working with Partial Clips

Cakewalk lets you select, copy, move, and delete portions of a project even if they do not match clip boundaries. There are two ways to do this.

- Directly select portions of one or more clips.
- Select a range of times and one or more tracks. Cakewalk automatically selects the portions of clips that are in both the selected time range and the selected tracks.

You can then copy, move, or delete the material the same way you do with whole clips. Once you start limiting your selection to partial clips, you cannot select entire clips or tracks in the normal fashion until you completely clear the selection first.

When you select portions of a clip, Cakewalk may round off the start and end times of your selection based on the Snap-To grid. For more information, see [Defining and Using the Snap-To Grid](#).

When you move, delete, or copy partial clips, you must choose one other option:

Option...	How it works...
Split Audio Events	If this option is checked, audio events will automatically be split into parts as needed when you cut, copy, paste, or move them. If this option is not checked, Cakewalk will cut, copy, paste, or move the entire event, even if only a portion is selected.

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For step by step instructions:

[How to Select a Portion of a Clip](#)

[How to Select a Portion of Several Clips](#)

[How to Select Partial Clips Using Time Ranges and Tracks](#)

[How to Clear the Partial Clip Selection](#)

### **To Select a Portion of a Clip**

1. Press and hold the Alt key.
2. Drag the mouse across part of a clip.

Cakewalk highlights the selected portion of the clip. You can edit this portion of the clip using all the normal editing commands.

### **To Select a Portion of Several Clips**

1. Press and hold the Alt key.
2. Drag the mouse across part of several clips in adjacent tracks.

Cakewalk highlights the selected portions of all the clips. You can edit these portions of clips using all the normal editing commands.

## **To Select Partial Clips Using Time Ranges and Tracks**

1. Select a range of time in one of the following ways:
  - Drag the mouse in the time ruler
  - Click between two markers to select the time between the markers
  - Use the F9 and F10 keys to set the beginning and end selection times
  - Select a clip (Cakewalk selects the range of time covered by the clip)
  - Choose Edit-Select-By Time, enter the start and end time, and click OK
2. Select one or more tracks by clicking, Shift-clicking, or Ctrl-clicking on the track numbers in the Track view.
3. To adjust the start and end time of the selection, hold the Shift key while clicking on the time ruler.

The relevant portions of clips in the selected tracks are highlighted. You can edit these portions of clips using all the normal editing commands.

## **To Clear the Partial Clip Selection**

You can clear the time-restricted selection in any of the following ways:

- Click in an empty area of the clips pane to completely clear the selection
- Choose Edit-Select-None or press the Num-5 key (the number 5 on the numeric keypad) to completely clear the selection
- Click on a single clip in the clips pane to clear the time selection and select the clip



## Markers and the Snap-To Grid

Cakewalk has a collection of features you can use to simplify and speed the work you do arranging your projects. Here are a few of the most important things you can do:

- Show gridlines on measure boundaries in the Track view
- Define and use a snap-to grid to make drag and drop editing more accurate
- Create markers to identify and work with key time points in your project

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See also:

[Showing Gridlines](#)

[How to Show or Hide Gridlines](#)

[Defining and Using the Snap-To Grid](#)

[How to Show or Hide Gridlines](#)

[How to Enable or Disable the Snap Grid](#)

[How to Change the Grid Interval](#)

[How to Add a Marker](#)

[How to Add a Marker on the Fly](#)

[How to Edit a Marker](#)

[How to Copy a Marker](#)

[How to Lock or Unlock Several Markers](#)

[How to Move a Marker](#)

[How to Delete a Marker](#)

[How to Delete Markers from the Markers View](#)

[How to Jump to a Marker](#)

[How to Select a Time Range Using Markers](#)

## Showing Gridlines

Displaying gridlines, or vertical rules, in the clips pane of the Track view, makes it easy to see at a glance how clips align with each other, how they align with measure boundaries, and when they start and end.

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For step by step instructions:

[How to Show or Hide Gridlines](#)

### **To Show or Hide Gridlines**

1. Right-click on the Track view and choose View Options from the menu.
2. To show gridlines, check the Display Vertical Rules box. To hide gridlines, make sure the Display Vertical Rules box is not checked.
3. Click OK.

Cakewalk displays the Track view as you requested.

## Defining and Using the Snap-To Grid

Cakewalk lets you define a snap-to grid that makes it easier to arrange clips and select time ranges. To use the snap-to grid, you enable the snap feature and set an interval, such as a whole note, half note, or quarter note. From then on, when you move or copy clips or markers or perform a selection using the time ruler, items will be snapped to the nearest point on the snap-to grid.

In addition to choosing a standard note duration for the snap interval, you can also enter a number of clock ticks. For example, at the default timebase of 120PPQ, a sixteenth note snap interval represents 30 ticks. If you change the timebase, the grid interval will be updated automatically. In the preceding example, if you update the timebase to 240 PPQ, the snap interval will be changed to 60.

The snap-to grid in each view is independent. For example, you can enable the snap-to grid in the Track view without enabling it in the Piano Roll, Audio, or Staff views. You can also enable the grid in several different views, but with different grid intervals in each one.



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For step by step instructions:


[How to Enable or Disable the Snap Grid](#)

[How to Change the Grid Interval](#)

## To Enable or Disable the Snap Grid

1. To enable the snap grid, click the  button in the toolbar.
2. To disable the snap grid, click the  button in the toolbar once again.

## To Change the Grid Interval

1. Shift-click the  button in the toolbar to display the Snap to Grid dialog box.
2. Choose the note duration you want, or enter a number of ticks.
3. Click OK when you are done.

All time selections and drag and drop editing operations use the new snap grid interval.

## Creating and Using Markers

Markers are a way of associating a name with a time point in your project. You use markers to name sections of a song, to mark “hit points” in a film score, or simply to provide a shortcut for working with any time point in a project. Markers make it easy to:

- Jump to a specific time point in a project
- Select a portion of a project
- Enter a time in any dialog box, by pressing F5 and choosing the marker you want

You can see and work with markers in four ways:

- They are displayed in the time ruler at the top of the Track, Audio, Staff, and Piano Roll view
- The marker toolbar lets you add markers and jump to specific marker locations
- The Markers view displays all markers and lets you add, edit, and delete markers
- You can press F11 while playback is in progress to add a marker on the fly

The time associated with a marker can be expressed in musical time or as a locked SMPTE time. If a marker has a musical time (measures, beats, and ticks), the marker stays at that musical time regardless of changes in tempo. If a marker has a locked SMPTE time (hours, minutes, seconds, and frames), the marker stays at the same time even when the tempo is changed. Locked markers are useful for projects that require you to sync the music or sound with film scores or multimedia presentations

Cakewalk takes the current snap grid settings into account when you move or copy markers. For example, if the snap grid is set to even measure boundaries, any time you move or copy a marker, the marker will be snapped to the beginning of the nearest measure. You are allowed to have any number of markers at a single time point.

To display the Marker view, choose View-Markers or click  on the toolbar. From the Markers view, you can use the File-Print and File-Print Preview commands to print a listing of markers.

You can add markers while playback is stopped, or while playback is in progress (“on the fly”). When you add a marker while playback is stopped, you can enter a name for the marker, and either use the Now time or enter a different time. When you add a marker on the fly, the marker is named automatically and assigned the Now time. Using the Markers view, you can edit the names and times whenever you want.

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For step by step instructions:

[How to Add a Marker](#)

[How to Add a Marker on the Fly](#)

[How to Edit a Marker](#)

[How to Copy a Marker](#)

[How to Lock or Unlock Several Markers](#)

[How to Move a Marker](#)

[How to Delete a Marker](#)


[How to Delete Markers from the Markers View](#)

[How to Jump to a Marker](#)

[How to Select a Time Range Using Markers](#)

## To Add a Marker

1. There are five ways to add a new marker:

- Click  in the toolbar
- Press F11
- Choose Insert-Marker
- Click Add in the Markers view
- Ctrl-click in the marker section of the time ruler


Cakewalk displays the Marker dialog box.

2. Enter a name for the marker in the Name box.
3. The time is set to the Now time. If you want, use the spinners to change the time or type a new marker time.
4. Check the Locked to SMPTE box if you want to lock the marker to the SMPTE time.
5. Click OK when you are done.

Cakewalk adds the marker and displays it in the time ruler and Mark ers view.



## To Add a Marker On the Fly

1. Click  in the toolbar, or Press F11.

Cakewalk adds a marker at the Now time, and displays it in the time ruler and Markers view.

## **To Edit a Marker**

1. Either right-click on the marker in the time ruler, or choose a marker in the Markers view and click Change. Cakewalk displays the Marker dialog box.
2. Change the marker name, time, or other settings as desired.
3. Click OK when you are done.

Cakewalk updates the marker in the time ruler and Markers view.

## **To Copy a Marker**

1. Press and hold the Ctrl key.
2. Drag a marker in the time ruler of the Track, Audio, Staff, or Piano Roll view. Cakewalk displays the Marker dialog box.
3. Enter the desired marker settings and click OK.

Cakewalk copies the marker and displays it in the time ruler and Markers view. You can also cut and paste markers directly from the markers view.

### **To Lock or Unlock Several Markers**

1. In the Markers view, select one or more markers. Use the Ctrl and Shift keys if necessary to modify the selection.
2. Check or uncheck the Locked box.

Cakewalk updates the markers.

### **To Move a Marker**

Drag the marker in the time ruler.

Cakewalk updates the marker time and shows it at the new location.

**To Delete a Marker**

1. Press and hold the left mouse button while pointing to a marker in the time ruler.
2. Press the Del (Delete) key, and release the mouse button.

Cakewalk deletes the marker. You can use Undo if you make a mis take.



### **To Delete Markers from the Markers View**

1. In the Markers view, select one or more markers. Use the Ctrl and Shift keys if necessary to modify the selection.
2. Click Delete or press the Del (Delete) key.

Cakewalk deletes the selected markers. You can use Undo if you make a mistake.

## To Jump to a Marker

There are many different ways to jump to a specific marker:

- Choose a marker from the drop-down list in the marker toolbar to jump to that marker
- Click the Now time in the toolbar, press F5 to display a list of markers, choose the marker you want, and click OK
- Press F5 twice to display a list of markers, choose the marker you want, and click OK
- Click on a marker in the Markers view to set the Now time to that marker
- Click  or  in the Marker toolbar to jump to the next or previous marker.
- Choose Go-Next Marker or Go-Previous Marker to jump to the next or previous marker.



## **To Select a Time Range Using Markers**

You can select a range of times by clicking in the marker section of the time ruler:

- Click to the left of the first marker to select the time between the start of the project and the first marker
- Click between two markers to select the time between the markers
- Click to the right of the last marker to select the time between the marker and the end of the project

## Working with Linked Clips

Cakewalk makes it easy to repeat a pattern over and over using a feature called **linked clips**. Linked clips always have the same contents, name, and display color. Any change you make to one of the clips will automatically apply to all of them. Any number of clips may be linked with each other.

To create linked clips, simply check the linked clips option in the Copy dialog box or the Drag and Drop Options dialog box. Linked clips are displayed with a dotted border, so they are easy to spot. You can also identify linked clips using the Clip Properties dialog box or the Select All Siblings command.

You can easily unlink linked clips, and then edit them individually. You have two options when unlinking linked clips:

Option...	How it works...
New linked group	The clips you selected will still be linked to each other, but won't be linked to any clips that are not selected
Independent	Every selected clip will be completely independent

Once you have unlinked linked clips, you cannot re-link them except by using Undo.

If you attempt to copy only a portion of a linked clip, the copy will not be linked to the original. Copies of a clip can be linked to the original only when you select and copy the entire clip.

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For step by step instructions:

[How to Make Linked Copies of a Clip Using Drag and Drop](#)

[How to Make Linked Copies of a Clip Using Copy and Paste](#)

[How to Unlink Linked Clips](#)

[How to Select the Clips that are Linked to Another Clip](#)

### **To Make Linked Copies of a Clip Using Drag and Drop**

1. Right-click in the clips pane and choose Drag and Drop Options to display the Drag and Drop Options dialog box.
2. Check the option labeled Copy Entire Clips as Linked Clips.
3. Click OK.
4. Select the clips you want to copy.
5. Position the mouse over one of the selected clips.
6. Press and hold down the Ctrl key.
7. Press and hold down the left mouse button. A rectangle is displayed around the selected clips.
8. Drag the clips to their new location, and release the mouse button.
9. If necessary, confirm the options in the Drag and Drop Options dialog box, and click OK.

Cakewalk creates copies of the selected clips that are linked to the originals. Any change you make to one of the clips is applied to all linked clips.

## **To Make Linked Copies of a Clip Using Copy and Paste**

1. Select the clips you want to copy.
2. Choose Edit Copy to display the Copy dialog box.
3. Make sure you check the option labeled Copy Entire Clips as Linked Clips.
4. Choose other options as desired and click OK. Cakewalk copies the clips to the Windows clipboard.
5. Click in the track pane to set the current track to be the one where clips should be pasted.
6. Set the Now time to be the time at which the clips should be pasted.
7. Choose Edit-Paste to display the Paste dialog box.
8. Choose the options you want and click OK.

Cakewalk creates copies of the selected clips that are linked to the originals. Any change you make to one of the clips is applied to all linked clips. If you make multiple copies, by pasting multiple repetitions, all copies of the clip will be linked together.

## **To Unlink Linked Clips**

1. In the Track view, select the clips you want to unlink.
2. Right-click on any selected clip and choose Unlink from the menu. Cakewalk displays the Unlink Clips dialog box.
3. Choose the unlink option you want, and click OK.

Cakewalk unlinks the clips and updates the Track view accordingly. From now on, any changes you make to one of the clips are applied only to remaining linked clips, if any.

### **To Select the Clips that are Linked to Another Clip**

1. Select one or more clips in the Track view.
2. Right-click on any selected clip and choose Select All Siblings from the menu.

Cakewalk selects any clip that is linked to one of the currently selected clips.

## Splitting and Combining Clips

Cakewalk provides several commands that are used to split and combine clips. Specifically, you can:

- Split a clip into several smaller clips
- Create a new clip from a selected portion of an existing clip
- Combine adjacent or overlapping clips into a single, longer clip

The following table summarizes the commands you can use:

To do this...	Use this command...	Notes...
Split clips into parts	Split	Works on all selected clips
Create a new clip from part of an existing clip	Edit>Create Clips	Erases the selected portion of the existing clip, and moves the material into a new, separate clip
Combine several clips into one	Combine	If the selected clips are in separate tracks, the new clip is placed in the first of these tracks

The Split command lets you split clips four different ways:

Option...	How it works...
Split at Time	Splits selected clips at a specific point in time. By default, the split occurs at the Now time, but you can choose any time you want
Split Repeatedly	Splits selected clips at regular intervals, beginning at a specified time, with a specified duration. For example, you could split a long clip into 4-bar clips starting at measure 5.
Split at Markers	Splits selected clips at any marker location. This option is available only if your project has markers.
Split when Silent	Removes “silent” stretches of one measure or more from selected clips. The presence in a measure of any event—including those that make no sound, such as a patch change or lyric event—will cause that measure to be retained.

While the Split command works for both MIDI and audio clips, the Split tool in the Audio view provides more precise control that is often required for audio material. In particular, this other command provides sample accurate editing and snap-to-zero capability.

Note that the Undo and Redo commands work with all three of these editing commands.

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For step by step instructions:

[How to Split Clips into Smaller Clips](#)

[How to Combine Clips](#)

[How to Split Material into New, Separate Clips](#)

## **To Split Clips into Smaller Clips**

1. Select the clips you want to split.
2. Right-click on any selected clip, and choose Split from the menu. Cakewalk shows the Split dialog box.
3. Choose the Split option you want to use, and enter the settings you want to use.
4. Click OK when you are done.

Cakewalk splits the selected clips according to your instructions.



## **To Combine Clips**

1. Select the clips you want to combine.
2. Right-click on any selected clip and choose Combine from the menu.

Cakewalk combines the selected clips into a single, new clip. If the selected clips were on different tracks, the resulting clip is placed in the first of these tracks.

### **To Split Material into New, Separate Clips**

1. Select a portion of one or more existing clips.
2. Choose Edit>Create Clips, or right-click on any selected clip and choose Create Clips from the menu.

Cakewalk creates new clips from the selected material.

## Tempo Changes

Your project can incorporate all kinds of tempo changes including step changes from one tempo to another, gradual increases (accelerandos) or decreases (ritardandos), or almost any other type of change you can imagine. The tempo changes you add to your song become part of the project, and are saved with the project file.

You can add tempo changes to your project in four ways:

- Using the Tempo toolbar
- Using the Insert-Tempo Change and Insert-Series of Tempos commands
- By drawing tempo changes graphically in the Tempo view

When you change the tempo of a project that contains audio, Cakewalk will, at your option, stretch or shrink the audio wave to fit the new tempo. Otherwise, the MIDI tracks will speed up or slow down while the audio tracks will play at the same speed.

Sometimes you don't want to adjust the speed of your audio. Here are some examples:

- If your project contains background music and a voice-over, you might want to change the tempo of the background music without altering the voice-over
- If you're trying to modify the speed of some MIDI tracks to match a sampled drum groove, you want to leave the audio unchanged

When you insert a tempo change using a dialog box, the Stretch Audio checkbox lets you choose whether or not to stretch or shrink the audio portions of your project. You can also designate that an audio clip should never be stretched by setting the track patch to be "Unstretchable."

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See also:

[Using the Tempo Toolbar](#)

[Using the Tempo Commands](#)

[Using the Tempo View](#)

## Using the Tempo Toolbar

The Tempo toolbar displays the current tempo, and lets you change the tempo as shown below:



When you enter a new tempo directly in the toolbar, you change the most recent tempo setting in the project.

The tempo ratio buttons temporarily change the speed of playback, without affecting the actual tempo that is stored with your song. During playback, the tempo is multiplied by the current tempo ratio. By default, the three tempo ratios are 0.50 (half speed), 1.00 (normal speed) and 2.00 (double speed). You can change the tempo ratios that are associated with each button.

Note that tempo ratios cannot be used when using any form of synchronization. For more information, see [Synchronization](#).

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For step by step instructions:

[How to Change the Current Tempo in the Tempo Toolbar](#)

[How to Set the Tempo Ratio](#)

[How to Change the Tempo Ratio Values](#)

### **To Change the Current Tempo in the Tempo Toolbar**

1. Click on the current tempo in the Tempo toolbar.
2. Type a new value or use the spinners to change the tempo value.
3. Press the Enter or Tab key.

Cakewalk changes the current tempo to the desired value. If Stretch Audio is enabled, after a  $\frac{3}{4}$  second delay, Cakewalk shrinks or stretches the song's audio events to conform to the new tempo. Lowering the tempo will shrink the audio; raising the tempo will stretch the audio.

### **To Set the Tempo Ratio**

1. You can set the tempo ratio in several ways:
2. Click on one of the tempo ratio buttons.
3. Choose Realtime-Tempo Ratio 1, 2, or 3.
4. Press Ctrl-1, Ctrl-2, or Ctrl-3.

Cakewalk changes the speed of playback.

### **To Change the Tempo Ratio Values**

1. Shift-click on one of the tempo ratio buttons to display the Value dialog box.
2. Enter a new value for the tempo ratio.
3. Click OK.

From now on, that tempo ratio button uses the ratio you entered.

## Using the Tempo Commands

The Insert-Tempo Change and Insert-Series of Tempos commands can be used to change the existing tempo of a project or to introduce one or more tempo changes at various points in the project. You can enter tempo values directly, introduce smooth increase or decreases in tempo, or even use your mouse to “tap out” the tempo you want for some portion of a project.

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For step by step instructions:


[How to Insert a Tempo Change](#)

[How to Insert a Series of Tempos](#)

[How to Modify the Most Recent Tempo Change](#)



## To Insert a Tempo Change

1. Click  in the toolbar or choose Insert-Tempo Change to display the Tempo dialog box.
2. Check the Insert a New Tempo box.
3. Enter a new tempo in one of the following ways:
  - Type a value in the Tempo field
  - Click the arrows to change the value
  - Tap a new tempo in the space indicated in the dialog box
4. Enter a starting time for the new tempo.
5. Check the Stretch Audio option if you want audio to be modified.
6. Click OK when you are done.

Cakewalk inserts a tempo change at the designated time point.

### **To Insert a Series of Tempos**

1. Choose Insert-Series of Tempos to display the Insert Series of Tempos dialog box.
2. Enter a starting tempo, ending tempo, and step size.
3. Enter a starting and ending time for the series of tempo changes.
4. Check the Stretch Audio option if you want audio to be modified.
5. Click OK when you are done.


Cakewalk erases any existing tempo changes between the starting and ending time, and inserts a series of tempo changes that change smoothly between the starting and ending time. This command never inserts more than one tempo change on the same clock tick.

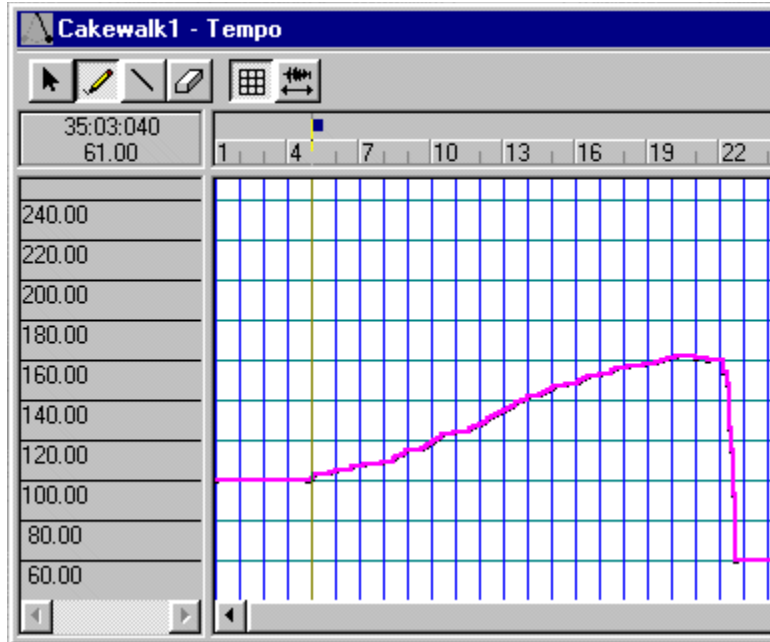
### **To Modify the Most Recent Tempo Change**

1. Choose Insert-Tempo Change to display the Tempo dialog box.
2. Check the Change the Most Recent Tempo box.
3. Enter a new tempo in one of the following ways:
  - Type a value in the Tempo field
  - Click the arrows to change the value
  - Tap a new tempo in the space indicated in the dialog box
4. Check the Stretch Audio option if you want audio to be modified.
5. Click OK when you are done.


Cakewalk changes the most recent tempo to the new value.

## Using the Tempo View




The Tempo view provides a graphic display of the tempo of project. In the Tempo view you can use your mouse to draw tempo changes directly onto the graph. Choose View-Tempo or click  on the toolbar to display the Tempo view of a project. 1



If an entire project has a single tempo, the Tempo view shows a straight horizontal line. You can zoom in and out on the tempo view using the zoom and unzoom buttons on the toolbar. To zoom all the way in or out in a single step, hold the Shift key while you click on the tool.

In the Tempo view, the  button in the toolbar determines whether or not audio will be modified. If the button is depressed, audio will be stretched when you introduce tempo changes. If not, audio material will not be affected by tempo changes.

The Tempo view has several tools you can use to add or modify tempo changes:

Tool...	Name...	What it's for...
	Line	Draw a straight line indicating a steady increase or decrease in tempo
	Draw	Draw a custom curve indicating changes in tempo
	Erase	Eliminate tempo changes already in place for some portion of a project

If you make a mistake using any of these tools, you can use Undo to correct the error. When you use the Draw tool, the speed with which you drag the mouse determines the density of tempo events. To insert a larger number of relatively small tempo changes, move the mouse slowly. To insert a smaller number of relatively large tempo changes, drag the mouse quickly.

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For step by step instructions:



[How to Insert a Tempo Change](#)

[How to Steadily Increase or Decrease the Tempo](#)


[How to Draw a Series of Tempo Changes in the Tempo View](#)

[How to Erase Tempo Changes in the Tempo View](#)


## To Insert a Tempo Change

1. Select the  tool or the  tool.
2. Click in the Tempo view at any desired time point and tempo level.  
Cakewalk introduces a tempo change at the indicated point.


## To Steadily Increase or Decrease the Tempo

1. Select the  tool.
  2. Drag a line in the Tempo view from the starting time and tempo to the ending time and tempo.
- Cakewalk introduces a series of tempo changes.

## To Draw a Series of Tempo Changes in the Tempo View

1. Select the  tool.
  2. Drag the cursor across the Tempo view, adjusting the tempo level as you move left to right.
- Cakewalk introduces a series of tempo changes.

## To Erase Tempo Changes in the Tempo View

1. Select the  tool.
2. Drag the mouse over the desired region to highlight the region you want to erase in red.
3. Release the mouse button when you have highlighted the desired region.

Cakewalk deletes all tempo changes in the area you marked. The last tempo setting prior to the erased region will now be in effect.



## More About Editing

Cakewalk lets you edit the events in your songs in dozens of different ways. The Piano Roll view lets you add and edit notes, controllers, and automation data interactively, using a graphic display.

Cakewalk's many editing commands can improve the quality of recorded performances, filter out certain types of events, and modify the tempos and dynamics of your songs. Finally, the Event List view lets you see and modify every detail of your project.

Cakewalk has many additional commands and features for working with audio. For more information, see [Audio Editing](#).

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See also:

[The Piano Roll View](#)

[Selecting and Editing Events](#)

[Changing the Timing of a Recording](#)

[Searching for Events](#)

[Controllers, RPNs, NRPNs, and Automation Data](#)

[The Event List View](#)

## The Piano Roll View

The Piano Roll view displays all notes and other events from a single track in a grid format that looks much like a player piano roll. Notes are displayed as horizontal bars, and drum notes as diamonds. Pitch runs from bottom to top, with the left vertical margin indicating the pitches as piano keys or note names. Time is displayed running left to right with vertical measure and beat boundaries. The Piano Roll view makes it easy to add, edit, and delete notes from a track.

The Piano Roll view has two main panes: the note pane and the controllers pane. When you first open a Piano Roll window, the note pane is full-size and the controllers pane is hidden at the bottom. Double-click the gray splitter bar to maximize the controllers pane, or drag the splitter bar as high as you want.

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See also:

[Opening the view](#)


[Selecting and Editing Notes](#)


[Percussion, Drum Notes, and Note Names](#)

[Controllers Pane](#)


## Opening the view

There are three ways to open the Piano Roll view:

- Select the track you want to see, then click 
- Select the track you want to see, then choose View-Piano Roll
- Right-click on a track and choose Piano Roll from the inspector menu


If several tracks are selected, the current track is displayed. You can always switch to a different track – simply click the  button (or press T) and choose the track you want. If you pick a blank track, Cakewalk creates a new track automatically.

The Piano Roll view lets you edit notes and controllers during playback or recording, in real time. This means you can loop over a portion of your project, and hear any change you make on the next loop. The Piano Roll view also shows notes on-screen as you record them.

Like the track view, the Piano Roll toolbar includes zoom tools that let you change the vertical and horizontal scale of the view. Hold the Shift key and click on the zoom tool to jump to the largest or smallest scale. The Piano Roll view also has a Snap to Grid  button. When enabled, this feature snaps note start times and durations to the snap grid resolution. You can set the resolution to any note length, or enter a number of ticks, by Shift-clicking on the Snap to Grid button.

## Selecting and Editing Notes

The Piano Roll view is a very convenient place to select, edit, and copy notes within a single track. There are several ways to select notes in the Piano Roll view:

- Click and drag in the time ruler to select notes (and other MIDI events) that start playing within the time range
- Use the Select tool  to select notes
- Click or drag the piano “keys” to select all notes of the given pitch(es)

You can use Shift-Click to add notes to the selection, and Ctrl-Click to toggle between adding to or removing from the selection.

You can add notes to a clip simply by clicking in the note pane with the pencil tool. Cakewalk remembers the velocity, duration, and channel of the note that you most recently moved, edited, or deleted, and uses these same characteristics for new notes automatically. You can edit notes freely, using the mouse to change the start time, pitch, or duration. You can also right-click on any note to edit the start time, pitch, duration, velocity and channel of that note. You can move and copy notes beyond the boundary of the clip in which they are located. When you drop the notes, they will be placed into whatever clip occupies the time at which you dropped them.

The Piano Roll view also lets you **scrub** the track that is currently displayed. The scrub command lets you drag a vertical bar over the view so that you can hear the notes in the track. You can scrub forward or backward at any speed. Scrubbing can be handy when you want to locate a bad note, or listen to the effects of changes you have made, without playing back at normal speed.

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For step by step instructions:

[How to Select Notes with the Selection Tool](#)

[How to Select All Notes of Certain Pitches](#)

[How to Edit a Note](#)

[How to Change Note Velocity or Channel](#)

[How to Move Notes](#)

[How to Copy Notes](#)

[How to Add a Note](#)


[How to Erase a Note](#)

[How to Erase Several Notes](#)

[How to Select and Erase Notes](#)

[How to “Scrub” the Song](#)

## To Select Notes with the Selection Tool

1. Click  to choose the Select tool.
2. Select notes as shown in the table:

To do this...	Do this...
Select a single note	Click on the note
Select several notes at once	Drag a rectangle around the notes you want to select
Add to the selection	Hold the Shift key while selecting notes
Toggle the selection	Hold the Ctrl key while selecting notes

Selected notes are highlighted in the Piano Roll view, and the time selection is set to the range of note start times.

## To Select All Notes of Certain Pitches

Click on the piano keys or note names on the left side of the note pane as shown in the table:

To do this...	Do this...
Select all notes of a single pitch	Click on the piano key or note name
Select all notes of several pitches	Drag a across the keys or note names
Add to the selection	Hold the Shift key while clicking on a piano key or note name
Toggle the selection	Hold the Ctrl key while clicking on a piano key or note name

## To Edit a Note

1. Click {bmc c6p4n1.bmp to choose the Draw tool.
2. Edit notes as described in the table:

To do this...	Do this...
Change the start time	Drag the left edge of the note in either direction. The note duration stays the same, but the start time is shifted.
Change the pitch	Drag the middle of the note up or down
Change the duration	Drag the right edge of the note in either direction

If the snap grid is enabled, the start time of each note is restricted to points on the snap grid, and the length of each note is restricted to an even multiple of the snap grid. For example, if the snap grid is set to quarter note resolution, you can move notes only to quarter-note boundaries, and you can increase or decrease the duration only by quarter notes.


### **To Change Note Velocity or Channel**

1. Right-click a single note to display the Note Properties dialog box.
2. Edit the start time, pitch, duration, velocity, or channel as desired.
3. Click OK when you are done.

Cakewalk updates the note event accordingly. Note that you can also edit note velocity in the controllers pane. For more information, see [Velocity, Pitch Wheel, and Aftertouch](#).




## To Move Notes

1. Click  or press S to choose the Select tool.
2. Select one or more notes.
3. Drag the selected notes to a new location.
4. If necessary, choose the Drag and Drop options from the Drag and Drop dialog box.


Cakewalk moves the selected notes.

## To Copy Notes


1. Click  or press S to choose the Select tool.
2. Select one or more notes.
3. Press and hold the Ctrl key.
4. Drag the selected notes to a new location.
5. If necessary, choose the Drag and Drop options from the Drag and Drop dialog box.

Cakewalk copies the selected notes.


## To Add a Note

1. Click  or press D to choose the Draw tool.
2. Press and hold the left mouse button in the Piano Roll view. Cakewalk adds a new note.
3. Drag the note to the desired location.
4. Release the left mouse button.


## To Erase a Note

1. Click  or press E to choose the Erase tool.
2. Click on any note to delete it.


## To Erase Several Notes

1. Click  or press E to choose the Erase tool.
2. Drag the cursor across notes to delete them.
3. Release the mouse button when you are done.

## To Select and Erase Notes

1. Click  or press S to choose the Select tool.
2. Select one or more notes.
3. Press the Delete key to delete the notes.

## To “Scrub” the Song

1. Click  or press B to choose the Scrub tool.
2. Press and hold the left mouse button in the Piano Roll view. Cakewalk displays a vertical line and plays any notes that are underneath the line.
3. Drag the line to the left or right, at any desired speed.

## Percussion, Drum Notes, and Note Names

If you are editing a track that is routed to a percussion instrument, the Piano Roll view automatically configures itself in drum mode. In drum mode, the piano “keys” are replaced by the names of the various percussion instruments. This means it is easy to change percussion notes from one instrument to another, or to select and edit the notes played by a single percussion instrument.

You can also manually reconfigure the view to display in drum mode or to use note names that are defined as part of any instrument definition. For more information about instrument definitions, see [Instrument Definitions](#).

---

For step by step instructions:

[How to Change to/from Drum Mode](#)



### **To Change to/from Drum Mode**

1. Right-click on the left side of the note pane (where the piano keys or note names are displayed) to display the Note Names and Drum Mode dialog box.
2. To use the note names from the assigned instrument (the default), click Use the Assigned Instrument Settings. Click Configure to change the instrument definitions.
3. To override the default setting, click Use These Settings Instead, and choose the note names and mode you want to work with.
4. To display diamond-shaped notes instead of rectangular boxes, check the Drum Mode box.
5. Click OK when you are done

The Piano Roll view is updated with the settings you request.

## Controllers Pane

The controllers pane, the lower half of the Piano Roll view, lets you edit MID, controller, velocity, pitch wheel, and other data. For more information, see [Controllers, RPNs, NPRNs, and Automation Data](#).

## Selecting and Editing Events

Cakewalk has many other editing commands that you can use to modify the events that make up your project. Here are some of the things you can do:

- Transpose events, clips, tracks or an entire project to a different key
- Shift events to an earlier or later time
- Stretch or shrink material to a different length
- Reverse the notes in a clip to create new arrangements
- Modify the note velocities

The following sections describe these editing commands and how to use them. Cakewalk also has some special commands you can use to modify or “clean up” a performance, or to search for or select events that meet certain criteria. For more information, see the topics listed below.

---

See also:

[Transposing](#)

[Shifting Events in Time](#)

[Stretching and Shrinking Events](#)

[Adding Crescendos and Descrescendos](#)

## Transposing

The Edit-Transpose command transposes the pitches of note events up or down by a fixed number of steps. It does so by changing the MIDI key numbers of note events. Simply enter the number of half-steps – a negative number to transpose down, a positive number to transpose up.

Cakewalk can also perform diatonic transposition, which shifts all the notes up and down the major scale of the current signature by the designated number of steps. For instance, if you specify an amount of +1 and the key signature is C-major, a C becomes a D (up a whole step), an E becomes an F (up a half step), and so on. Diatonic transposition assures you that the transposed notes fit with the original key signature.

As an option, you can choose to transpose selected audio clips along with any selected MIDI clips. Cakewalk uses pitch-shifting to perform the transposition. You can transpose audio only a single octave in either direction (-12 to +12), and you cannot transpose audio when you are using diatonic transposition.

---

For step by step instructions:

[How to Transpose Selected Events](#)

### **To Transpose Selected Events**

1. Select the tracks, clips, or events you want to transpose.
2. Choose Edit-Transpose to display the Transpose dialog box.
3. Use the spinners or enter the number of steps to transpose.
4. Check Diatonic Math if you want to transpose along the major scale of the current key.
5. Choose Transpose Audio if you want to pitch-shift selected audio clips.
6. Click OK when you are done.

Cakewalk transposes the selected events.

## Shifting Events in Time

The Track view lets you move entire clips forward or backward in time either using drag and drop editing, or by changing the start time of selected clips. The Edit-Slide command is slightly more flexible – you can use it to shift individual events and markers (or selected events and markers) either forward or backward in time. This has an effect that is similar to the Time+ parameter in the Track view. However, the Edit-Slide command modifies the time stored with each event, while the Time+ parameter simply applies a temporary change during playback.

You can also use the Edit-Slide command to move markers located within the selection. If you have selected any locked markers, Cakewalk will ask whether they should slide too.

---

For step by step instructions:

[How to Shift Events in Time](#)

### **To Shift Events in Time**

1. Select the events and/or markers you want to shift.
2. Choose Edit-Slide to display the Slide dialog box.
3. Check the types of event you want to slide (events and/or markers)
4. Enter the number of measures, ticks, seconds, or frames to slide. Enter a negative number to shift material earlier.
5. Click OK when you are done.

Cakewalk shifts the selected events and/or markers. Note that you cannot slide any event earlier than 1:01:000. For example, if the current selection starts at 2:01:000, you cannot slide events earlier by more than one measure.

## Stretching and Shrinking Events

You can also use the Edit-Length command to alter only the start times or the durations of notes. For example, changing the durations of notes to 50 percent of their original length can create a staccato effect.

---

For step by step instructions:

[How to Stretch or Shrink Using Percentages](#)



### **To Stretch or Shrink Using Percentages**

1. Select the events you want to change.
2. Choose Edit-Length to display the Length dialog box.
3. Choose to change the Start Times and/or Durations of selected notes by checking the boxes.
4. If you want to stretch selected audio events, check the Stretch Audio box.
5. Use the spinners or type in the desired percent change in length.
6. Click OK when you are done.

Cakewalk modifies the length of selected events.

## **Adding Crescendos and Decrescendos**

You can edit note velocities in the controllers pane of the Piano Roll view, which lets you draw shapes other than straight line changes. For more information, see [Using the Controllers Pane](#).

## Changing the Timing of a Recording

When you record a performance, there can easily be systematic problems you'd like to correct. For example, the note timing may not have been as accurate as you would like. Or, you may have recorded without using a metronome, and strayed from the tempo in one direction or another.

Cakewalk lets you modify the timing of a clip. The quantize command alters the timing of the notes in your recording so that they fit a time grid. The grid can have fixed time intervals, or intervals that are based on some existing note pattern.

---

See also:

[Quantizing](#)

[Resolution](#)

[Offset](#)

[Duration](#)

[Strength](#)

[Swing](#)

[Window](#)

[Other Settings](#)

## Quantizing

Quantizing is one of the most important editing functions in Cakewalk. You use this feature to correct timing errors you make when recording from a MIDI instrument, or to adjust the timing of audio events.

Very few musicians are capable of performing in perfect time. As you play, you are likely to strike some notes slightly before or after the beat, or to hold some notes slightly longer than you intended. The quantize commands can help to correct these types of timing mistakes.

The Cakewalk Edit-Quantize command adjusts the start time and duration of selected notes so that they line up with a fixed size grid

This command has quite a few settings, making it very flexible and powerful. In addition, it lets you create, save, and re-use presets. This means that once you find the settings you like, you can save them and then apply them to other projects in a consistent way.

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Settings:

[Resolution](#)

[Offset](#)

[Duration](#)

[Strength](#)

[Swing](#)

[Window](#)

[Other Settings](#)

---

For step by step instructions:

[How to Use the Quantize Command](#)

## Resolution

The **resolution** indicates the spacing of the grid. You can use any value from a whole note down to a thirty-second note triplet. You can also specify resolution in clock ticks. A rule of thumb is to select a resolution that matches the smallest note in the region you are quantizing. If you are quantizing a run of sixteenth notes, use a sixteenth note as the resolution. If you are quantizing a mix of sixteenth and eighth notes, you should still use a sixteenth note. At the default timebase of 120PPQ, 120 clock ticks is equal to quarter-note resolution.

## Offset

Normally, the resolution grid is aligned evenly with the start of measures and beats. As an option, you can shift the grid earlier or later by any desired number of clock ticks. If the resolution is a quarter note, and you've set the offset to +3 ticks, then a note that is originally near 1:01:000 would be moved to 1:01:003 – three ticks beyond the beat boundary.

## **Duration**

As an option, Cakewalk can adjust the duration of note events so that each note ends one clock tick before the start of the nearest resolution-sized note. This ensures that the notes do not overlap, which can cause problems on some synthesizers. The adjustment may lengthen the duration of some notes, and shorten the duration of others.

## Strength

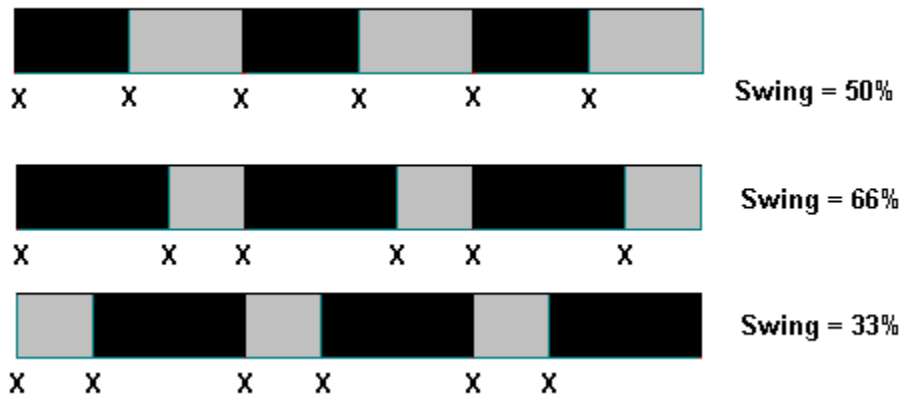
The human ear is tuned to the slight “imperfections” we hear from most musicians. If you quantize a song so that all notes are perfectly in position, it may end up sounding mechanical or rigid. To avoid this, Cakewalk lets you adjust the **strength** of the adjustment. A strength of 100 percent indicates that all notes are moved so that they are in perfect time, while a strength of 50 percent means that all notes are moved half-way towards the desired position. This lets you “tighten up” the timing as much as you want, without going too far.



## Swing

Many songs do not have notes positioned on a perfectly even time grid. For example, songs with a “swing” feel, though they may be written all using eighth notes, are often played more like eighth note triplets, with the first note extended and the second one shortened. The **swing** option lets you distort the timing grid so each pair of notes is spaced unevenly, giving the quantized material a swing feel.

A swing value of 50 percent (the default) means that the grid points are spaced evenly. A value of 67 percent means that the time between the first and second grid points is twice as long as the time between the second and third points. The figure below illustrates the effect of the swing setting on the timing grid:



## Window

When you quantize some portion of a song, notes that are very far from the grid should probably not be moved at all. The **window**, or **sensitivity** setting lets you choose how close to the resolution grid a note must be located for quantize to move it.

A window of 100 percent includes all notes, and guarantees that all notes will be shift to lie exactly on the grid. The window extends half the resolution distance before and after the quantization point. A window of 50 percent extends only a quarter of the way toward the adjacent quantization points.

## Other Settings

Like many other editing commands, the quantize commands have an option to stretch audio. This option changes the duration of audio events as if they were MIDI notes. If you want, you can also restrict the types of events that are affected by the quantize commands to only notes, lyrics, and audio events. If you choose this option, Cakewalk will not modify other events, like controllers.

## To Use the Quantize Command

1. Select the material you want to quantize using any of the selection tools and commands.
2. Choose Edit-Quantize to display the Quantize dialog box.
3. Choose a preset from the list, or enter the settings you want according to the table:

Setting...	What to do...
Resolution	Choose a note size or enter the number of clock ticks
Change	Check the event types and characteristics you want to change
Options	Enter values for Strength, Swing, Window, and Offset

4. Click Audition if you want to hear how the quantization will sound; press Stop to stop auditioning the change.
5. Make adjustments as necessary.
6. Click OK when you are done.

Cakewalk quantizes the selected MIDI information and audio event. You can use Undo to restore the material to its original state.

## Searching For Events

The events in a project have many different parameters. For example, all MIDI notes have a channel, starting time, pitch, velocity, and duration. Controllers have a controller number and value. Cakewalk makes it simple to find, select, and modify events that have certain values for specific attributes. Here are some of the things you can do, and the commands that you would use:

### Action...

### Command...

Search through a song to find the first event that has specific attributes, and then search again to find the next such event

Go-Search, Go-Search Next

Select all the events in a song that have the specified attributes

Modify an existing selection to keep only those events that have the specified attributes

Search through a song to find the first event that has specific attributes, and then search again to find the next such event

Go-Search, Go-Search Next

These capabilities can help you find problem spots or errors in a project, or make systematic changes to events that have particular attributes. All of these capabilities rely on the use of an **event filter**, which lets you choose the types of events you want to work with, and the range of values in which you are interested.

---

See also:

[Event Filters](#)

[Searching for an Event](#)

[Selecting Events](#)

[Example - Splitting Left-Hand and Right-Hand Parts](#)

## Event Filters

When you select individual clips, or select portions of clips by dragging the time ruler, you automatically select all the events that fall within the designated time range. Sometimes you need finer control over which events are selected. For example, you might want to:

- select the notes that are played in a certain octave, so you can copy them to another track
- select and boost the velocity of notes that have a velocity below a certain threshold
- find the first patch change event on a particular track
- select and change the duration of all notes that occur on the 3rd beat of any measure

The Event Filter dialog box looks like this:

**Event Filter - Select Some**

Include:

☒ **Note** Key: Min Max Velocity: Min Max Duration: Min Max  
☐ exc C 0 G 10 ☐ exc 0 127 ☐ exc 0 546.015

☒ **KeyAft** Key: Min Max Pressure: Min Max  
☐ exc C 0 G 10 ☐ exc 0 127

☒ **Control** Number: Min Max Value: Min Max  
☐ exc 0 127 ☐ exc 0 127

☒ **RPN** Number: Min Max Value: Min Max  
☐ exc 0 16383 ☐ exc 0 16383

☒ **NRPN** Number: Min Max Value: Min Max  
☐ exc 0 16383 ☐ exc 0 16383

☒ **Patch** Bank: Min Max Patch: Min Max  
☐ exc 0 16384 ☐ exc 0 127

☒ **ChanAft** Pressure: Min Max  
☐ exc 0 127

☒ **Wheel** Amount: Min Max  
☐ exc -8192 8191

**All Non-Special Events**

Channel: 1 16  
Beat: 1 99  
Tick: 0 1919

**"Special" Events**

☒ Audio ☒ SysxBank ☒ SysxDat  
☒ Text ☒ Lyric ☒ MCI  
☒ Expression ☒ Chord ☒ Hairpin

All None

Different types of event have different parameters, as shown in the table:

This event type...	Has these parameters...
Note	Pitch, velocity and duration
Key Aftertouch	Pitch and pressure value
Controller	Controller number and value
xRPN	xRPN number and value
Patch Change	Bank and patch numbers
Channel Aftertouch	Pressure value
Pitch Wheel	Value

The event filter only accepts events that meet all the specified ranges. This means that a note event must fall within the pitch range, the velocity range, and the duration range in order to be included. The event filter can also be used to accept events that occur in a range of channel numbers, beats, and clock ticks.

You can choose either to include or to exclude the events that meet the specified criteria. To exclude events within the designated range, and select the ones outside the designated range, check the **exc** checkbox for that value range.

The event filter can also be used to identify several “special” event types: audio, System Exclusive events, Lyrics, MCI commands, and a few others. You do not enter a range of values for these “special” events; Cakewalk finds all events of the types you choose.

The All and None buttons help you set up the event filter the way you want:

<b>Click this button...</b>	<b>To do this...</b>
-----------------------------	----------------------

All	Set the event filter to include all events. You can then modify the value ranges to narrow down your search, or uncheck the types of events you want to exclude.
None	Set the event filter to not include any events. Starting from a blank slate, you can check off the types of events you want to find or select, and enter the desired ranges of values.

In any place in the event filter where you would normally enter a pitch string, you can also enter the pitch by pressing a key on your MIDI keyboard. Also, you can use the question mark in place of the octave number as a “wild card.” This lets the event filter accept a single note, regardless of the octave. For example, the pitch string “C?” will match a C in any octave. Use wild card octave numbers only for the minimum range value. The maximum value is not needed and its value is ignored.

## Searching for an Event

The Go-Search command is used to find the next event (searching forward from the Now time) that meets the criteria you lay out in an event filter. Once you have found the first such event, you can find the next event that meets the criteria using the Go-Search Again command (or by pressing F3).

---

For step by step instructions:

[How to Search for an Event](#)



### **To Search for an Event**

1. Choose Go-Search to display the Event Filter dialog box.
2. Set up the event filter to find the events you want.
3. Click OK.

Cakewalk finds the next event that meets the criteria, and sets the Now time to the start time of that event. To find the next occurrence, press F3 or choose **Go-Search Again**.

## Selecting Events

The Edit-Select by Filter command is used to refine a selection by applying an event filter to an initial selection. You can use this command any number of times to refine the selection even further. Before using this command, use any of the selection commands and tools to create an initial set of selected event. You can use the Edit- Select-All command to select all events in the current view.

The Track view cannot display individual selected events. As a result, the Edit-Select by Filter command will not necessarily change the appearance of the Track view. Cakewalk applies the event filter rule, but the change is not visible. However, once you change the selection in any way (for example, by clicking on a track number, or by clicking in the time ruler), the effects of the event filter are erased. If you want to use the filter, you must choose Edit-Select-by Filter again, and click OK to use the same filter values.

**Note:** The shading of a clip in the Track view indicates how many of the events in the clip are selected. If the clip is shown in solid black, all events in the clip are selected. If a portion of a clip is shown in medium gray, all the events in that time range are selected. If the clip is shown in light gray, only some of the events in the shaded time range are selected.

---

For step by step instructions:

[How to Select Events Using the Event Filter](#)

[Example - Splitting Left-Hand and Right-Hand Parts](#)

### **To Select Events Using the Event Filter**

1. First, select an initial set of tracks, clips, or events.
2. Choose Edit-Select-by Filter to display the Event Filter dialog box.
3. Set up the event filter to find the events you want.
4. Click OK.

Cakewalk searches the currently selected events, and weeds out those that do not meet the requirements of the event filter.

### **Example - Splitting Left-Hand and Right-Hand Parts**

Suppose you recorded a keyboard riff on Track 1, but want to split the left and right hands apart into separate tracks so you can edit them separately. Suppose that all the right-hand notes are above C4. Here's how to proceed:

1. Select all of Track 1 by clicking on the track number in the Track view.
2. Choose Edit-Select-By Filter to display the Event Filter dialog box.
3. Click the None button to clear the dialog box.
4. Check the Note checkbox, and enter a minimum value of C4. The maximum should already be set to C9.
5. Click OK. Cakewalk selects all the notes from C4 up.
6. Choose Edit-Cut to move the selected notes to the clipboard.
7. Choose Edit-Paste and paste the events to a different track.

## Controllers, RPNs, NRPNs, and Automation Data

Cakewalk projects contain a lot more information than the notes and digital audio files that are at the heart of your work. Controllers, RPNs and NRPNs (xRPNs, for short) are special types of events used by MIDI software and hardware to control the details of how MIDI music is played. Automation data are used to adjust volume, pan, and other parameters of MIDI and audio tracks on the fly, while playback is in progress.

Cakewalk lets you enter or edit controller, xRPN, and automation data in several ways:

- Using the Controllers pane in the Piano Roll view
- Using the Insert-Series of Controllers command
- Using the automation features of the Console view and StudioWare panels
- Event by event in the Event List view

Editing these data in the Controllers pane gives you the most flexibility. You can examine the controllers in graphical form, and edit them even while recording or playback is in progress. This means you can loop over a portion of your project, and hear any change you make on the next loop.

For more information on automation, see [Mixing](#), and [StudioWare](#). For more information about the Event List view, see [The Event List View](#).

---

See also:

[Controllers](#)

[RPNs and NRPNs](#)

[Automation Data](#)

[Velocity, Pitch Wheel, and Aftertouch](#)

[Using the Controllers Pane](#)

## Controllers

Controllers are pedals, knobs, and wheels on your electronic instrument that you use to change the sound while you're playing. For example, a sustain pedal and a modulation wheel are two controllers commonly found on keyboards.

Controllers let you control the detail and character of your music. Say you're playing a guitar sound on your synthesizer, but it sounds lifeless and dull. That's partly because a guitar player doesn't just play notes one after another — he often bends or slides on the strings to put emotion into his playing. You can use controllers in the same way, creating bends, volume swells, and other effects that make sounds more realistic and more fun to listen to.

Your computer can work the controllers on your electronic instrument by sending MIDI Controller messages. The MIDI specification allows for 128 different types of controllers, many of which are used for standard purposes. For example, controller 7 is normally used for volume events, and controller 10 is normally used for pan. Every controller can take on a value ranging from 0 to 127.

The Piano Roll toolbar contains several drop-down lists that let you choose the controller you want to see and edit. The contents of these lists depend on the port and channel settings, and on the instrument assigned to that port and channel. Different instruments use controllers in different ways. Cakewalk lets you use instrument definitions to define the names that go with each controller number. For more information on instrument definitions, see [Instrument Definitions](#).

**Note:** Cakewalk has automatic searchback for all continuous controller data, to ensure that the correct controller values are in effect regardless of where you start playback. Suppose you start playback halfway through a song. Cakewalk searches back from that point to find any earlier controller values that should still apply.

## RPNs and NRPNs

RPNs (Registered Parameter Numbers) and NRPNs (Non-Registered Parameter Numbers) are similar to controllers, except that both the parameter number and data value can be any number between 0 and 16,383.

When RPNs and NRPNs are transmitted via MIDI or stored in a standard MIDI file, they are converted into four separate controller messages. Cakewalk detects incoming xRPN messages from MIDI inputs or files and reassembles them into a single RPN or NRPN event. This provides the convenience of single RPN or NRPN events in Cakewalk plus compatibility with existing files, equipment, and software. The following table shows the controller numbers Cakewalk uses for RPN and NRPN events:

Message	Parameter Number MSB Controller	Parameter Number LSB Controller	Data Value MSB Controller	Data Value LSB Controller
RPN	101	100	6	38
NRPN	99	98	6	38

## Automation Data

Both the Console view and the StudioWare view allow you to record automation data that define changes in volume and pan throughout a project. The automation data can include step changes recorded using the snapshot button, or continuous changes recorded while using the knobs, faders, and buttons.

## Velocity, Pitch Wheel, and Aftertouch

Cakewalk lets you display and edit several other types of data the same way you do controller data. These data include:

- MIDI note velocities
- MIDI pitch wheel or pitch-bend messages
- MIDI channel aftertouch (ChanAft) values
- MIDI key aftertouch (KeyAft) values

Remember that note velocity is an attribute of each note, and not a completely separate event. You cannot add or remove velocity events in the Controllers pane, but you can use the line and draw tools to adjust the velocity values for existing notes. You can edit individual note velocities in the Note Properties dialog box, described in [Changing Note Properties](#).



## Using the Controllers Pane





The Controllers pane is the most powerful and flexible way to edit controller, RPN, NRPN, automation, velocity, pitch wheel and aftertouch data. The Controllers pane is the lower half of the Piano Roll view.

The Controllers pane looks like a graph; the horizontal axis represents time, and the vertical axis represents the event values. Each event appears as a single vertical line, and the height of this line shows the value of the event. The Controllers pane shows events for all the clips in a single track. You can only see one type of controller at a time, and you can only see the events on a single MIDI channel. The exception is velocity data, which are not channel specific. You can zoom in and out on the Controllers pane using the zoom and unzoom buttons on the toolbar. To zoom all the way in or out in a single step, hold the Shift key while you click on the tool.

Selection methods in the Controllers pane are similar to those in other views. Here is a summary:

- Click on a controller to select it
- Shift-click to add other controllers to the selection
- Ctrl-click to toggle the selection state of a controller
- Drag a rectangle around several controllers to select them
- Click and drag in the time ruler to select all controllers in a time range
- Click between two markers to select the controllers that lie between the markers

The Controllers pane has several tools you can use to add or modify events:

Tool...	Name...	What it's for...
	Select	Select controller events, so you can delete them
	Line	Draw a straight line indicating a steady increase or decrease in controller value
	Draw	Draw a custom curve indicating changes in controller value
	Erase	Erase controller changes already in place

Note that you can also add controllers using the Insert-Series of Controllers command. If you make a mistake using any of these tools or commands, you can use Undo to correct the error.

When you use the Draw tool, the speed with which you drag the mouse determines the density of controller events. To insert a larger number of controller events with relatively small changes in value, move the mouse slowly. To insert a smaller number of controller events with relatively large changes in value, drag the mouse quickly.

Creating a change that sounds smooth does not always require making the value change by one on each tick. Bigger jumps may sound very gradual if the tempo is fast. Also, many devices round off the Controller values. For example, many instruments respond to volume controller values of 100 and 101 with exactly the same loudness. Using too high a density of Controller events can backfire by making the computer work so hard during playback that it is unable to keep up. This will usually cause hiccups or poor timing during playback.

---

For step by step instructions:

[How to Display Controller, RPN, NRPN, Velocity, Pitch-Bend, or Aftertouch Data](#)

[How to Display Automation Data](#)

[How to Insert a Controller Value](#)

[How to Draw a Linear Series of Controllers](#)

[How to Draw a Series of Controller Value Changes](#)

[How to Insert a Series of Controllers](#)

[How to Remove or Erase Controllers](#)

## To Display Controller, RPN, NRPN, Velocity, Pitch-Bend, or Aftertouch Data

1. Select the track whose controller or xRPN data you want to see, by clicking on the track number in the Track view.
2. Choose View-Piano Roll to display the Piano Roll view.
3. Drag the horizontal splitter bar so that the Controllers pane is visible.
4. Choose the data you want to see according to the table:

To see this...	Do this...
Controller data	Choose Control from the first drop-down list in the toolbar, and then choose the controller and channel from the second and third drop-down lists
RPN or NRPN data	Choose RPN or NRPN from the first drop-down list in the toolbar, choose which RPN or NRPN you want from the second drop-down list, and choose the channel from the third drop-down list
Velocity data	Choose Velocity from the first drop-down list
Pitch-bend data	Choose Wheel from the first drop-down list, and the MIDI channel from the third drop-down list
Aftertouch data	Choose ChanAft from the first drop-down list, and the MIDI channel from the third drop-down list

Cakewalk displays the data in the controllers pane.

### **To Display Automation Data**

1. In the Console view, right-click on a control to display the inspector menu.
2. Choose Display Automation Data.

Cakewalk opens a new Controllers pane, and configures it to display automation data for the control.

### To Insert a Controller Value

1. Choose the data type, controller or xRPN number, and channel (if applicable) from the lists in the toolbar.


2. Select the  tool or the

 tool.


3. Click in the Controller pane view at any desired time point and value.


Cakewalk adds a controller at the indicated point.

### **To Draw a Linear Series of Controllers**

1. Choose the data type, controller or xRPN number, and channel (if applicable) from the lists in the toolbar.
2. Select the  tool.
3. Drag a line in the Controller pane from the starting time and value to the ending time and value.  
Cakewalk adds a series of controllers, and erases any existing controller values in the same time interval.

## To Draw a Series of Controller Value Changes

1. Choose the data type, controller or xRPN number, and channel (if applicable) from the lists in the toolbar.
2. Select the  tool.
3. Drag the cursor across the Controllers pane, adjusting the value as you move left to right.  
Cakewalk adds a series of controllers, and erases any existing controller values in the same time interval.


**Tip:** When using the  tool, you can press and hold the Shift key to draw a straight line.

### **To Insert a Series of Controllers**

1. Choose Insert-Series of Controllers to display the Insert Series of Controllers dialog box.
2. Choose the controller type from the Insert list.
3. Choose the controller number or type from the Number list.
4. Use the spinners or enter the desired MIDI channel.
5. Enter a starting and ending value in the Begin and End boxes.
6. Enter a starting and ending time in the From and Thru boxes.
7. Click OK when you are done.

Cakewalk inserts a series of controller events with values that change smoothly over time from the starting to the ending value indicated in the dialog box. This command never inserts more than one event on the same clock tick. If any controllers of the type you have selected already exist in the time region, Cakewalk deletes these before inserting the new ones.

## To Remove or Erase Controllers

1. Choose the data type, controller or xRPN number, and channel (if applicable) from the lists in the toolbar.
2. Select the  tool
3. Drag the mouse over the desired region to highlight the region you want to erase.
4. Release the mouse button when you have highlighted the desired region.

Cakewalk deletes all controllers of the selected type.


Note that you cannot delete velocity events in the Controllers pane. You must delete the notes that have those velocities.



## The Event List View

The Event List view shows all kinds of events in a list format. You can insert, delete, or modify any kind of event, including notes, pitch wheel data, velocity, MIDI controllers, patch changes, wave files, lyrics, text strings, MCI commands, System Exclusive meta-events, and more.

There are three ways to open the Event List view:


- Select one or more tracks and choose View-Event List
- Select one or more tracks and click  in the toolbar

Right-click on a track in the track view and choose Event List from the inspector menu :

2-Part Invention #13 in A minor.wrk - Event List - Track 1						
	Trk	HMSF	MBT	Ch	Kind	Data
	1	00:00:00:05	1:01:030	1	Note	E 5
	1	00:00:00:11	1:01:060	1	Note	A 5
	1	00:00:00:16	1:01:090	1	Note	C 6
	1	00:00:00:21	1:02:000	1	Note	B 5
	1	00:00:00:26	1:02:030	1	Note	E 5
	1	00:00:01:02	1:02:060	1	Note	B 5
	1	00:00:01:07	1:02:090	1	Note	D 6
	1	00:00:01:12	1:03:000	1	Note	C 6
	1	00:00:01:23	1:03:060	1	Note	E 6
	1	00:00:02:04	1:04:000	1	Note	G#5
	1	00:00:02:14	1:04:060	1	Note	E 6
	1	00:00:02:25	2:01:000	1	Note	A 5
	1	00:00:03:00	2:01:030	1	Note	E 5
	1	00:00:03:05	2:01:060	1	Note	A 5
	1	00:00:03:11	2:01:090	1	Note	C 6
	1	00:00:03:16	2:02:000	1	Note	B 5
	1	00:00:03:21	2:02:030	1	Note	E 5
	1	00:00:03:26	2:02:060	1	Note	B 5

The events in the selected tracks are listed one per line, from top to bottom. As you move the highlight through the event list, Cakewalk Pro Audio updates the Now marker (time display). During playback, the event list scrolls to display the events at the current time. The event list may jump to keep up, but it will always be in the right neighborhood, and the highlight will be on the correct event when playback stops. Any time you change the Now time, the event list is updated and the highlight is moved to the event that will be played next.

When the Event List view includes more than one track, events are mixed together in chronological order. For example, if you select tracks 1 and 3 when you open the Event List view, you see a single list of intermingled events from tracks 1 and 3. You can have any number of Event List views, each containing any number of tracks, open at the

same time. You can change the tracks shown in the Event List view by clicking the  button and choosing the tracks you want.

---

See also:

[Event List Overview](#)

[Editing Events and Event Parameters](#)

[Note Events](#)

[MCIcmd Events](#)

## Event List Overview

Each line of the Event List view shows a single event along with all of its parameters. There are many different types of events. All share the following parameters:

- The time of the event, displayed in SMPTE (hours:minutes:seconds:frames) format.
- The time of the event, displayed in musical (measures:beats:ticks) format.
- The event type, or **kind** of event.

The remaining parameters vary by event type. Here is a summary listing of the parameters that apply to each type of event.

Short Name...	Type of Event...	Parameters...
Note	MIDI note	Pitch (MIDI key number), velocity (0-127), duration (beats:ticks, or simply simply ticks), MIDI channel (1-16)
KeyAft	MIDI key aftertouch	Pitch (MIDI key number), pressure amount (0-127), MIDI channel (1-16)
Control	MIDI controller change	Controller number (0-127), controller value (0-127), MIDI channel (1-16)
Patch	MIDI patch change	Bank select method, bank number, number or name of the patch, MIDI channel (1-16)
ChanAft	MIDI channel after touch	Pressure amount (0-127), MIDI channel (1-16)
Wheel	MIDI pitch wheel position	Wheel position (-8192 to 8191, where the center is 0)
RPN	Registered Parameter Number	Parameter number (0-16383), parameter value (0-16383), MIDI channel (1-16)
NRPN	Non-registered Parameter Number	Parameter number (0-16383), parameter value (0-16383), MIDI channel (1-16)
Sysx Bank	System Exclusive data bank	Sysx bank number (0-255)
Sysx Data	System Exclusive data message	Sysx message up to 255 bytes long
Text	Text	Text
Lyric	Lyric	Text (a single word or syllable)
MCIcmd	Windows Media Control Interface (MCI) command	MCI command text
Wave Audio	Digital audio wave	Name, velocity (0-127), and number of samples
Expression	Staff view expression marking	Text of expression mark
Hairpin	Staff view	Direction (crescendo or

	dynamics marking	diminuendo) and duration
Chord	Staff view chord sym bol	The name of the chord

Here are some notes about events and their parameters:

- The Channel parameter in the Track view can force an event to play on a different MIDI channel than the one shown in the event list.
- Pedal marks entered in the Staff view are displayed in the Event List view as controller events.
- Many keyboards do not support key aftertouch and channel aftertouch. Consult the User's Guide for your keyboard for more information.
- When you double-click the value of a patch event, Cakewalk displays the Bank/Patch Change dialog box. For more information about bank and patch changes, see [To Insert a Bank/Patch Change](#).
- See [System Exclusive Data](#), for more information about system exclusive banks.
- See [Audio Editing](#), for more information about audio events.

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See also:

[The Event List View](#).

## Editing Events and Event Parameters

The Event List view lets you add, delete, or change events one by one. You can also print the list of events, or audition the events one at a time to see how they sound.

0 You can change the parameters of any event by moving the rectangular highlight to the cell you want to change and doing one of the following:

- Type a new value and then press Enter
- Press the gray - and + keys to decrease or increase values by a small amount
- Press the [ and ] keys to decrease or increase values by a larger amount
- Click and hold the mouse button, and then drag the mouse up or down to change the value by a small amount
- Click and hold both mouse buttons, and then drag the mouse up or down to change the value by a larger amount
- Double-click on a cell and then enter or choose a new value

If you change the time of an event, it may also change its position in the event list. The Event List view follows that event to its new location.

If you try to change the event type (kind of event), Cakewalk lets you choose the kind of event you want from a dialog box. When you change one kind of MIDI event into another kind of MIDI event, Cakewalk preserves the parameters as fully as possible.

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For step by step instructions:

[How to Insert a New Event](#)

[How to Delete an Event](#)

[How to Delete Several Events](#)

[How to Print the Event List](#)

[How to Play Events Step by Step](#)

**To Insert a New Event**

1. Move the highlight to the point at which you want to insert an event.
2. Press the Ins (Insert) key. Cakewalk makes a copy of the highlighted event.
3. Edit the event kind as necessary.
4. Edit the event time and other parameter values as required.

If the event list is initially empty, pressing the Insert key creates a default note event.

**To Delete an Event**

1. Move the highlight to the event you want to delete.
2. Press the Del (Delete) key.

Cakewalk deletes the event.

### **To Delete Several Events**

1. Select the events you want to delete by clicking in the first column of the Event list view.
2. Choose Edit-Cut.

Cakewalk deletes the selected events.

**To Print the Event List**

1. Choose File-Print Preview to display a preview of the printed event listing.
2. Click the Zoom button (or just click the page) to zoom in and out, and use the Page Up, Page Down, and arrow keys to review the pages.
3. Click Print to print the event list, or click Close to close the Preview window without printing.



## **To Play Events Step by Step**

1. Using the keyboard, hold the Shift key and press the space bar to play the currently highlighted event. If the event is a note event, it plays until you release the space bar.
2. When you release the space bar, the highlight moves to the next event.
3. Continue pressing the space bar to play events one by one.
4. To edit the last event you heard, release the Shift key.

The highlight moves back to the last event you heard, so you can make changes. You can also audition a single event using the mouse. Ctrl-click on an event to play the event. If the event is a note or wave event, it plays until you release the mouse button.

## Note Events

There are three Values parameters for note events:

- A pitch, which represents the MIDI key number as a note and an octave. Pitch may also be indicated by a note name, if there is an assigned instrument definition that uses a note name list.
- A velocity (0–127), which is how fast the key is struck. Some keyboards don't transmit or receive velocity messages.
- A duration, which is how long the note lasts. This amount is shown in beats:ticks format. (If the note lasts less than one beat, then only the number of ticks is shown.)

Note names may also represent percussion instruments, and lists of such note names are sometimes associated with a particular percussion patch. The note C3, for example, may really be “kick drum.” If a patch is associated with a percussion note name list, the name of the percussion instrument appears in Event List view rather than a note and an octave from the piano keyboard.

Cakewalk uses the following notation to display flats and sharps in this and other views:

Character...	Meaning...
b	flat
#	sharp
"	double flat
x	double sharp

## MCIcmd Events

Media Control Interface (MCI) commands are special events that let you control other multimedia hardware and software (e.g., CD-ROM drives, laserdiscs, sound cards, animations, video) during playback. MCI commands are part of the multimedia extensions in Windows. MCIcmd events have one parameter — the command line text of the MCI command. Here are some examples:

This command...	Does this...
PLAY C:\TRAIN.WAV	Plays the wave file train.wav
PLAY D:\VIDEOS\VACATION.AVI	Plays the video file vacation.avi from the VID EOS folder
SET CDAUDIO TIME FORMAT TMSF PLAY CDAUDIO 3	Plays a specific track from the CD drive
STOP CDAUDIO	Stops the CD from playing

While MCI commands can be used to play wave files, these files are played at their normal speed and are not necessarily synchronized with MIDI or other audio data. By contrast, wave audio events (described below) are played in lock-step synchronization with MIDI and other audio data.

For complete documentation of Windows MCI commands, search for MCI on the Microsoft World-Wide Web site.

## Audio Editing

The Audio view lets you edit and arrange audio events. You can perform basic tasks such as cut, copy, paste, and move; apply simple audio processing such as volume change, fades, and equalization; and use sophisticated audio effects such as stereo chorus and reverb. The Audio view lets you see your audio events on a timeline, arranged by track, to help you visualize the organization of your project's audio data.

The Audio view is similar in appearance to the Clips pane of the Track view, and many of the same selection and editing techniques apply. An important difference is that the Track view shows audio clips, which may contain one or more events, while the Audio view shows each event individually.

Most of the audio processing commands and audio effects described in this topic and the topics listed below can be used from the Track and Event List views as well, by selecting one or more audio clips or events, then choosing the desired command from the Edit-Audio or Edit-Plug-in menu. Plug-in effects can also be applied to audio data nondestructively, in real time, in the Console view. For more information, see [Mixing](#).

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See also:

[Digital Audio Fundamentals](#)

[The Audio View](#)

[Basic Audio Editing](#)

[Basic Audio Processing](#)

[Audio Effects](#)

## Digital Audio Fundamentals

**Digital audio** is a numeric representation of sound; it is sound stored as numbers. In order to understand what the numbers mean, you need to start with the basic principles of **acoustics**, the science of sound.

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See also:

[Basic Acoustics](#)

[Waveforms](#)

[Recording a Sound](#)

[The Decibel Scale](#)

[Audio Events](#)

[Managing Audio Data](#)

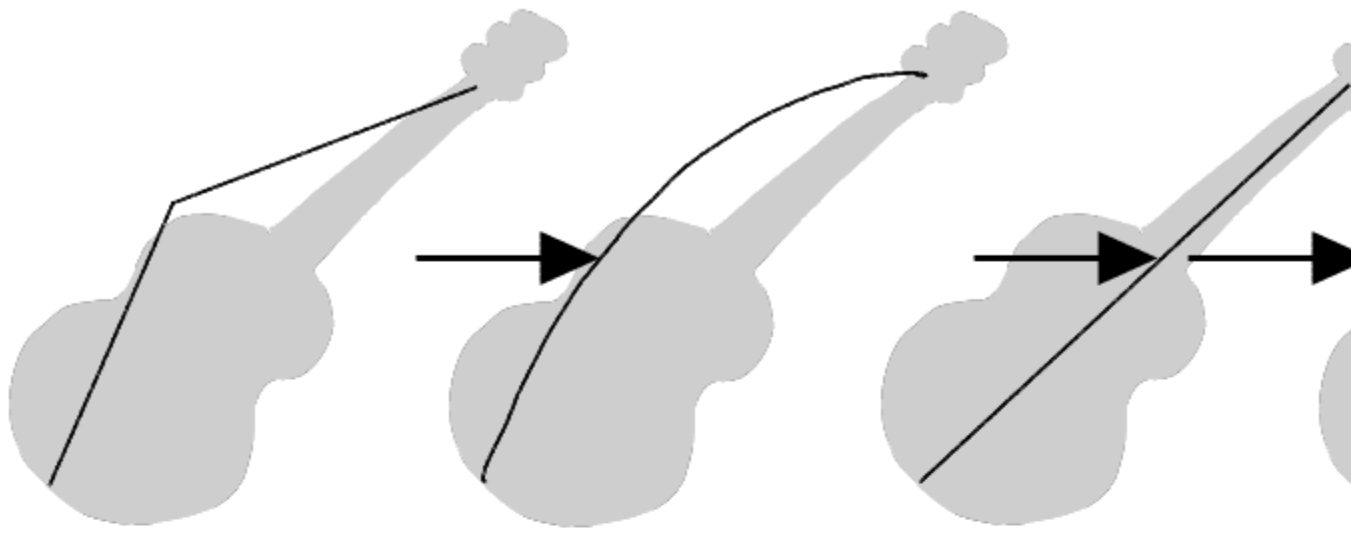
## **Basic Acoustics**

Sound is produced when molecules in the air are disturbed by some type of motion produced by a vibrating object. This object, which might be a guitar string, human vocal cord, or a garbage can, is set into motion because energy is applied to it. The guitar string is struck by a pick or finger, while the garbage can is hit perhaps by a hammer, but the basic result is the same: they both begin to vibrate. The rate and amount of vibration is critical to our perception of the sound. If it is not fast enough or strong enough, we won't hear it. But if the vibration occurs at least twenty times a second and the molecules in the air are moved enough, then we will hear sound.

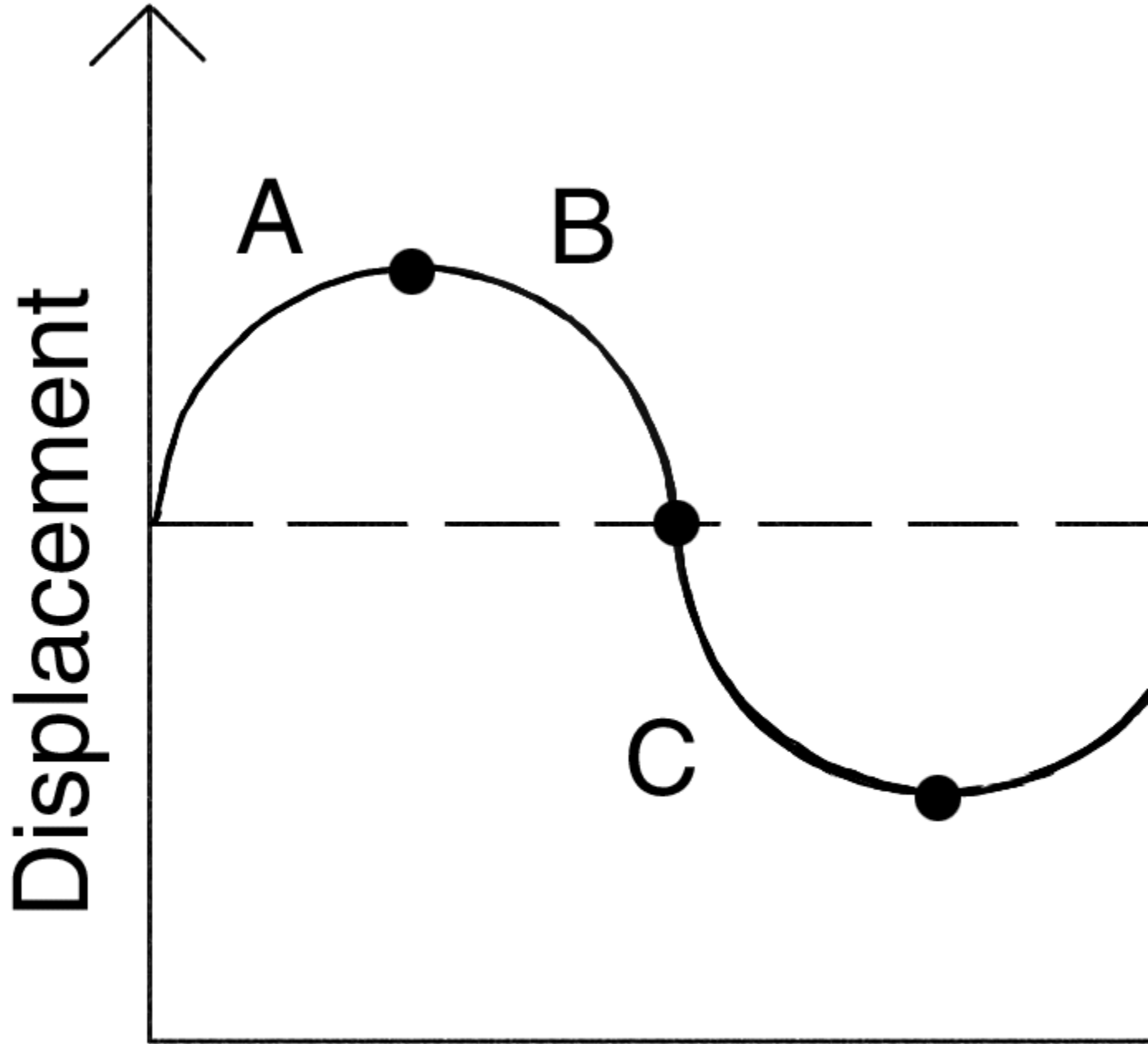
## Example-A Guitar String

To understand the process better, let's take a closer look at a guitar string.

When a finger picks a guitar string, the entire string starts to move back and forth at a certain rate. This rate is called the **frequency** of the vibration. Because a single back and forth motion is called a **cycle**, we use a measure of frequency called **cycles per second**, or **cps**. This measure is also known as **Hertz**, abbreviated **Hz**. Often the frequency of vibration of an object is very fast, so we can also express the frequency in thousands of cycles per second, or **kilohertz** (abbreviated **kHz**).



The actual distance the string moves is called its **displacement**, and is proportional to how hard the string is plucked. A greater displacement results in a louder sound. The displacement of the string changes as the string vibrates, as shown here:



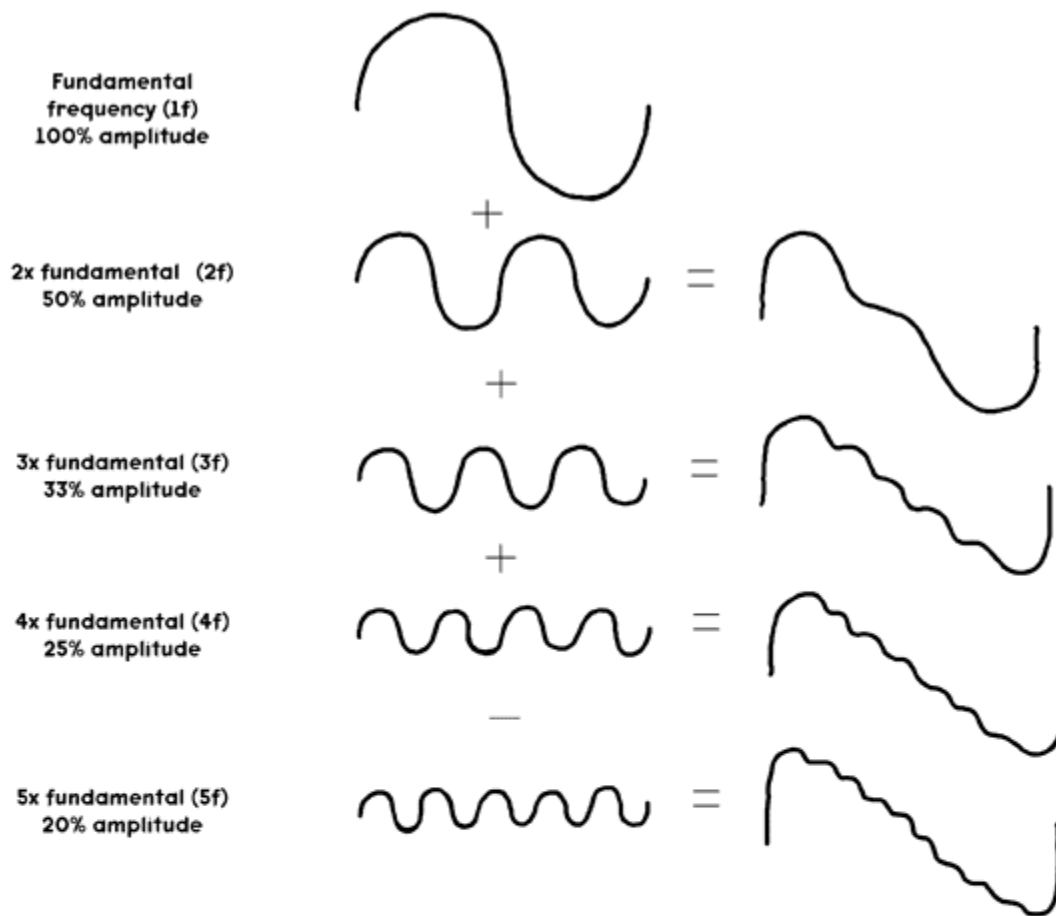
The segment marked "A" represents the string as it is pulled back by the pick; "B" shows it moving back towards its resting point, "C" represents the string moving through the resting point and onward to its outer limit; then "D" has it moving back towards the point of rest. This pattern repeats continuously until the friction of the molecules in the air gradually slows the string to a stop. As the string vibrates, it causes the molecules of air around it to vibrate as well. The vibrations are passed along through the air as **sound waves**. When the vibrations enter your ear, they make your eardrum vibrate, and you hear a sound. Likewise, if the vibrating air hits a microphone, it causes the microphone



to vibrate and send out electrical signals.

In order for us humans to hear the sound, the frequency of the vibration must be at least 20 Hz. The highest frequency sound we can hear is theoretically 20 kHz, but in reality, it's probably closer to 15 or 17 kHz. Other animals, and microphones, have different hearing ranges.

If the simple back-and-forth motion of the string was the only phenomenon involved in creating a sound, then all stringed instruments would probably sound much the same. We know this is not true, of course; the laws of physics are not quite so simple. In fact, the string vibrates not only at its entire length, but at one-half its length, one-third, one-fourth, one-fifth, etc. These additional vibrations (**overtones**) occur at a rate faster than the rate of the original vibration (the **fundamental frequency**), but are usually weaker in strength. Our ear doesn't hear each frequency of vibration individually, however. If it did, we would hear a multi-note chord every time a single string were played. Rather, all these vibrations are added together to form a complex or composite sound that our ear perceives as a single tone.

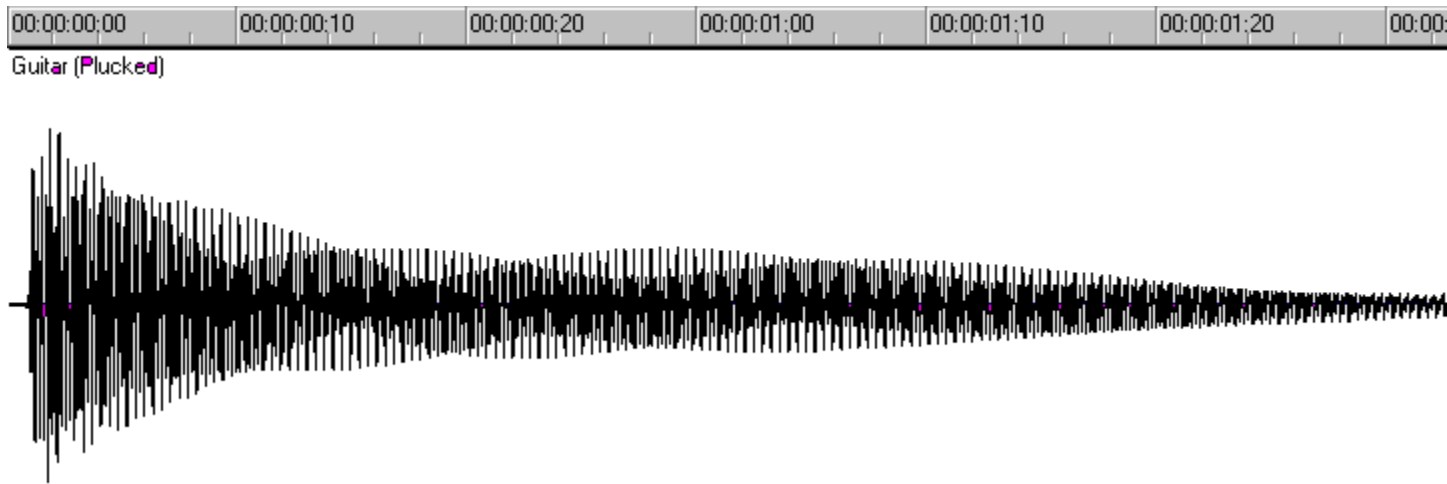


This composite waveform still doesn't account for the uniqueness of the sound of different instruments. For example, stringed instruments usually have a resonator. In the case of the guitar, the resonator is the big block of hollow wood to which the string is attached (the guitar body). This has a major impact on the sound we perceive when a guitar is played as it actually enhances or amplifies some of the vibrations produced by the string, and diminishes or

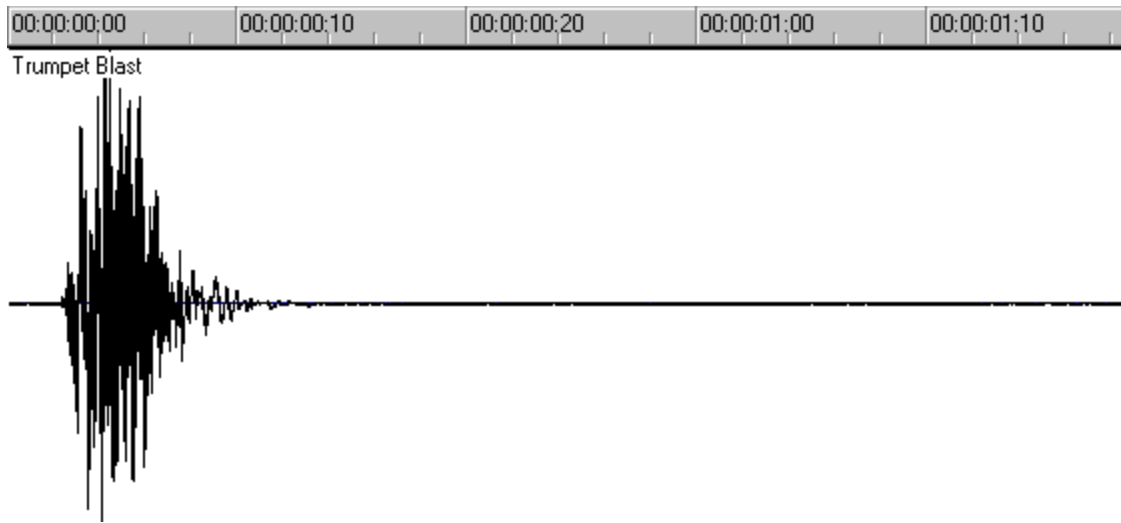
attenuates others. The ultimate effect of all the vibrations occurring simultaneously, being altered by the resonator, adds up to the sound we know as guitar.

## Waveforms

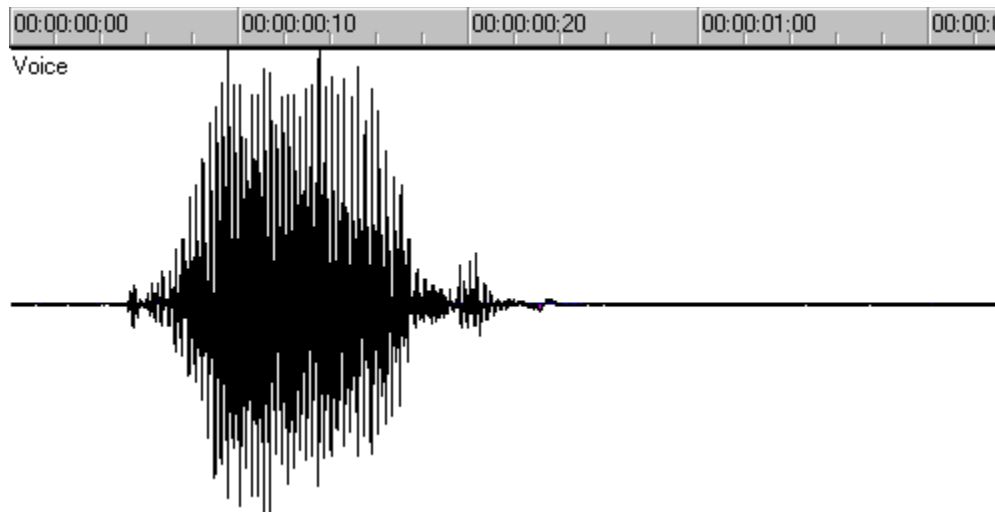
A sound wave can be represented in many different ways: as a mathematical formula, as a series of numbers, or graphically as a **waveform**. A waveform displays the size, or **amplitude**, of the vibration as a function of time. For example, the waveform of the sound of the plucked guitar string might look like this:



The waveform of a trumpet blast might look like this:

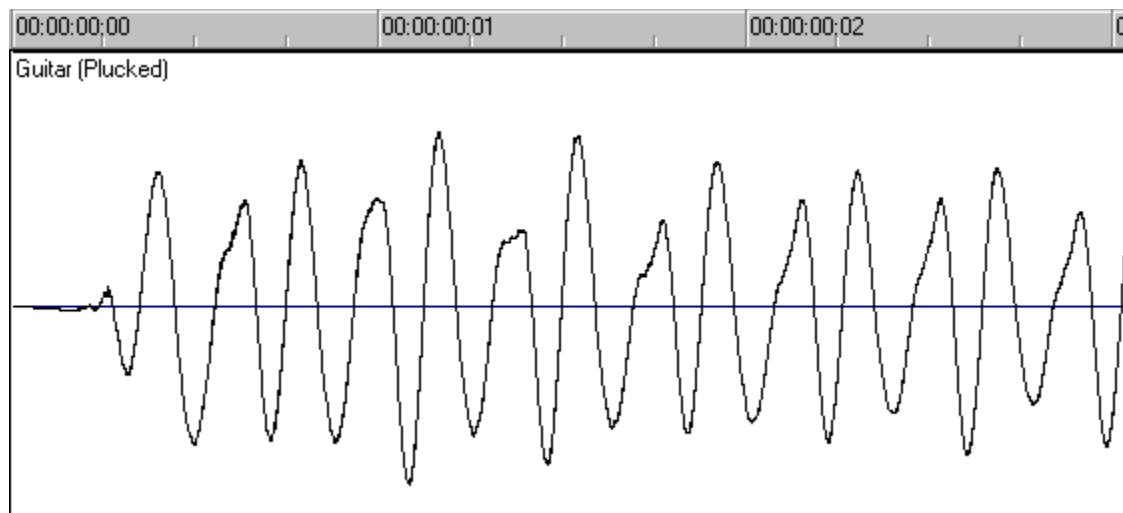


And the waveform of a spoken word might look like this:



The three waveforms shown above are quite different from one another, both in appearance and sound. Each has its own characteristic shape, or envelope, and each has its own complex combination of frequency components, which can change across the duration of the sound.

The center line of a waveform is the zero line; it corresponds to the rest position (displacement of 0) of the original vibrating object. (A waveform for perfect silence would be a horizontal line at zero.) Back and forth motions of the vibrating object translate to upward (positive) and downward (negative) excursions of waveform amplitude. For example, a close-up of a portion of the guitar waveform might look like this:



The waveform crosses the zero line twice during each complete vibration. These **zero-crossings** are important in digital audio processing—they are good places to cut waveforms apart and splice them together. If waveforms are cut or spliced at other locations, clicks and pops can occur. The maximum amplitude of the waveform in each vibration is also important: it determines the strength of the vibration, and thus the loudness of the sound.

## Recording a Sound

To record digital audio, your computer monitors the electrical signal generated by a microphone (or some other electroacoustical device). Because the signal is caused by a sound, the signal strength varies in direct proportion to the sound's waveform. The computer measures and saves the strength of the electrical signal from the microphone, thus recording the waveform.

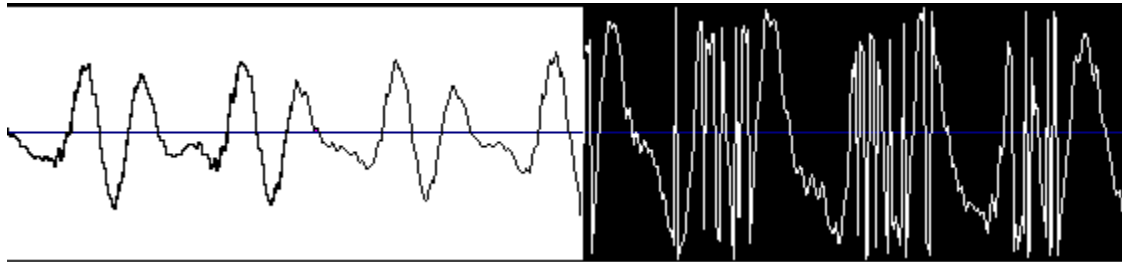
There are two important aspects of this measuring process. First is the **sampling rate**-the rate at which the computer saves measurements of the signal strength. It is a known fact of physics that you must measure, or **sample**, the signal at a rate at least twice that of the highest frequency you wish to capture. For example, suppose you want to record a moderately high note on a violin-say the A whose fundamental frequency is 440 Hz-and all overtones up to five times the fundamental. The highest frequency you want to capture is 2,200 Hz, so you need to measure the electrical signal from the microphone at least 4,400 times per second.

Since humans can hear frequencies well above 10 kHz, most sound cards and digital recording systems are capable of sampling at much higher rates than that. Typical sampling rates used by modern musicians and audio engineers are 22 kHz, 44.1 kHz, and 48 kHz. The 44.1 kHz rate is called **CD-quality**, since it is the rate used by audio compact discs.

The other important aspect of the measuring process is the **sampling resolution**. The sampling resolution determines how accurately the amplitude of each sample is measured. At present, the music industry has settled on a system that provides 65,536 different values to assign to the amplitude of a waveform at any given instant. Thus, each sample saved by your computer requires 2 bytes (16 bits) to store, since it takes 2 bytes to store a number from -32,768 to 32,767. The scaling of the electrical input signal level to amplitude value is determined by your audio hardware, and by the position of your input level control.

What if the amplitude of the sampled signal gets too high, such that a 16-bit number is not large enough to represent it? What typically happens is that the signal is **clipped**-cut off at the maximum value.

Here is what a clipped waveform might look like:



Clipping is not usually desirable, and may have unpleasant audible effects. Sudden irregularities in the waveform of any type can cause clicks, pops, and distortion of the original sound.

## The Decibel Scale

In acoustics, the decibel (dB) scale is a scale for measuring the relative loudness of two sounds. For example, environmental noise is often measured as follows:

$$L = 20 \log (p/p_0)$$

where L is the sound pressure level (in dB), p is the sound pressure amplitude, and p<sub>0</sub> is a reference amplitude of 20 micropascals (less than one billionth of atmospheric pressure). On this scale, a barely audible sound (p = p<sub>0</sub>) has a sound pressure level of 0 dB, normal conversation (p = 1,000\*p<sub>0</sub>) is at a level of around 60 dB, and a jet engine at close range (p = 1,000,000\*p<sub>0</sub>) is at a level of around 120 dB.

Similar decibel scales are used in other branches of science and engineering to measure electrical power levels and other signal levels, always with respect to some reference level.

In Cakewalk, decibels are used in several places:

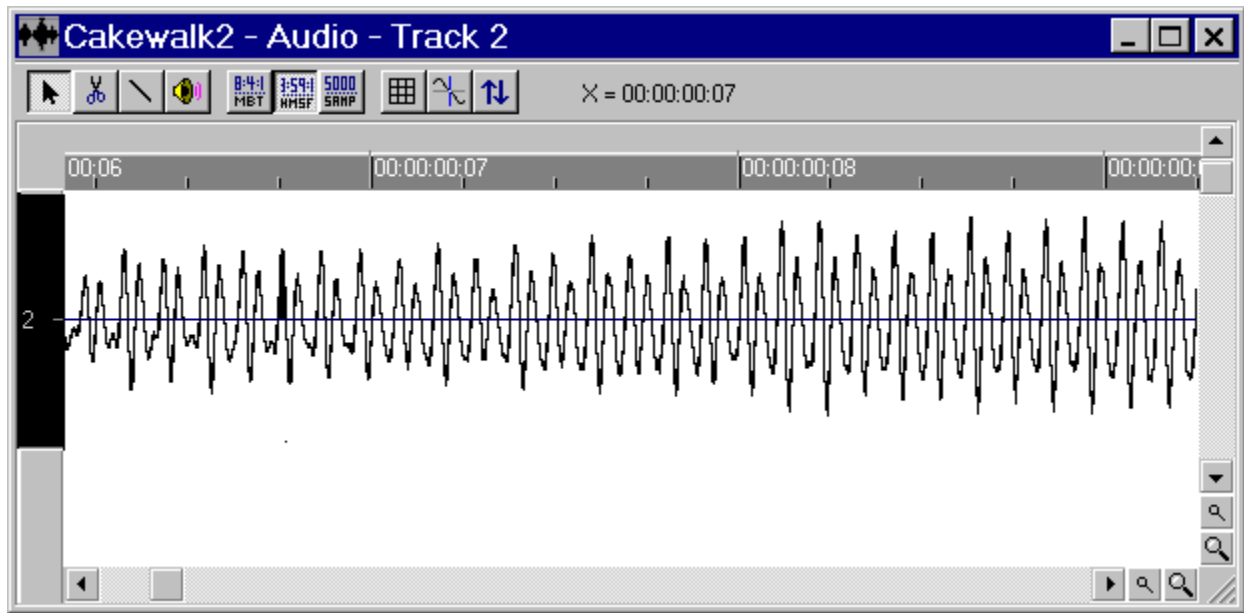
- to scale the amplitude of the waveform (3dB Louder and 3dB Quieter commands)
- to indicate volume levels of audio tracks in the Console view
- to indicate the effects of filters and equalizers

The reference level (0 dB) usually corresponds to the current loudness of the sound. A positive change in decibels makes the sound louder; a negative change makes the sound quieter.

## Audio Events

You should have a good idea of what is contained in a Cakewalk audio event. An audio event contains a long series of numbers, or samples, representing the fluctuating amplitude of a waveform. Audio events are typically quite large—hundreds of kilobytes to many megabytes in size. By comparison, a MIDI event takes only a few bytes to store.

The Audio view lets you see your audio waveforms in great detail; you can zoom in until you see the individual samples. For easier viewing, Cakewalk displays the amplitude of the waveform as a percent in the range –100 percent to +100 percent.



You should also now be aware of some things to watch out for when editing your audio data. First, if you cut audio events apart or splice them together, you should do so at zero-crossings in the waveform, in order to avoid sudden changes in amplitude that may cause clicks and pops. Second, you should beware of clipping. Clipping of the audio waveform can occur if you record a signal at too high of a record level, or if you apply audio processing or effects that increase the waveform amplitude too much. If you accidentally cause the waveform to clip, you should undo the command and try again with different parameters.

Clipping can also occur in other situations—for example, if you try to play or mix several loud audio tracks together, the aggregate signal strength may at times exceed the clipping limit, and the output signal will be distorted. To correct the problem, you can reduce the velocity parameter of loud audio events, or reduce the track volume in the Console view.



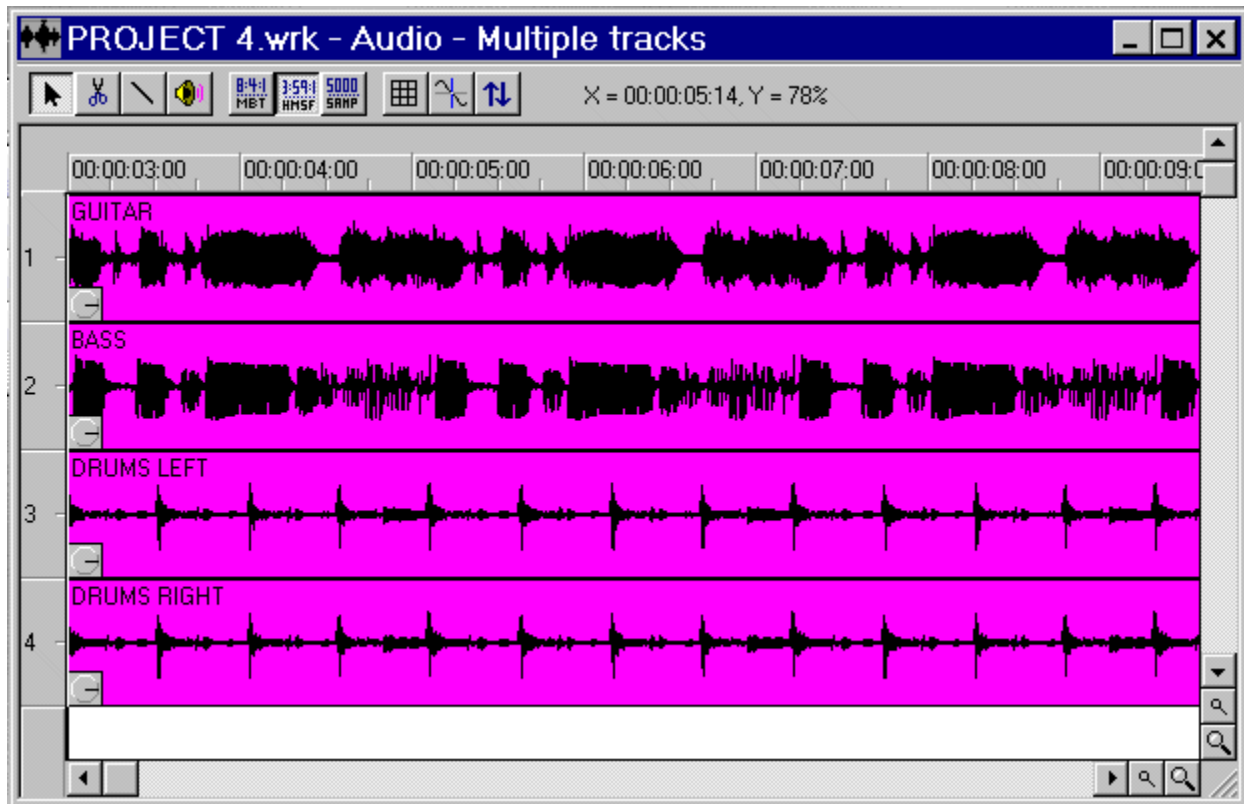
## Managing Audio Data

Because of the great size of audio events, Cakewalk uses an intelligent scheme for storing audio events on disk so as to conserve disk space and minimize the time it takes to load and save data. Audio data is not stored directly in your project file, but rather in separate files in a special directory.


You can also export your project's MIDI and audio data in RealMedia format; see [Preparing Audio for Distribution](#) for more information.

## The Audio View

The Audio view displays audio events on a timeline, arranged by track.



There are three ways to open the Audio view:

- In the Track view, select the tracks you want to see, then click the Audio View button .
- In the Track view, select the tracks you want to see, then choose View-Audio
- Right-click on an audio track or clip in the Track view and choose Audio from the menu

You can always change the tracks that are displayed – click the Pick Tracks button  and select the tracks you want.

The Audio view lets you edit, delete, copy, and move events during playback or recording, in real time. This means you can loop over a portion of your project, and hear any change you make on the next loop.


As in many other views, the Audio view toolbar includes zoom tools that let you change the vertical and horizontal scale of the view. Hold the Shift key and click on the zoom tool to jump to the largest or smallest scale.

See also:

[Snap-to Options](#)


[Ruler Units](#)

## Snap-to Options

The Audio view has several “snap-to” features. First, the Audio view has a Snap-to grid button . When enabled, this feature lets you do one of the following:

- snap selection times and event start times to the snap time resolution
- snap selection times and event start and end times to the nearest starting or ending time of any other event

You can set the resolution to any note length, enter a number of ticks, or choose to snap to other events by Shift-clicking on the Snap to grid button.

The Audio view also has a Snap to Zero Crossing button . This feature snaps selection times to the nearest zero-point crossing in the audio waveform. By cutting, pasting, and looping audio events at zero crossings, you minimize the audio glitches that occur when a waveform starts or ends, or when one waveform is spliced to another.

The current X and Y coordinates of the mouse pointer are displayed to the right of the tools. The X coordinate is shown in the current ruler units, rounded to the nearest Snap unit. The Y coordinate is shown in percentage units ranging from –100% to 100% of the waveform’s maximum amplitude.


## Ruler Units

Like the rulers in other views, the Audio view ruler can display time in measures, beats, and ticks (MBT) or in hours, minutes, seconds, and frames (SMPTE). The Audio view can also display the ruler in Samples -- the number of digital audio samples since the beginning of the project, based on the sampling rate of the project's digital audio data.

You can choose the units you want by clicking one of the three Time Ruler Units buttons, or cycle among the three options by double-clicking the time ruler.

## Basic Audio Editing

The Audio view lets you perform basic editing tasks such as cut, copy, paste, delete, drag-and-drop move and copy, split, and combine. You can apply simple linear fades and swells graphically with the Draw tool. The Scrub tool lets you audition portions of audio by dragging the mouse.

Use the Selection tool  to make selections. Selection methods in the Audio view are similar to those in other views. Here is a summary:

To do this...	Do this...
Select a single event	Click on the event
Select several events at once	Drag a rectangle around them
Select part of an event	Press Alt and drag over a portion of one or more events
Add events to the selection	Press Shift and either click on the events or drag a rectangle around the events
Add or remove events from the selection	Press Ctrl and either click on the events or drag a rectangle around the events
Add or remove events in a track from the selection	Click on the track number
Select events in a time range	Drag in the time ruler
Select events between two markers	Click between the markers
Remove all selections	Click in an empty area outside of any event

## Editing Event Properties

Audio events have three properties that you can change: a name, a starting time, and a velocity.

The name of an event is used in the Audio view and Event List view. You can assign any name to help you remember the contents of the event.

The term **velocity** is borrowed from MIDI, where it indicates the speed with which a key was struck, and thus its loudness. Cakewalk assigns a velocity to each audio event as a means of letting you control and adjust its volume. The velocity of an audio event is a number between 0 and 127, with a velocity of 103 corresponding to the natural loudness of the waveform. Higher velocities increase the volume, lower values decrease the volume. The default relationship of velocity and volume (in decibels) is as follows:

$$\text{dB} = (\text{Velocity} - 103) \times .75$$

Changing the event velocity does not change the audio waveform data. Rather, the velocity is used by Cakewalk as a scaling factor during playback.

Note that you can also edit some audio event properties in the Event List view or the Clips pane of the Track view.

---

For step by step instructions:

[How to Change an Audio Event's Name](#)

[How to Change the Velocity of an Event](#)

[How to Change an Event's Starting Time](#)

### **To Change an Audio Event's Name**

1. Position the pointer over the left portion of the name (the pointer changes to an I-beam), then click.
2. Type a new name and press Enter. Press Esc if you want to cancel the change.

OR

1. Right-click on the audio event and choose Event Properties.
2. Type a new name in the Name box.
3. Click OK.

The Audio view displays the new event name in the upper left corner of the event.

### **To Change the Velocity of an Event**

1. Click on the fader knob in the lower-left corner of the event.
  2. Drag the pointer upward to increase the velocity, or downward to decrease the velocity.
- OR

1. Right-click on the audio event and choose Event Properties.
2. Enter a new velocity in the Velocity box.
3. Click OK.

Cakewalk will use the new velocity to determine the audio event volume during playback.

### **To Change an Event's Starting Time**

1. Right-click on an audio event and choose Event Properties.
2. Enter a new starting time in either the Time box (MBT) or the Sample box (samples since the start of the project).
3. Click OK.

The Audio view displays the event at the new starting time.



## **Moving, Copying, and Deleting Audio Events**

Events can be cut, copied, pasted, and deleted with Edit menu commands, or moved and copied with drag-and-drop techniques. These work the same in the Audio view as they do in the Clips pane of the Track view. For more information, see [Basic Editing and Arranging](#).

## Splitting Audio Events

You can split long audio events into shorter ones. This lets you extract and rearrange individual sounds, adjust timing and alignment, and apply effects selectively. Audio events can be split with the Scissors tool, or with the Split command.


---

For step by step instructions:

[How to Split Events with the Scissors Tool](#)

[How to Split Events with the Split Command](#)

## To Split Events with the Scissors Tool

1. Click the Scissors tool .
2. Split events according to the table:

To do this...	Do this
Split an event into two events	Click on the event at the time you want to split it
Split an event at two points at once	Click on the event at the first time, then drag a rectangle to the second time

When using the Scissors, split times are always rounded to the nearest snap-to unit.

**Tip:** To minimize pops and clicks, use the Snap to Zero Crossing feature.

### **To Split Events with the Split Command**

1. Select the event(s) to be split in the Audio view.
2. Right-click on one of the selected events and choose Split from the menu.
3. Enter the split point in the specified units, or press F5 to pick a marker.

Cakewalk splits the audio event at the time you specified. Each new event has the same name and velocity as the original event.

## Combining Audio Events

Individual audio events in the same track can be combined into a single event with the Combine command.

When you combine events that overlap, you have two choices as to what happens to the overlapping audio:

Option	Meaning
Polyphonic	Overlapping events are mixed together
Monophonic	An overlapping event cuts off the one before it

If you combine several events that do not overlap and have identical velocities, the new event has the same velocity as the original events. If you combine events that overlap or that have different velocities, the relative volumes of the events are preserved when they are combined and the new audio event is assigned a velocity of 103 (unity gain.)

Note that the Combine command in the Audio view is different from the Combine command in the Track view.

---

For step by step instructions:

[How to Combine Events](#)

## **To Combine Events**

1. Select the events to be combined in the Audio view.
2. Choose Edit-Audio-Combine, or right-click on one of the events and choose Combine from the menu.
3. If any of the events overlap, Cakewalk displays the Combine Audio Events dialog box. Select an option and click OK.

The events are combined into a single event. Overlapping events are combined in the manner you specified. Empty space between events is filled with silence in the new event.

## Applying Fades with the Draw Tool

A fade is a gradual increase or decrease in volume. An increase in volume is a “fade-in” or “crescendo”; a decrease in volume is a “fade-out” or “decrecendo.” In the Audio view, the Draw tool lets you draw a linear envelope around a waveform, in order to apply a fade to an audio event.


The height of the envelope at each time determines the multiplicative factor that will be applied to the waveform at that point. The zero-crossing line of the waveform corresponds to an envelope height of 0 percent, the maximum amplitude line corresponds to 100 percent.

---

For step by step instructions:

[How to Apply a Fade or Swell](#)

## To Apply a Fade or Swell

1. Click the Draw tool .
2. Click in an event at the starting point of the fade or swell.
3. Drag toward the right to the end of the fade or swell. You'll see two mirror-image horizontal lines that indicate the shape of the envelope.
4. Drag up or down to change the slope of the envelope. The waveform changes to show you the effect of the envelope.
5. Release the mouse button to apply the envelope.

Press Shift when making your initial click, or while dragging, to snap to the nearest 25% increment. Press Esc while dragging to cancel the operation.

**Tip:** If you drag back over the starting time at a different volume level, the starting volume is changed to the new one.



## Scrubbing

You can use the Scrub tool to locate or audition a particular sound or passage as you drag the mouse. As the mouse moves, its position is tracked by short snippets of audio. You can scrub a single event, or scrub all events displayed in the view. The default snippet length is 100 milliseconds (1/10 of a second), but you can change this setting if you prefer a longer or shorter value.


---

For step by step instructions:

[How to Audition Audio with the Scrub Tool](#)

[How to Change the Snippet Length](#)

## To Audition Audio with the Scrub Tool

1. Click the Scrub tool .
  2. Click and drag the pointer over audio events.
  3. If you hold the mouse steady at a single point, the same snippet repeats over and over.
- To hear the events in all displayed tracks, drag with the Scrub tool in the horizontal ruler.

### **To Change the Snippet Length**

1. Choose Tools-Audio Options and click the Advanced tab.
2. Set the Scrub snippet length as desired.
3. Click OK.

Cakewalk uses the new options the next time you scrub in the Audio view.

## Basic Audio Processing

Audio processing commands let you modify audio data according to some rule or algorithm. The rule can be as simple as reversing the audio data or multiplying it by a certain factor, or as complex as performing a Fourier analysis and selectively amplifying or attenuating sounds at certain frequencies. Among the basic audio processing commands are ones to increase and decrease volume, to reverse the data, and to perform equalization.



Audio processing commands can work on both whole and partial events. For example, suppose you want to make certain words in a vocal passage softer. You can select the portion of the audio event containing those words, then apply the 3db Quieter command one or more times.

You should listen to the results of your work after each audio processing command. If you don't like what you hear, you can use Edit-Undo to restore your audio data to its previous state.

Many of the dialog boxes associated with Cakewalk's audio processing and effects commands have two important features: Audition and Presets.

The Audition button is used to audition the processed audio data. When you click Audition, Cakewalk processes the first three seconds of your data, then plays it repeatedly until you click Stop. This helps you to get an idea of whether the settings in the dialog box are producing the desired effect.

Presets are a way to store dialog box settings so that you can apply the exact same processing or effect again in the future. The following table tells you how to use presets:

To do this...	Do this...
Save the current settings as a pre set	Enter a preset name and click the Save button 
Use a preset	Select the preset from the drop down list
Delete a preset	Select the preset, then click the Delete button 

Many audio processing and effects presets are supplied with Cakewalk. See [Presets](#) for a list.

## Increasing or Decreasing Volume

Cakewalk provides three commands to boost or cut the volume of audio data. The 3dB Louder and 3dB Quieter commands are used to increase or decrease the volume by 3 decibels, respectively. For more information on the decibel scale, see [The Decibel Scale](#). You can apply these commands several times in succession to get a larger boost or decrease. The Normalize command “normalizes” the audio data—it boosts the volume until the maximum amplitude is reached somewhere in the data. By normalizing the data, you achieve the maximum possible volume without distortion or clipping. In addition, you can use the draw tool to adjust the volume of all audio events on a track in a single step.

Like all the audio processing commands, these commands work by modifying the waveform data. You can achieve volume changes nondestructively by changing the event velocity, as discussed in [Editing Event Properties](#).

When increasing or decreasing the volume of audio events, you should consider the following points:

- Normalize and 3 dB Louder raise the noise floor—that is, while they increase the volume of the signal, they also amplify the noise it contains. (This is true when you raise the volume by other means, too.)
- 3 dB Louder, if applied to a signal that is already fairly loud, may cause the waveform to exceed the maximum amplitude and clip.
- Normalize, by raising the waveform amplitude to the maximum, puts the signal in danger of being clipped if you subsequently apply a command or effect that boosts the signal slightly. If this occurs, you may have to back up and apply 3 dB Quieter to the normalized signal before the other processing, or simply lower the velocity of the entire track.
- Each application of 3 dB Quieter erodes the signal structure slightly; you cannot repeatedly apply 3 dB Quieter, then use 3 dB Louder to return to the original waveform.
- Due to the nature and limitations of digital audio, the sum of all audio signals played together (including the effects of event velocity) cannot exceed the 16-bit waveform amplitude limit. Even though no individual event is clipped, the combination may cause distortion.

If the selection contains any loud signals, Normalize may not seem to have any effect. This is because the volume increase is determined by the loudest audio in the selection. If an audio event contains segments that are too quiet and others that are loud, you should probably split off the quiet segments into separate events and then normalize those.

---

For step by step instructions:

[How to Boost Audio Volume by 3 Decibels](#)

[How to Decrease Audio Volume by 3 Decibels](#)

[How to Normalize Audio Data](#)

[How to Adjust the Volume of Audio Events](#)

### **To Boost Audio Volume by 3 Decibels**

1. Select the audio data to be affected.
2. Choose Edit-Audio-3dB Louder, or right-click and choose 3dB Louder from the menu.

Cakewalk increases the volume of the selected audio by 3 dB.

### **To Decrease Audio Volume by 3 Decibels**

1. Select the audio data to be affected.
2. Choose Edit-Audio-3dB Quieter, or right-click and choose 3dB Quieter from the menu.

Cakewalk decreases the volume of the selected audio by 3 dB.


### **To Normalize Audio Data**

1. Select the audio data to be affected.
2. Choose Edit-Audio-Normalize, or right-click and choose Normalize from the menu.

Cakewalk increases the volume of the selected audio to the maximum it can reach without clipping.



## To Adjust the Volume of Audio Events

1. Click  to choose the Line tool.
  2. Click on the track number in the Audio view.
  3. Drag the mouse up or down to adjust the volume.
- Cakewalk reverses the selected audio data.

## Reversing Audio Data

By reversing audio data, you can make it play backwards. You may wish to do this to obtain unusual sounds for special effects.

The Reverse command does not reverse the musical position of audio data.

---

For step by step instructions:

[How to Reverse Audio Data](#)

### **To Reverse Audio Data**

1. Select the audio data to be affected.
2. Choose Edit-Audio-Reverse, or right-click and choose Reverse from the menu.

Cakewalk reverses the selected audio data.

## Equalizing Audio Data

Equalization lets you boost or decrease the volume of sounds at different frequencies. For example, you can boost the bass, cut high-frequency hiss, or brighten mid-range vocals.

Cakewalk provides a graphic equalizer that lets you boost or decrease the volume of audio events in ten frequency bands. The width of each band doubles as you go from low to high frequencies; thus, the centers of the bands are each an octave apart.

Boosting the audio signal too much may result in clipping or distortion. If this occurs, you may need to undo the command, then decrease the volume one or more times with the 3dB Quieter command before equalization.

---

For step by step instructions:

[How to Equalize Audio Data](#)

## **To Equalize Audio Data**

1. Select the audio data to be modified.
2. Choose Edit-Audio-Graphic EQ, or right-click and choose Graphic EQ from the menu, to open the Graphic EQ dialog box.
3. Choose a preset, or adjust the sliders to the desired equalization.
4. Click Audition to hear a preview of the first three seconds of the selected audio with the equalization applied.
5. Click OK when the settings are the way you want.

Cakewalk applies the specified equalization to the selected audio.

For a list of presets supplied with Cakewalk, see [Presets](#).

## Audio Effects

Cakewalk provides the ability to use plug-in audio effects using Microsoft's DirectX technology. Some audio plug-in effects are supplied with Cakewalk. Others can be purchased from third-party software manufacturers, and appear automatically in Cakewalk's menus once they are installed on your system. This section describes the effects that are included with Cakewalk.

Using plug-in effects is similar to using the audio processing commands described above. The overall procedure is as follows:

- Select the audio data to be affected.
- Choose Edit-Plug In and then choose the effect you want from the menu to open the corresponding dialog box.
- Set effect parameters (or select a preset).
- Click Audition to preview the audio with the effect applied.
- Click the Bypass button to turn off the effect temporarily, so you can Audition the signal both with and without the effect.
- Click OK to apply the effect to the selected audio data.

If you're not happy with the result, choose the Edit-Undo command before doing any additional audio processing. Note that the Bypass button is available in all Cakewalk effects, but may not be available in third-party effects.

Audio effects can be applied to whole or partial events. For example, you can apply reverb to a single word in a vocal event, or apply a delay to one guitar note.

Audio effects can also be applied to audio tracks in real time (during playback) in the Console view. Unlike any of the audio processing discussed so far, using effects in real time is non-destructive. This means that the audio event data itself is not modified, and no new audio files are created. See [Mixing](#), for more information on real-time audio effects.

**Note:** Offline effects may cause your audio events to grow in size. For example, when you apply reverb, your event may need to grow to accommodate the tail end of an echo.

## Mixing Audio Effects

The dialog box for each plug-in effect has a Mixing tab that provides three options for processing the data.

Option	Meaning
Process In-Place, Mono to Mono	<p>Audio is processed event-by-event, in mono format. The processed output of the plug-in replaces the original event's data, in-place. (If the plug-in produces only stereo output, Cakewalk automatically converts the audio to mono.)</p> <p>This option is best for effects like Time/Pitch Stretching and Parametric Equalization.</p>
Process In-Place, Creating Stereo Output Tracks	<p>Audio is fed into the plug-in, event-by-event, in mono format. A new pair of stereo tracks is inserted beneath each selected track, and the stereo output of the plug-in is placed into this stereo pair. (If the plug-in produces only mono output, Cakewalk automatically converts it to stereo.)</p> <p>If you check Keep Original Data, Cakewalk won't delete the original audio data. This lets you create stereo "wet only" tracks for finer mixing control. If you leave Keep Original Data unchecked, the processed data will replace the original audio events.</p>
Create a Send Submix	<p>All selected audio tracks are mixed down into a stereo submix. This stereo submix is fed into the plug-in, in stereo. The stereo output of the plug-in is placed into two brand new tracks, which you choose.</p> <p>If you check Keep Original Data, Cakewalk won't delete the original audio data. If you leave it unchecked, the processed data will replace the original audio events.</p>

## Shifting Pitch

The Cakewalk FX Pitch Shifter raises or lowers the pitch of an audio signal, while leaving the duration of the audio event unchanged. The pitch shift parameters are as follows:

Parameter/Option	Meaning
Pitch	The amount by which the pitch is changed, in semitones.
Dry Mix (%)	The volume of the original, unprocessed signal passed to the output.
Wet Mix (%)	The volume of the processed signal passed to the output.
Feedback Mix (%)	The amount of pitch-shifted signal that is fed into a delay line.
Delay Time (ms)	The length of the delay in milliseconds.
Mod. Depth (ms)	The amount the delay time will vary.

This is a fast pitch shifter that uses minimal computation time.

## Notation and Lyrics

The topics listed below describe three Cakewalk views that are used to edit the musical aspects of your project.

- Cakewalk's [Staff view](#) lets you see and edit your composition in standard notation. You can add, move, and delete notes with your mouse. You can add chord names, guitar chord grids, expression marks, hairpin symbols, pedal marks, and lyrics. And, you can print professional-quality notation of a complete arrangement or individual parts, with up to 24 staves per page.
- The [Meter/Key view](#) lets you view, insert, and edit meter and key changes at any measure boundary in the song.
- The [Lyrics view](#) lets you edit a track's lyrics, and can be used to cue you with the lyrics during playback or recording.

---

See also:

[The Staff View](#)

[Basic Musical Editing](#)

[Chords and Marks](#)

[Working with Percussion](#)

[Printing](#)

[The Meter/Key View](#)

[Working with Lyrics](#)




## The Staff View


The Staff view displays MIDI note events as musical notation. For some musicians, this may be the most familiar and comfortable view in which to work. The Staff view provides many features that make it possible for you to compose, edit, and print music.



## Opening the Staff View


There are three ways to open the Staff view:

- In the Track view, select the MIDI tracks you want to see, then click the Staff View button 
- In the Track view, select the MIDI tracks you want to see, then choose View-Staff
- Right-click on a track in the Clips pane and choose Staff from the menu

You can always change the tracks that are displayed-click the Pick Tracks button  and select the tracks you want.

The Staff view lets you edit, delete, copy, and move notes during playback or recording, in real time. This means you can loop over a portion of your project, and hear any change you make on the next loop. You can "freeze" the Staff view from automatic scrolling during playback by pressing the Scroll Lock key.

As in many other views, the Staff view toolbar includes zoom tools that let you change the scale of the view. Hold the Shift key and click on the zoom tool to jump to the largest or smallest scale.

The Snap to grid option  snaps selection times and event start times to the snap resolution. You can set the resolution to any note length, or enter a number of ticks, by Shift-clicking on the Snap to grid button. The notehead size buttons also set the snap time resolution.

## Staff View Layout

The Staff view can display up to 24 staves of standard notation. When you open the Staff view window, Cakewalk automatically picks a clef for each track — Bass or Treble — by looking at the range of pitches in the track. If a track has notes that fall into both clefs, or no notes at all, Cakewalk automatically splits the track into two staves, Treble and Bass. You can change the assignment of clefs with the Staff View Layout dialog box.

When you split a track into Treble and Bass staves, you must select a split point. Notes at or above the split are placed into a treble staff, notes below the split are placed into a bass staff.


Percussion settings are discussed in [Working with Percussion](#).

---

For step by step instructions:

[How to Change the Staff View layout](#)

## To Change the Staff View layout

1. Click the Layout button  to open the Staff View Layout dialog box.
  2. Select a track from the list. The Clef option shows the track's clef.
  3. Select a new clef from the list.
  4. If you select Treble/Bass, select a Split point.
  5. If you select one of the Percussion options, click Percussion Settings to set up the appearance of percussion notes.
  6. Repeat steps 2-5 for other tracks.
  7. Click Close when you are done.
- Cakewalk displays tracks using the new staff settings.

**Tip:** If a piano part's left-hand and right-hand parts overlap, a split point will not correctly separate the two parts into Treble and Bass staves. You may prefer to put the two parts into two separate tracks.

## **Basic Musical Editing**

The Staff view's tools let you edit a song by manipulating the elements of standard music notation. Using these tools, you can create and edit notes, chord symbols (guitar fretboards), pedal marks, expression marks, hairpins, and lyrics.

## Inserting Notes

You can add notes to your composition with simple point-and-click techniques. To help with your composing, Cakewalk gives you audio feedback as you place each note.

Six buttons let you select a notehead size ranging from a whole note to a 32nd note. Buttons to the right of the notehead buttons let you select dotted note or triplet modifiers. Selecting a notehead size also sets the snap time resolution to increments where the selected notehead can be legally placed.

You may want to pick a different Snap to grid value for a particular note. For example, if you want to insert a half note in the last quarter note position in a measure (in order to get two tied quarter notes), you must set the snap resolution to a quarter note. Cakewalk will automatically convert the half note to two tied quarter notes. The same method can be used to insert a syncopated note, such as a quarter note at an eighth note position.


You may also wish to disable the Fill Durations and Trim Durations options before you enter notes on the staff. This will allow you to see the true durations of all the notes you enter. These options are discussed in [Changing the Way Notes are Displayed](#).

---

For step by step instructions:


[How to Change the Staff View layout](#)

## To Change the Staff View layout

1. Click the Draw tool .
2. Select a notehead size, and a modifier (dot or triplet) if desired.
3. Click on an empty space in the staff.
4. If desired, drag the note horizontally or vertically to a new time or pitch.

Cakewalk places the new note in the staff.

## Selecting Notes

Use the Selection tool  to make selections. Selection methods in the Staff view are similar to those in other views. Here is a summary:

To do this...	Do this...
Select a note or other symbol	Click on it
Select several symbols at once	Drag a rectangle around them
Add symbols to the selection	Press Shift and either click on the symbols or drag a rectangle around the events
Add or remove symbols from the selection	Press Ctrl and either click on the symbols or drag a rectangle around the events
Select symbols in a time range	Drag in the time ruler
Select symbols between two markers	Click between the markers
Remove all selections	Click in an empty area

**Note:** Tied notes must be selected together, since the series is really just a single MIDI note. To select tied notes, you must click or drag a rectangle around the first note of the series.



## Moving, Copying, and Deleting Notes

Selections can be cut, copied, pasted, and deleted with Edit menu commands. The techniques are similar to those used in other views. Selections can also be dragged and dropped to copy or move them. To help you keep track of your current position while dragging, you can keep an eye on the time and pitch locator in the upper-right corner of the Staff view.

Notes can be dragged horizontally, to a new time, or vertically, to a new pitch or staff. When you drag a note up or down to a new pitch, the note normally snaps to the notes in the current key signature (diatonic scale). This makes it easy to drag notes quickly among pitches that are in the current key. But you can also drag in half-steps (chromatic scale) by clicking the right mouse button while dragging. Right-clicking again returns you to the diatonic scale.

If you need to transpose more than a few notes, use the Edit-Transpose command. For more information, see [Transposing](#).

---

For step by step instructions:

[How to Move Single Note](#)



[How to Move Several Notes](#)

[How to Copy One or More Notes](#)


[How to Erase Notes with the Eraser](#)

[How to Audition with the Scrub Tool](#)

## To Move a Single Note


1. Click the Select tool  or the Draw tool .
  2. Click the note to be moved.
  3. Drag the note to a new time, pitch, or staff.
- Cakewalk moves the note to the new location.

## To Move Several Notes

1. Click the Select tool .
2. Select the notes to be moved.
3. Click on one of the selected notes.
4. Drag the notes to a new time, pitch, or staff.


Cakewalk moves the notes to the new location.

## To Copy One or More Notes


1. Click the Select tool .
2. Select the notes to be copied.
3. Press and hold the Ctrl key.
4. Drag the notes to a new time, pitch, or staff.

Cakewalk inserts copies of the notes at the new location.

## To Erase Notes with the Eraser

1. Click the Erase tool .
  2. Click on any notehead to erase the note.
  3. To erase several notes, click and drag the eraser.
- Any notes whose notehead is touched by the eraser will be deleted.

## To Audition with the Scrub Tool

1. Click the Scrub tool .
  2. Click in the staff to display the vertical scrub line.
  3. Drag the mouse horizontally to move the scrub line.
- Cakewalk plays any notes the scrub line passes over.

## Changing Note Properties

The Staff view lets you edit all the MIDI parameters for a note, including those not normally portrayed by standard musical notation. Note properties are as follows:

Property	Meaning
Time	The starting time of the note
Pitch	The note's pitch
Velocity	The note's velocity (0 to 127)
Duration	The note's duration, in ticks or in beats and ticks
Channel	The MIDI channel on which the note is played

---

For step by step instructions:

[How to Edit a Note's Properties](#)

### **To Edit a Note's Properties**

1. Right-click on the note to open the Note Properties dialog box.
2. Edit the note's properties, as described in the table.
3. Click OK.

Cakewalk changes the note's parameters, moving it to a new pitch or time if necessary.



## Working with Triplets

The Staff view places certain limitations on the use of triplets. The limitations are:

- Triplets must occur in full sets of three.
- All three steps in a triplet must be notes (no rests) of the same basic duration.
- There can be no ties in or out of the triplet.



In most cases, the Staff view can recognize triplets in MIDI data. However, the slight timing inaccuracies inherent in live performances can complicate the detection of triplets. If working from performance data, you may find it useful to quantize the notes closer to exact triplet positions using the Edit-Quantize command. See [Quantizing](#) for details.

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For step by step instructions:

[How to Enter a Triplet](#)

## To Enter a Triplet

1. Turn on the Snap to Time option.
2. Click the Draw tool .
3. Click the appropriate notehead button.
4. Select the Triplet option .
5. Enter the first note at the desired location in the staff.

Cakewalk inserts all three triplet notes at the same pitch. You can then drag the second and third notes to their correct pitch locations.

## Beaming of Rests


The Staff view supports beaming of rests, a practice that is popular with rhythmically complex music. Beam lengths are extended to include rests that are integral parts of the beamed group of notes. Short stems, called stemlets, extend from the beam toward the rest. This makes the rhythms easier to read, because the beat boundaries are made clear.

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For step by step instructions:

[How to Enable Beaming of Rests](#)

## To Enable Beaming of Rests

1. Click the Layout button  to open the Staff View Layout dialog box.
2. Select the Beam Rests option.
3. Click OK.

Thereafter, the Staff view beams rests as though they were notes.

## Changing the Way Notes are Displayed

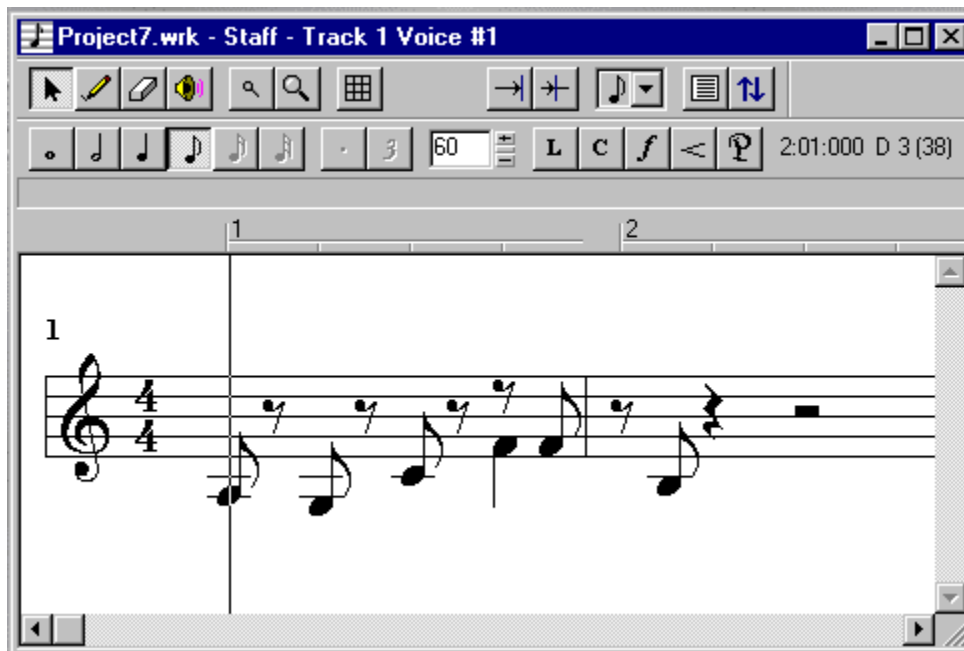
Unlike musical notation programs, Cakewalk uses the MIDI events themselves as the permanent representation of the music; thus, the Staff view is only an interpretation of a MIDI performance.

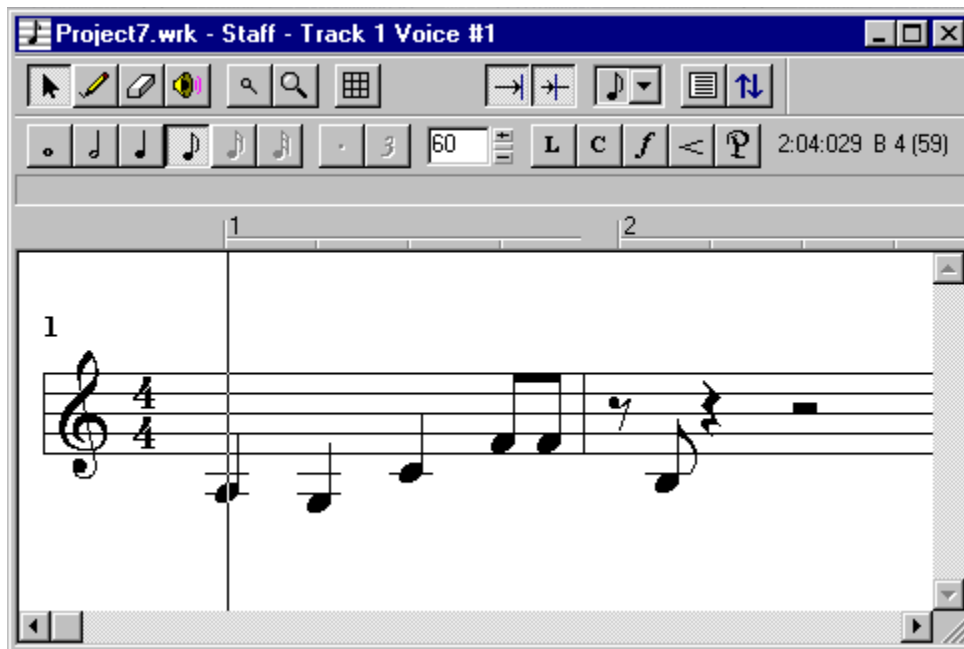
MIDI notes do not always correspond exactly to notes on a staff. Whereas a staff defines precise grid-like starting times and durations for notes, a MIDI note can start at any arbitrary time during the song, and last for any length of time. If you record a performance from a MIDI keyboard, for example, you'll find that some notes may start slightly before the beat, and some a little after, and that the notes end a little late or a little early. Although these slight imperfections are what gives a performance its "human" quality, you don't necessarily want to see all these imperfections notated with excruciating precision.

The Staff view has two options you can select to affect the way MIDI notes are displayed on the staff:

Option	Purpose
Fill Durations	Visually rounds up note durations to the next beat, or the next note, whichever comes first.
Trim Durations	Visually rounds down note durations if they extend a little way past the start of the next note.

Here's what the Staff view looks like with and without these options:





On the other hand, if you are entering notes into the Staff view with the mouse, Fill and Trim Durations may produce confusing results. For example, with Fill Durations, an inserted eighth note in 4/4 time would look like a quarter note until you insert another eighth note immediately following it. It is recommended that you turn off the Fill Durations and Trim Durations options when entering notes; these options are more appropriate for looking at notes you recorded.

## Using Enharmonic Spellings

Any musical note can be referred to by several different names. For example, C#3 and Db3 identify the same pitch, as do G4 and Abb4. The most appropriate name depends upon the current key signature, but can also depend on musical context.

Cakewalk uses a set of rules to automatically add accidentals (sharps or flats) to notes based on the current key signature. These rules cover the most common musical situations and usually lead to pleasing results. However, there is no guaranteed right way to resolve accidentals. Doing so ultimately requires knowledge regarding what key or scale is being evoked — knowledge that only the composer possesses. For example, if a modulation is being prepared, then the new key signature has not yet been completely established, and the harmony has already begun to shift. In fact, there may not even be a scale in a diatonic sense: chromatic scales, for instance, are supposed to sharp on the way up and flat on the way down. Because no set of rules will suffice for all situations, the composer needs the ability to override any default choice.

Notes in Cakewalk normally do not have a forced enharmonic spelling. This means they will automatically change to match the default for a new key signature. If you specify spelling that matches the default choice, Cakewalk will drop any forced spelling and switch back to default behavior. Otherwise, the forced spelling is remembered for that note, and will not change to follow the key signature. If you change the pitch of a note by some other means (for instance, by dragging it up or down), it will lose any forced spelling, because it very likely no longer applies to the new pitch. Enharmonic spelling overrides for each note are saved in the project file.

When you type a note's enharmonic spelling, use the following table as a guide:

Accidental	Character	Example	Displays As
------------	-----------	---------	-------------

Flat
------

b
---

Cb5
-----

1



Sharp
-------

#
---

C#5
-----

1



Double flat
-------------

“
---

C”5
-----

1



Double sharp      x

Cx5



---

For step by step instructions:

[How to Change a Note's Enharmonic Spelling](#)



## **To Change a Note's Enharmonic Spelling**

1. Right-click on the note to open the Note Properties dialog box.
2. In the Pitch textbox, type a new spelling for the note.
3. Click OK.

Cakewalk displays the note with the new enharmonic spelling.

You can change enharmonic spellings in other views, such as the Event List view, by similarly typing a new spelling wherever the note pitch is displayed as a text string.

## **MIDI Channels and Voices**

If you set notes to different MIDI channels in the Staff view, they will automatically be forced into separate voices. This gives you greater control over voice assignment and beaming, and is especially important in keyboard and percussion notation. The use of different MIDI channels is conceptually linked to the use of different instruments. Therefore, setting notes to different channels gives you a useful way to show separate voices, whether the track has a forced channel or not.

You can disable the forced mapping of MIDI channels by choosing Tools-Initialization File, and adding the following line: `StaffViewChanSeparateVoices = 0`.

## Chords and Marks

The Staff view lets you add and edit chord symbols, dynamic markings, hairpin symbols, and pedal events. Like notes, these symbols are placed in the score with the Draw tool. They can be selected, cut, copied, pasted, deleted, and dragged and dropped. With the exception of pedal marks, though, these symbols have no audible effect; they serve only to enhance and clarify the printed score.

## Adding Chord Symbols

The Staff view lets you enter chord symbols above the staff. You can enter both ordinary chord names and guitar chord symbols, which display both the chord name and fingering. Cakewalk has a large number of predefined chords from which you can choose. You can also define and save your own chords.

If a track is split into Treble/Bass staves, chords are allowed only above the upper (Treble) staff.

Cakewalk stores its library of chords in the file CHORDS.LIW. The chords in the library are sorted into groups. You can add and remove chords from the library, create new groups (i.e. for alternative guitar tunings), and add chords from a different library file.

You edit chords in the Chord Properties dialog box. Chord properties are shown in the following table:

Property	Meaning
Time	The time of the chord, in measure, beat, and tick (MBT) format
Name	The name of the chord
Group	The chord group

The Chord Properties dialog box also lets you draw guitar chord grids and manage the chord library.

You can suppress the display of all guitar chord diagrams by deselecting the Show Chord Grids option in the Staff view's Layout dialog box. With this option disabled, only chord text appears.

---

For step by step instructions:

[How to Add a Chord Symbol](#)



[How to Move a Chord Symbol](#)

[How to Edit a Chord Symbol](#)

[How to Add a Guitar Chord Grid](#)


[How to Manage the Chord Library](#)

## To Add a Chord Symbol

1. Click the Draw tool .
2. Select the Chord tool .
3. Position the pointer above the staff. (The pointer changes to a pencil when you are in a legal position.)
4. Click to place a chord symbol.

Cakewalk inserts a copy of the most recently added chord (by default, C). You can then edit the symbol to display the chord you want.

## To Move a Chord Symbol

1. Click the Draw tool .
2. Drag the chord symbol to a new location.

## To Edit a Chord Symbol

1. Right-click on the symbol to open the Chord Properties dialog box.
2. Edit information about the chord according to the table:

To do this...	Do this...
Move a chord in time	Change the Time property.
Give the chord a new name	Select a chord from the dropdown list, or type a new name. Use “#” for sharp and “b” for flat.
Add descriptive text to the	Type the text in square brackets chord name after the chord name. The text does not appear in the Staff view.
See a different set of chords	Select a group from the list. This option only applies if you have created a custom chord library.

3. If desired, add a guitar chord grid (see below).
4. Click OK.

The Staff view displays the chord with the new properties, moving it to a new time if necessary.

## To Add a Guitar Chord Grid

1. Right-click on the chord symbol to open the Chord Properties dialog box.
2. Follow the instructions in the table:

To do this...	Do this...
Display a blank chord grid	Click New Grid.
Place a dot on the grid	Select the finger number (1-4, or T for Thumb), then click on the grid at the appropriate string and fret location
Assign an open string	Select O, then click on the string
Assign a muted string	Select X, then click on the string
Change the finger assigned	Click on the dot repeatedly to cycle to a dot through the fingers
Insert a fret designation	Click to the right of the grid and enter the number of the index finger fret in the Chord Fret Number dialog box.
Play the chord (Audition)	Click Play.
Remove the chord grid	Click Remove Grid.

3. Click OK.

The Staff view displays the chord with the new guitar chord grid.



## To Manage the Chord Library

1. Right-click on the chord symbol to open the Chord Properties dialog box.
2. Follow the instructions in the table:

To do this...	Do this...
Add a chord to the library	Select a group, enter a name in the Name box, enter a guitar grid (if desired), and click Save.
Delete a chord from the current	Select the chord from the group list and click Delete.
Add a new group	Type a name for the group in the Group textbox and click Save.
Delete a group	Select a group from the list and click Delete.
Merge chords from an external	Click the Import buttons and chord library select a file.

3. Click OK.

Cakewalk saves the chord library with the changes you made.

## Adding Expression Marks

Expression marks tell a performer how to interpret the notes and durations on the page. They provide a necessary supplement to simple notation, in which notes have only pitch and duration, but no hint of how loudly, softly, or smoothly, they are to be played. Dynamic marks — from ppp for "very quietly" through fff for "quite loudly" — allow notation to convey volume instructions. Expression marks are also needed to specify other aspects of performance, such as whether a passage is to be played legato or staccato. Finally, expression marks can be used to convey to the performer the composer's suggestions or requirements as to how a passage should be interpreted. In such cases the language used can leave much to the imagination, as in with majesty or abrasively.

Expression marks do not change the underlying MIDI data. They only provide information to the reader on how a piece should be performed.

If the track is split into Treble/Bass staves, expression marks are allowed only below the Treble staff.

When entering an expression mark, you can leave a dangling hyphen at the end of an expression mark to insert automatic spaced hyphens until the next expression mark. For example:

cresc.       - - -       ff

It is often desirable to terminate such a series of hyphens with a blank expression mark. For example:

accel.       - - -

Expression text is italicized in the Staff view. Standard dynamic markings also appear bold.



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For step by step instructions:

[How to Add an Expression Mark](#)

[How to Edit an Expression Mark](#)

## To Add an Expression Mark

1. Click the Draw tool .
  2. Select the Expression tool .
  3. Position the pointer below the lowest note in the staff. (The pointer changes to a pencil when you are in a legal position.)
  4. Click to open an insertion box.
  5. Type the expression mark text. Press Esc to abort the operation.
  6. Press Enter, or press Tab or Shift-Tab to move to the next or previous mark, respectively.
- Cakewalk inserts the new expression mark below the staff.

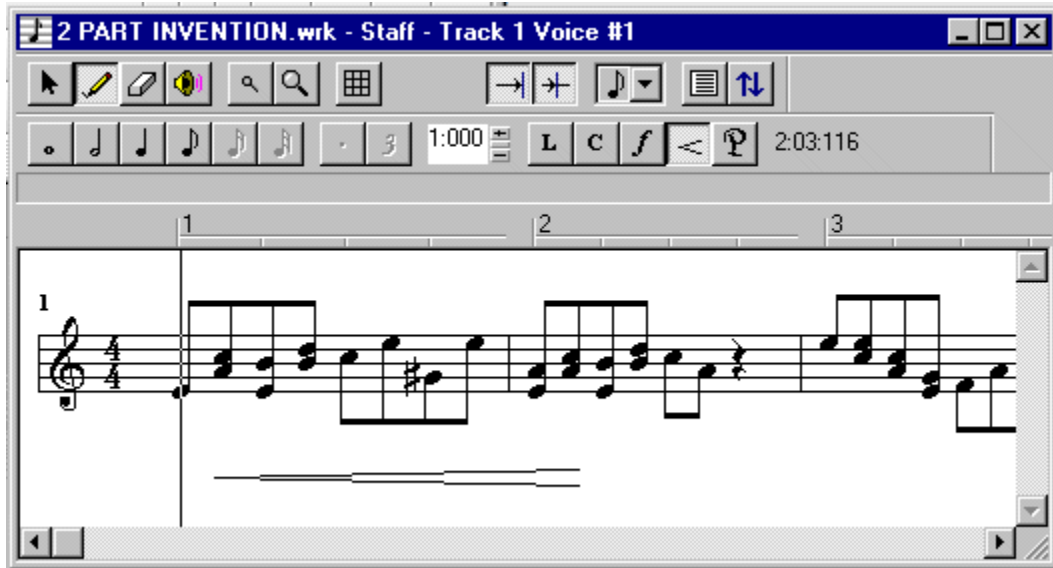
### **To Edit an Expression Mark**

1. Right-click on the expression mark to open the Expression Text Properties dialog box.
2. Edit the time and text of the expression mark as desired.
3. Click OK.

The Staff view displays the expression mark with the new text, moving it to a new time if necessary. You can also use the Draw tool and click directly on an expression mark to change its text.

## Adding Hairpin Symbols

Some musical phrases vary dynamically, increasing or decreasing in loudness for dramatic effect. Cakewalk lets you insert traditional crescendo and diminuendo hairpin symbols that convey this information to a performer, as shown here:





If the track is split into Treble/Bass staves, hairpin symbols are allowed only below the Treble staff.

For step by step instructions:

[How to Add a Hairpin Symbol](#)

[How to Edit a Hairpin Symbol](#)

## To Add a Hairpin Symbol

1. Click the Draw tool .
2. Select the Hairpin tool .
3. Position the pointer below the staff. (The pointer changes to a pencil when you are in a legal position.)
4. Click to place a hairpin symbol.

Cakewalk inserts a copy of the most recently added hairpin symbol, which you can edit as desired.

### **To Edit a Hairpin Symbol**

1. Right-click on the hairpin symbol to open the Hairpin Properties dialog box.
2. Edit the starting time, duration, and type of the hairpin as desired.
3. Click OK.

The Staff view displays the hairpin symbol with the new properties, moving it to a new time if necessary.

## Adding Pedal Marks

Pedal marks traditionally indicate where the sustain pedal of a piano is to be pressed, and for how long. With Cakewalk, you can achieve the same effect by inserting a pair of symbols indicating when the sustain pedal controller is to be turned on (down) and when it is to be turned off (up). Unlike chord symbols, expression marks, and hairpin symbols, each pedal symbol corresponds to a MIDI event. The other symbols are purely ornamental, intended to provide a composer with a way to communicate suggestions or requirements to performers.

Pedal event parameters are as follows:

Parameters	Meaning
Time	The time of the event, in measures, beats, and ticks (MBT)
Channel	The MIDI channel on which the event will be sent
Value	The event value. A value of 127 depresses the pedal, a value of 0 raises it. (Some advanced synthesizers support values between 0 and 127 for "partial pedaling.")

If the track is split into Treble/Bass staves, pedal marks are allowed only below the Bass staff.

You can suppress the display of all pedal marks by deselecting the Show Pedal Events option in the Staff view's Layout dialog box.

---



For step by step instructions:

[How to Add a Pedal Mark](#)

[How to Edit a Pedal Event](#)



## To Add a Pedal Mark

1. Click the Draw tool .
2. Select the Pedal tool .
3. Position the pointer below the staff. (The pointer changes to a pencil when you are in a legal position.)
4. Click to place a pedal mark.

Cakewalk inserts a pair of pedal symbols (a pedal down and a pedal up.) You can click and drag either symbol to a new time.

### **To Edit a Pedal Event**

1. Right-click on the pedal symbol (pedal down or pedal up) to open the Pedal Event Parameters dialog box.
2. Edit the pedal event parameters, as described in the table above.
3. Click OK.

Cakewalk changes the pedal event parameters, moving the symbol to a new time if necessary.

## Working with Percussion

The Staff view can display percussion tracks on a five-line percussion staff or on a single percussion line. The staff usually displays notes for a drumset or multiple percussion instruments; the line is used to display notes for a single instrument (although it need not be so).

Cakewalk lets you control the appearance of percussion staves in considerable detail. You can display percussion notes using several different types of noteheads and articulation symbols, and you can map any percussion sound to any position on the percussion staff. (In a percussion track, each MIDI note value designates a different percussion instrument; mapping lets you display any instrument in any position on the staff, regardless of the underlying MIDI note value.) You can save your settings as a preset, and use them again on other tracks and in other projects. Cakewalk supplies a standard preset based on the General MIDI percussion standard and popularly accepted percussion staff positions and noteheads.

## Setting up a Percussion Track

Before you use the percussion capabilities of the Staff view, your percussion track should be set up correctly. This will allow you to hear the proper sounds when placing notes and during playback, and will allow you to see the correct percussion instrument names rather than generic note names in the Piano Roll view, Event List view, and Percussion Notation dialog box.

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For step by step instructions:

[How to Set up a Percussion Track](#)

## To Set up a Percussion Track

1. Right-click on the track in the Track pane and choose Track Properties to open the Track Properties dialog box.
2. Assign the port and channel for your percussion instrument. For example, if the port is assigned to a sound card that supports General MIDI, use channel 10.
3. Click Instruments to open the Assign Instruments dialog box.
4. Make sure that the port/channel combination used by your track is assigned to a percussion instrument definition. For example, channel 10 of a General MIDI port should be assigned to the General MIDI Drums instrument definition.
5. Click OK in both dialog boxes.

Cakewalk shows the new track port and channel in the Track view, and will use the proper percussion instrument names in the Piano Roll view, Event List view, and Percussion Notation dialog box.

For more information about instrument definitions, see [Instrument Definitions](#).

## Setting up a Percussion Staff or Line

The first time you display a percussion track in the Staff view, Cakewalk picks a default percussion clef for the track. Tracks with only one note value are assigned the Percussion Line clef. Tracks with multiple note values are assigned the Percussion Staff clef.

If you want to change a Percussion Staff to a Percussion Line or vice versa, or if you want to change another type of staff to a percussion staff, you can do so in the Staff View Layout dialog box. If you change a track's clef to a non-percussion clef, the percussion notation settings will be lost.

The lowest and highest lines on the Percussion clef are E5 and F6, respectively. The Percussion Line represents E5.

By default, percussion staves are given Cakewalk's default note bindings and notehead assignments. If you want to use your own notation, or if you want to set up the appearance of a percussion line, you need to use the Percussion Notation Key dialog box. In this dialog, the percussion sounds and staff positions that are bound have an asterisk near their names. When you select a bound percussion sound, a line joins the sound to its staff position. Each percussion sound can only be bound to a single position, but each position may be bound to several sounds. You can use different notehead types and articulation symbols to visually distinguish the sounds.


---

For step by step instructions:

[How to Assign a Percussion Staff or Line to a Track](#)


[How to Set up a Track's Percussion Notation Key](#)


## To Assign a Percussion Staff or Line to a Track

1. Click the Layout button  to open the Staff View Layout dialog box.
2. Select your percussion track from the list.
3. Select Percussion Staff or Percussion Line from the Clef dropdown list.
4. Click Percussion Settings to set up the appearance of percussion notes (see below).
5. Click Close.

Cakewalk changes the track's clef to the selected percussion clef.

## To Set up a Track's Percussion Notation Key

1. Click the Layout button  to open the Staff View Layout dialog box.
2. Select your percussion track from the list.
3. Click Percussion Settings to open the Percussion Notation Key dialog box.
4. Set up the percussion notation key according to the following table:

To do this...	Do this...
Map (bind) a percussion sound to a line or space on the staff	Select the sound (or corresponding MIDI note) in the MIDI Note list, select the intended position in the percussion staff in the Display As list, then click Bind.
Set the notehead and articulation mark for a percussion sound	Select the sound in the MIDI Note list, then select a Notehead Type and Articulation Symbol. (Only bound sounds can be assigned a notehead type and articulation symbol other than the default.)
Set the default staff position, notehead type, and articulation symbol for unbound percussion sounds	Select the default position in the Display As list, select a Notehead Type and Articulation Symbol, then click Default Note.
Remove a binding	Select the percussion sound in the MIDI Note list, then click Unbind. Unbound notes are displayed in the default position.
Load a preset	Select the preset from the Preset list.
Save your settings as a preset	Click the Save button  and enter a preset name.
Clear all bindings	Click Zap All.
Select notes in the note lists with a MIDI keyboard.	Click in the MIDI Note or Display As list, then strike a key on your keyboard

5. Click OK to close the Percussion Notation Key dialog box.
6. Click Close to close the Staff View Layout dialog box.

The Staff view shows the percussion clef with the note bindings and noteheads you assigned.



## Ghost Strokes

In percussion notation, parentheses around a note mean that it is a "ghost stroke", played very lightly and barely heard. Cakewalk supports ghost strokes by displaying parentheses around any percussion note event with velocity less than 32 (a fixed, arbitrary threshold). If necessary, you can adjust the Vel+ parameter of the track and the velocities of the individual notes to effectively move this threshold without changing the way the note sounds.

## Printing

The Staff view provides printing support of standard musical notation in nine staff sizes. The Staff view prints general project information from the File Info dialog box (see [Labeling Your Projects](#)) at the beginning of the score, including the song's title (or file name), subtitle (dedication), playing instructions, author/composer, and copyright. In addition, Cakewalk identifies the track(s) by number and name, and numbers each measure and each page.

Cakewalk lets you select a size for your printed score. Engravers have nine standardized sizes of the five-line staff. The vertical distance between the lines of each staff is called its rastral size, or measurement. Each rastral size has a number and is used by publishers for a specific genre of musical composition.

Number	Trade names	Genre usage
0	Commercial or Public	Wire-bound manuscript
1	Giant or English	Elementary band and orchestra books; instruction booklets
2 or 3	Regular, Common, or Ordinary	Sheet music for, for example, concertos and classics
4	Peter	Folios, works for organ, etc.
5	Large middle	Band/wind ensemble music; sheet music
6	Small middle	Chorals; condensed sheet music
7	Cadenza	Pocket editions; cues in piano parts; military marches
8	Pearl	Thematic advertisement; ossia clarification

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For step by step instructions:

[How to Print a Score](#)

## **To Print a Score**

1. Make sure the Staff view is the current window.
2. Choose File-Print Preview.
3. If you want, click Zoom or click in the music, to zoom the view in and out.
4. Click the Configure button to select a rastral size.
5. When zoomed out, you can press Page Up, Page Down, Home, and End to navigate between pages.
6. Click Print.

Cakewalk displays the Windows Print dialog box, from which you can set up your printer and prints the score.

Alternatively, you can choose File-Print and skip the print preview window.

## **The Meter/Key View**

The Meter/Key view lets you enter meter and key changes on measure boundaries. Meter and key changes affect all tracks.

## What is Meter?

The meter -- also known as the time signature -- describes how to divide time into rhythmic pulses. When you set the meter, you are specifying the number of beats per measure and the note value of each beat. Common meters include:

- 2/4 (two beats per measure, quarter note gets a beat)
- 4/4 (four beats per measure, quarter note gets a beat)
- 3/4 (three beats per measure, quarter note gets a beat)
- 6/8 (six beats per measure, eighth note gets a beat)

The top number of a meter is the number of beats per measure, and can be from 1 through 99. The bottom number of a meter is the value of each beat; you can pick from a list of values ranging from a whole note to a thirty-second note.

The meter affects several things in Cakewalk:

- Metronome accents
- How measure, beat and tick (MBT) times are calculated and displayed
- How the Staff view is drawn

While Cakewalk in general allows meters to have up to 99 beats per measure, the Staff view cannot display such measures. You will receive an error message if you try to use the Staff view with meters exceeding its capacity.

Usually the easiest approach to working with meter changes is to set all of them up before doing any recording. Use the Meter/Key view or the Insert-Meter/Key Change command to add meter changes at the desired measures.

## What is Key?

In musical terms, a key is a system of related notes based on the tonic (the base pitch) of a major or minor scale. A key signature is a group of sharps or flats placed immediately to the right of the clef sign. The key signature tells a performer that certain notes are to be systematically raised or lowered.

There are fifteen different key signatures -- seven with sharps, seven with flats, and one without either. The fifteen key signatures correspond to fifteen different major scales, and to fifteen different minor scales (for example, the key signature for C major is the same as for A minor).

The key signature affects several things in Cakewalk:

- The key signature controls how Cakewalk displays notes. In the Event List view and some dialog boxes, Cakewalk converts the MIDI pitch number to labels like Db (D-flat in the key of C).
- The Staff view uses the key signature to display notation correctly.

The key signature only affects how Cakewalk displays pitches for you. Changing the key signature does not affect the MIDI key number (pitch) stored with each note. To actually transpose pitches, use the Transpose command or edit notes individually by using the Piano Roll, Event List, or Staff views.

Frequently you use only one key signature for an entire song. The default key is C. You can change these defaults by creating your own default template file. For more information, see [Templates](#).

## Opening the Meter/Key View

To open the Meter/Key view, click  or choose View-Meter/Key.

The Meter/Key view displays a list of meter/key changes in the project. There is always an entry for measure 1, because there must always be a meter and key signature for the song. The default meter is 4/4 and the default key is C. You can change these defaults by creating your own default template file. For more information, see [Templates](#). Each meter/key change has the following properties:

Property	Meaning
At Measure	The measure where the meter/key change takes place
Beats per Measure	The number of beats per measure-the upper number in the time signature
Beat Value	The note length of a beat-the lower number in the time signature. 2 corresponds to a half note, 4 to a quarter note, 8 to an eighth note, etc.
Key Signature	The key signature

## Adding and Editing Meter/Key Changes

The Meter/Key view displays a list of all the meter/key changes in the song. You can add, delete, or edit meter/key changes by clicking the buttons at the left of the list. Meter/key changes can also be inserted into the project with the Insert-Meter/Key Change command.

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For step by step instructions:

[How to Add a Meter/key Change](#)

[How to Delete a Meter/key Change](#)

[How to Move a Meter/key Change](#)

[How to Edit a Meter/key Change](#)

### **To Add a Meter/key Change**

1. Open the Meter/Key view.
2. Click Add, or choose Insert-Meter/Key Change, to open the Meter/Key Signature dialog box.
3. Enter information about the new meter/key change.
4. Click OK.

Cakewalk inserts the meter/key change into the project. The meter/ key change will appear in the Staff view at the appropriate measure.



### **To Delete a Meter/key Change**

1. Select the meter/key change to be deleted from the list.
2. Select additional meter/key changes by using Shift-click and Ctrl-click.
3. Select the Confirm option if you want to be prompted to confirm deletion.
4. Click Delete.

Cakewalk removes the meter/key change from the project. Note that you cannot delete the first meter/key change from measure 1 of a project.

### **To Move a Meter/key Change**

1. Select the meter/key change to be moved.
2. Click Add.
3. Edit the Measure parameter to the meter/key change's new measure.
4. Click OK.
5. Select the original meter/key change again.
6. Click Delete.

Cakewalk removes the original meter/key change, and inserts a copy of it at the new measure.

**To Edit a Meter/key Change**

1. Select the meter/key change to be edited.
2. Click Change to open the Meter/Key Signature dialog box.
3. Edit the meter/key change properties.
4. Click OK.

Cakewalk changes the properties of the meter/key change.

## Working with Lyrics

Cakewalk lets you create, edit, and display lyrics -- words and syllables associated with notes in a track. Lyrics can be the words to a song, the text of a vocal passage, a narration to be read along with the music, cues of some type, or text totally unrelated to the music. Each word or syllable in the lyrics must be associated with a note in a MIDI track. Each MIDI track can have its own lyrics.

Although lyrics can logically be associated with digital audio data, you cannot actually place lyrics in an audio track. If you want to create lyrics for an audio track, you must create an auxiliary MIDI track to hold the lyrics.

You can enter and edit lyrics in two ways:

- Using the Lyrics tool in the Staff view
- Using the Lyrics view

The Staff view is usually the preferred location for entering lyrics, since you can see the notes with which the lyrics are associated. The Lyrics view can also be used for entering or editing lyrics, but its main strength is that it can display lyrics in a larger, more readable format. You might use the Lyrics view to display song lyrics during recording and playback, so performers can see the words and sing along. You can make the font size in the Lyrics view as large as desired, so that the lyrics can be read at a distance from the monitor. During playback, the current line in the lyrics is enclosed in a box and the current word is highlighted.

Lyric events are similar to text events. Like any other event, they occur at a particular time. They contain text, just like general-purpose text events, but generally they contain only a single word (or syllable of a word). As events, Lyrics can be edited in the Event List view (see [The Event List View](#)).

## Adding and Editing Lyrics in the Staff View

The Staff view displays lyrics below their associated track. If the track is split into Treble/Bass staves, lyrics are aligned with notes in both staves, but are displayed below the Treble staff.

When a lyric word or syllable spans multiple notes, a trailing underline or series of regularly spaced hyphens is automatically drawn, following conventional lyric notation practice.



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For step by step instructions:

[How to Add Lyrics to a Track](#)

[How to Edit Lyrics](#)

## To Add Lyrics to a Track


1. Click the Draw tool .
2. Select the Lyrics tool .
3. Position the pointer below the staff, under the first note to be assigned lyrics. (The pointer changes to a pencil when you are in a legal position.)
4. Click to open an insertion box.
5. Follow the instructions in the table:

To do this...	Do this...
Enter a word or syllable	Type it in the insertion box
End the word or syllable and	Type a space, tab, or hyphen move to the next note
Skip over a note	Type a space or hyphen
Move back to the previous note	Press Shift-Tab

6. Press Enter when you are done.

Cakewalk displays the new lyrics below the staff.


## To Edit Lyrics


1. Click the Draw tool .
2. Click on the word you want to change.
3. Edit the word as desired.
4. Press Enter.

Cakewalk replaces the old word with the new one.

## Opening the Lyrics View

There are three ways to open the Lyrics view:

- In the Track view, select the track whose lyrics you want to see, then click 
- In the Track view, select the track whose lyrics you want to see, then choose View-Lyrics
- Right-click on a clip in the Clips pane and choose Lyrics from the menu

The Pick Track button  opens a dialog where you can select the track whose lyrics you want to see. Select the desired track, then click OK.

To select a font for the display, use one of the following:

Option/Button	Purpose
Font A	Selects the first font. By default, this is a small font useful for editing.
Font B	Selects the second font. By default, this is a larger font useful for reading lyrics at a distance.
Font	Opens a dialog where you can select a font. The selected font is then assigned as Font A or B (depending on which is currently selected).

## Adding and Editing Lyrics in the Lyrics View

Lyrics appear in the Lyrics view as a stream of syllables, each one associated with a note in the track. In this context, a **syllable** is any continuous string of characters, without a hyphen. For example, “love,” “desire,” and “infatuation” are all syllables; each one would be associated with a single note. If you want to break a word into multiple syllables, you must hyphenate the word. For example, “de-sire” would map onto two notes, since it is now two syllables long.

You can enter the lyrics marking the syllables the way you want, or simply type the text in normally and use automatic hyphenation to break the text into syllables. This means you can add lyrics to a project by copying and pasting them from another application (such as a word processor), and then hyphenate them automatically.

To extend a single syllable over more than one note, you can use extra hyphens, separated by spaces. For example, in “Oh - say can you see...”, the “Oh” is extended over two notes. If a track contains no lyrics yet, the display will show only a series of hyphens (one for each note in the track).

If you enter more syllables than there are notes in the track, Cakewalk assigns the extra lyrics times at quarter note intervals.

---

For step by step instructions:

[How to Enter Lyrics in the Lyrics View](#)

[How to Edit Lyrics in the Lyrics View](#)

[How to Hyphenate the Lyrics](#)



## **To Enter Lyrics in the Lyrics View**

1. Click in the upper left corner of the view to position the cursor at the start of the text.
2. Follow the instructions in the table:

<b>To do this...</b>	<b>Do this...</b>
Enter a word or syllable	Type it
End a word or syllable and move	Type a space or hyphen to the next note
Break a line for easier viewing	Press Enter

## **To Edit Lyrics in the Lyrics View**

Editing in the Lyrics view follows standard Windows conventions for cursor movement, selection, cut, copy, paste, and delete. When you pause, Cakewalk will update all lyric events in the track.

### **To Hyphenate the Lyrics**

1. If you want, select a portion of the lyric text. If you do not select any text, all the lyrics will be hyphenated.
2. Click the Hyphenate button.

Cakewalk hyphenates the lyrics.

## Mixing

The topics listed below describe the Console view, a live digital mixer that gives you full track-by-track control over recording and playback of your project. Using the Console view, you can:

- set track parameters such as port, channel, bank, and patch, and source
- mute and solo tracks
- arm tracks for recording
- monitor your input devices with track level meters
- control volume and panning
- control MIDI track chorus and reverb
- add real-time effects to digital audio

The Console view supports automation, which lets you record and play back volume and pan changes and MIDI reverb and chorus settings.

The Console view also lets you record the digital audio portions of a project, including all real-time effects and control movements, as a stereo pair of audio tracks. You can use the mixed-down tracks to create a CD master or to publish your work on the World Wide Web.

---

See also:

[The Console View](#)

[Mixing MIDI](#)

[Routing and Mixing Digital Audio](#)

[Using Real-Time Effects](#)

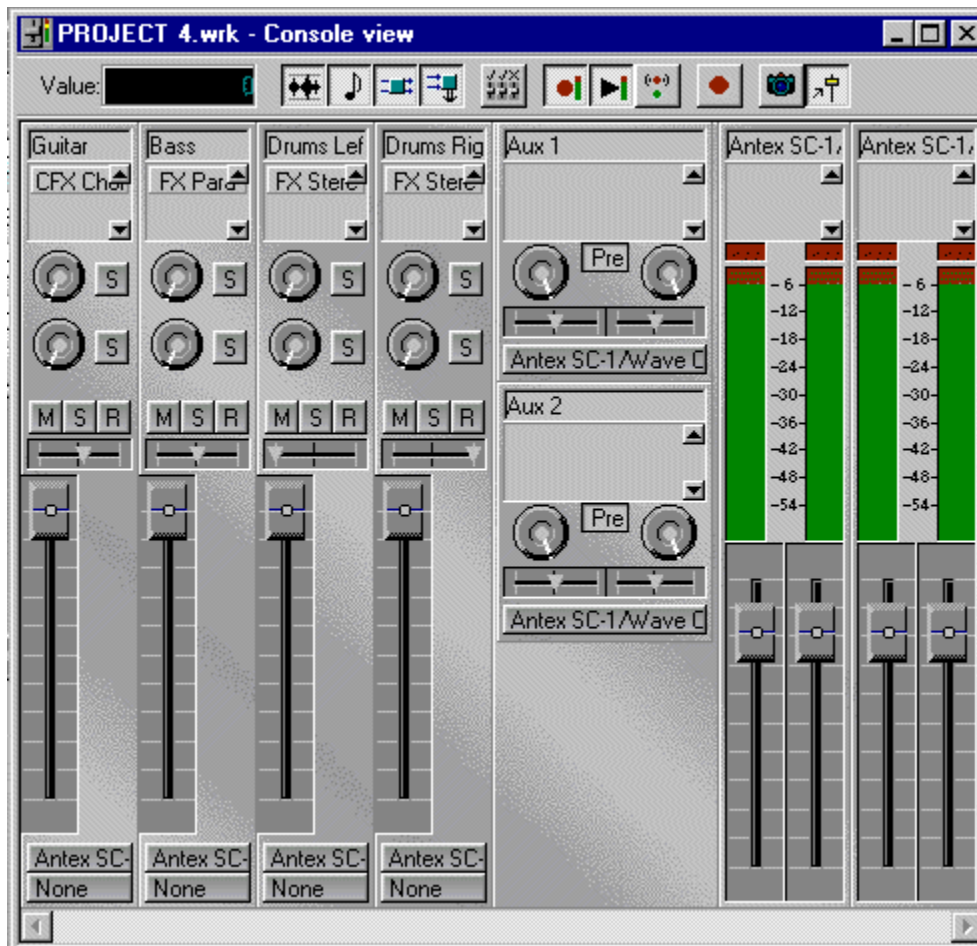
[Using Control Groups](#)

[Using Remote Control](#)

[Recording Automation Data](#)

## The Console View

The Console view contains all the controls you need to mix your project. To open the Console view click the Console view button or choose View-Console.

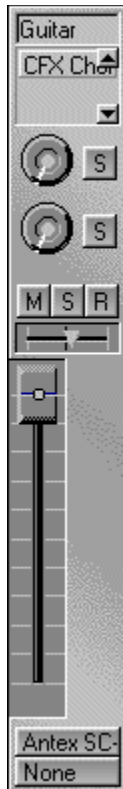


Sound controls in the Console view are grouped in **modules**. There are four types of modules:

Module type...	What you can do...
----------------	--------------------

MIDI track	Set the track's output port, channel, bank, and patch; set the input source and monitor input levels; mute, solo, and arm the track; set channel volume, panning, chorus, and reverb levels.
Audio track	Set the track's output port; set the input source and monitor input levels; mute, solo, and arm the track; set track volume and panning; apply real-time effects, send audio data to aux buses.
Aux bus	Receive input from one or more audio tracks, apply real-time effects, and send the results to an output port.
Main	Apply real-time stereo master effects; monitor output levels using meters; control the stereo volume of audio output to an audio port.

The Console view contains several different types of controls. Here's how they are used:



Knobs can be adjusted in three different ways:

- Click along the outer edge of the knob to move the knob to that position
- Drag the outer edge of the knob in a circular motion to set the desired position
- Click on the center of the knob and drag the mouse up or down to adjust the knob

The controls and effects patch points all have tooltips associated with them. To see a description of a particular control or effect, simply rest the cursor over the item for a few seconds.

---

See also:

[Configuring the Console](#)

## Configuring the Console

The Console view can be reconfigured in a variety of ways. You can:

- Choose the modules that you want to see
- Adjust the display of audio meters and clip indicators
- Change the number of Aux buses
- Choose to use balance or pan controls on aux buses and main outputs

You can adjust the modules that are displayed by type or individually using tools in the Console view toolbar.

Meters are helpful in determining the relative volumes of your audio tracks, and in detecting and preventing overload. By default, the Console view displays output level meters in Main output modules at all times, and displays record level meters in individual tracks whenever they are armed and have an audio input source. The display of meter, however, can place a considerable load on your computer. Showing only the peak indicators, or hiding the meters entirely, can reduce the load on your computer. This may increase the number of audio tracks and real-time effects you can play back at one time.

Finally, there are two options you can access from the Tools-Audio Options command that affect the layout and operation of the Console view. First, Cakewalk lets you control the number of aux buses that appear in the Console view. If you are not planning to make use of any aux buses, you can reduce this number to zero to save space and make the Console view more compact.

Second, Cakewalk lets you choose two modes of operation for the stereo pan/balance controls:

Mode...	What it means...
Balance	Constant audio is not maintained as the signal is swept across the stereo field. As the balance control is moved toward the left channel, for example, the volume of the right channel is gradually reduced to zero, while the left channel volume is left unchanged.
Pan (Constant Power)	Constant audio is maintained as the signal is swept across the stereo field. As the pan control is moved, both the right and left channel volumes are changed to ensure that the total power delivered to the two channels remains constant.

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For step by step instructions:

[How to Choose the Modules that are Displayed](#)






[How to Change the Meter Display](#)

[How to Change the Number of Aux Buses](#)

[How to Choose Balance or Pan Controls](#)




## To Choose the Modules that are Displayed

Use the tools in the Console view toolbar as described in the table:

Tool...	How it works...
	Show or hide audio modules
	Show or hide MIDI modules
	Show or hide Aux buses
	Show or hide Main audio output
	Choose the modules you want to see individually from a dialog box

## To Change the Meter Display

Use the tools in the Console view toolbar as described in the table:

Tool...	How it works...
	When pressed, Record level meters are displayed when a track has an audio input source and is armed for recording
	When pressed, Playback level meters are displayed on all Main outputs
	When pressed, peak indicators are displayed instead of meters. The peak indicators light if the signal is clipping

## To Change the Number of Aux Buses

1. Choose Tools-Audio Options to display the Audio Options dialog box.
2. Enter the desired number of aux buses in the Number of Aux Buses box.
3. Click OK when you are done.

The next time you open the Console view, it will contain the designated number of aux buses.

### **To Choose Balance or Pan Controls**

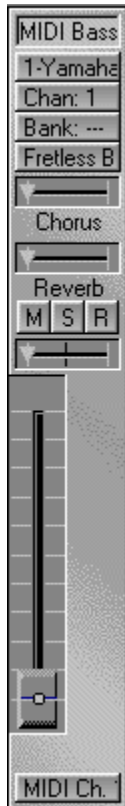
1. Choose Tools-Audio Options to display the Audio Options dialog box.
2. Choose Balance Control or Constant Power in the MIDI Pan Mapping box.
3. Click OK when you are done.

Cakewalk interprets MIDI pan messages as you requested.



## Mixing MIDI

Each MIDI track in your project is assigned a strip in the Console view. A MIDI strip looks like this:



The chorus, reverb, pan, and volume controls work by sending controller messages to your MIDI device. As you move the knobs and faders for these controls, the controller value is shown in the Console view toolbar. These messages are merged into the stream of MIDI data sent to the output port. (Note that not all MIDI devices support chorus and reverb controller messages.)

**Tip:** You can control the level of all MIDI tracks at once by grouping the MIDI faders. For more information, see [Using Control Groups](#).

You can control the mixing and playback of a MIDI track as follows:

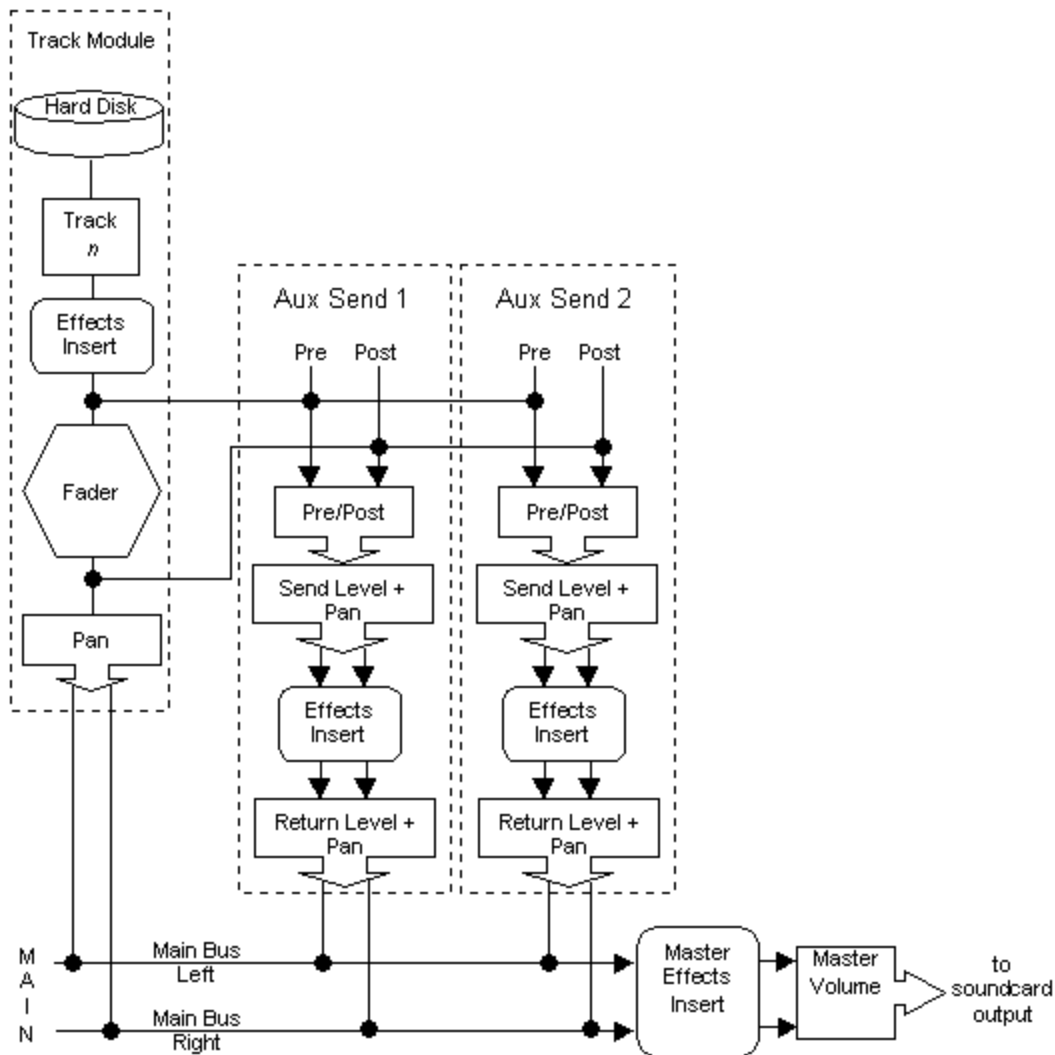
To do this...	Do this...
Select the output port	Click the Port button and choose one from the list
Select the channel	Click the Channel button and choose one from the list
Select the bank	Click the Bank button and choose one from the list
Select the patch	Click the Patch button and choose one from the list
Set the Chorus level	Adjust the Chorus knob
Set the Reverb level	Adjust the Reverb knob
Mute the track	Click the Mute button

Solo the track	Click the Solo button
Arm the track for recording	Click the Arm button
Set the Pan level	Adjust the Pan fader
Set the Volume level	Adjust the Volume fader
Select the input source	Click the input source button and choose one from the list

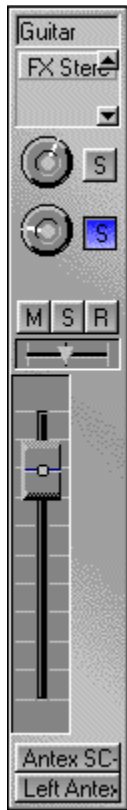
When moving the Volume fader, the Value box in the toolbar displays the level from a scale of 0 (minimum) to 127 (maximum). When you move the Pan slider, the Value box displays the pan value on a scale that ranges from 0 (hard left) to 64 (center) to 127 (hard right).

## Routing and Mixing Digital Audio

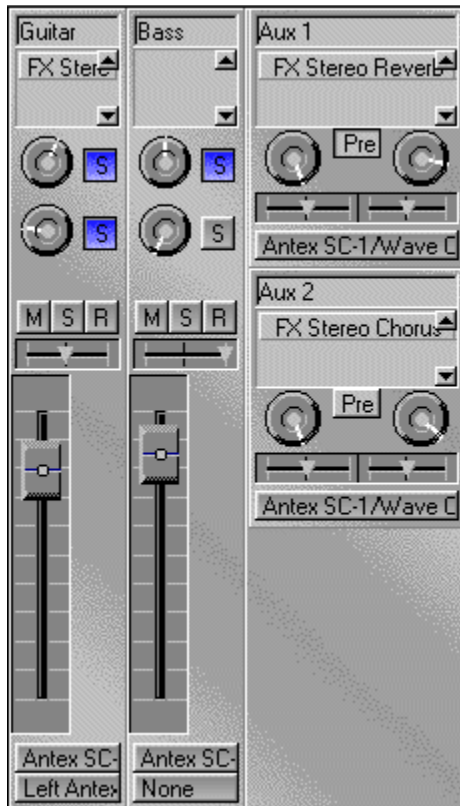
The Console view lets you route and mix your digital audio data in a number of different ways. The “wiring diagram” for digital audio in the Console view looks like this:



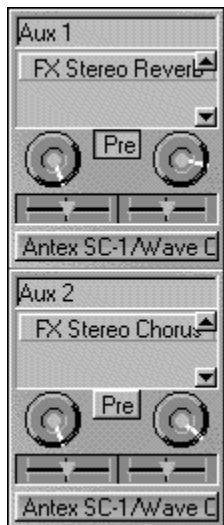
Audio events in each track are processed by any real-time audio effects you have patched in place, passed through the track pan control and volume fader, and then sent to the designated main output, in stereo. This is shown in the diagram below:



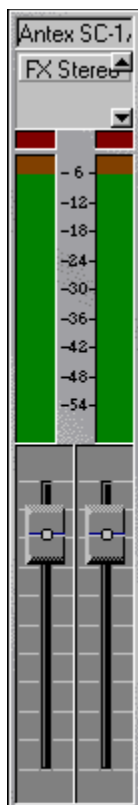
Any audio track can be tapped, before or after the track volume control, and sent to one or more aux buses. An aux bus can tap any number of audio tracks. Each track's data passes through the track's send level knob on its way to the aux bus. This is shown in the diagram below:



The audio in each aux bus passes through the send level and pan controls, is processed by any real-time effects you have patched, sent through the return level and pan controls, and then sent to the designated main output, in stereo. This is shown in the diagram below:



At the main output, all audio data from audio tracks and aux buses that were routed to the main are mixed together and processed by the main's real-time effects. Finally, the data passes through the master volume faders, and is sent to the output port:



---

See also:

[Audio Track Modules](#)

[Aux Buses](#)

[Audio Main Output Module](#)

## Audio Track Modules

You control the mixing and playback of an audio track as follows:

To do this...	Do this...
Add a realtime audio effect to the track	Right-click in the Effects patch point and select an effect from the list (for more information, see <a href="#">Using Real-Time Effects</a> )
Send audio data from the track to an aux bus	Select the corresponding Aux Send Enable and set the Aux Send Level (for more information, see <a href="#">Aux Buses</a> )
Mute the track	Click the Mute button
Solo the track	Click the Solo button
Arm the track for recording	Click the Arm button
Set the Pan level	Adjust the Pan control
Set the Volume level	Adjust the Volume fader
Select the output port	Click the output port button and choose one from the list
Select the input source	Click the input source button and choose one from the list

When moving the Volume fader and Aux Send Level knobs, the Value box in the toolbar displays the value in dB (decibels). A value of 0 dB indicates full signal strength; negative values indicate an attenuated signal. When you move the Pan slider, the Value box displays the pan value on a scale that ranges from 0 (hard left) to 64 (center) to 127 (hard right).

## Aux Buses

Aux buses are useful for mixing together different audio tracks (in stereo) and applying effects to the mix. You can mix the tracks at different volume levels by adjusting each track's aux send level. Each track's Pan control is used to determine its right/left position in the mix.

You control the aux bus as follows:

To do this...	Do this...
Send audio data from an audio track to the aux bus	In the audio track's strip, press the Aux Send Enable button corresponding to the aux bus
Set the level of the audio data sent to the aux bus	In the audio track's strip, set the Aux Send Level corresponding to the aux bus
Bypass all input audio tracks' volume faders	Press the Pre-Fader Enable button
Set the input level to the aux bus	Adjust the Send level
Set the input panning to the aux bus	Adjust the Send balance
Add a real-time audio effect to the bus	Right-click in the Effects patch point and select an effect from the list (for more information, see <a href="#">Using Real-Time Effects</a> )
Set the output level	Adjust the Return level
Set the output panning	Adjust the Return balance
Select the output port	Click the output port button and choose one from the list

As with Audio strips, the Value box in the toolbar displays the send and return levels in decibels, and the send and return balance values on a scale of 0 to 127.



## Audio Main Output Module

Here's what you can do in the main:

### To do this...

Add a real-time audio effect to the mix

Set the output volume

### Do this...

Right-click in the Effects patch point and select an effect from the list (for more information, see [Using Real-Time Effects](#))

Adjust the Left or Right Volume fader

As you drag the volume sliders, the Value box in the toolbar displays the volume level in decibels.

## Using Real-Time Effects

In [Audio Editing](#), you learned how to use Cakewalk's DirectX plug-in audio effects to modify digital audio data. In the Console view, plug-in effects can be used nondestructively, in real time.

For example, suppose you want to add a reverb effect to a track containing a recorded violin solo. You could do it in two different ways:

- Select the track's data in the Track or Audio view and use the Edit-Plug in-Cakewalk-FX Reverb/Chorus command
- In the Console view, patch the Cakewalk FX Reverb/Chorus effect in the track's patch point

Let's look at the advantages and disadvantages of each method.

In the first ("offline") case, you are applying a "destructive" edit. The digital audio data itself is modified. Although this may be exactly what you want, it does limit your options. If you want to modify the effect parameters slightly, or remove the effect and try a different effect, you must use the **Undo** command, or revert to a saved copy of the original data.

In the second case, you are applying the effect nondestructively – the digital audio data in your track is not changed, but simply altered on the fly during playback. This means you can experiment with effects parameters, bypass effects, or remove them entirely at any time. Since most effects require complex numeric calculations, real-time effects processing puts a heavy load on your computer's CPU. If you use too many effects, the CPU will not be able to keep up and playback will sound choppy and disconnected.

Real-time effects can also be applied to a submix in an aux bus, or to a main output. For example, rather than patching separate reverb effects in each of several guitar tracks, you can mix the guitar tracks together in an aux bus and apply a single reverb effect to the submix. This makes much more efficient use of CPU time. Patching effects on an aux bus or main output also opens up new creative possibilities.

There are several reasons why you might want to apply effects offline (destructively):

- If you want to apply more effects than your CPU can handle, applying some of the effects offline will reduce CPU usage during playback.
- If you want to apply effects to an individual audio event or clip, rather than the whole track, it is simpler to do so using offline effects.

---

See also:

[Effects Parameters](#)

## Effects Parameters

Each effect in an effects patch point has its own independent set of parameter values. For example, you can apply a short reverb in one track and a long reverb in another track. The dialog boxes for real-time effects contain the same parameters as described in [Audio Editing](#). There are a few differences:

- You can adjust the parameters while playback is in progress, so there is no need for an Audition button
- Because mixing is handled through the Console view, there is no Mixing tab
- You do not need to click OK for the effect to be applied

See [Audio Effects](#) for descriptions of the effects and their parameters.

## To Apply Real-Time Effects

It is very easy to use the Console view's real-time effects. Here's what to do:

### To do this...

Add a real-time effect to an audio track, aux bus, or main

Change the order in which effects are used

Edit an effect's parameters

Move an effect to a different patch point

### Do this...

Right-click in the Effects patch point and select an effect from the list

Drag the effects up or down in the patch point list

Double-click on the effect to open the effect's dialog box

Drag the effect to another patch point

When you place an effect in the patch point, an abbreviated name is used to describe the effect. Sometimes the limited space makes it impossible to identify the effect. If this occurs, simply rest the cursor over the effect for a second or two, and a tooltip will pop up to display the full name of the effect.

## Using Control Groups

Cakewalk lets you link faders, knobs, or buttons in the Console view into **groups**. Groups are collections of controls whose movements are linked together. For example:

- Two volume faders can be grouped so that when you increase or decrease the volume of one track, the volume of the other track changes in exactly the same way.
- Four mute buttons can be grouped so that when you click on the mute button to mute track 1, tracks 1 and 2 are muted and tracks 3 and 4 are un-muted.

The Console view identifies knobs and faders that are grouped using a colored group indicator that is displayed on the controls in each group. The controls in group A are displayed with a red indicator, the controls in group B with a green indicator, and so on. Faders and knobs can be grouped together. Buttons can only be grouped with other buttons.

When you group buttons together, the way they work is based on their position when you create the group:

- Buttons that are in the same position when grouped will turn on and off together at all times
- Buttons that are in opposite positions when grouped will always remain in opposite positions

With faders and knobs, you have several additional options. There are three general types of groups: [absolute](#), [relative](#), and [custom](#).

---

For step by step instructions:

[How to Add a Control to a Group](#)

[How to Remove a Control from its Group](#)

[How to Set the Group Type to Relative or Absolute](#)

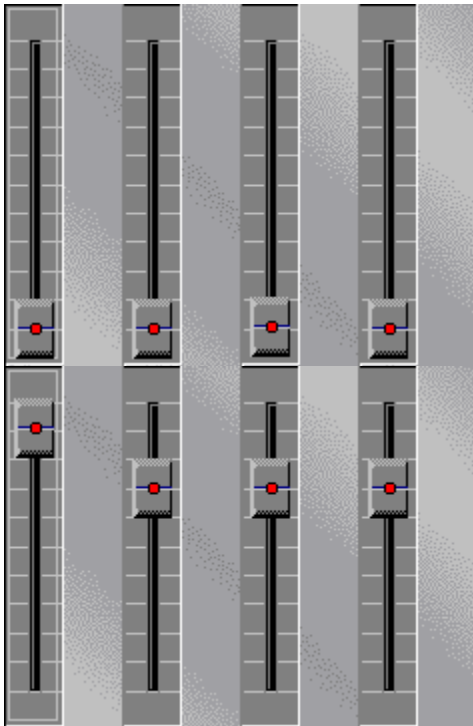
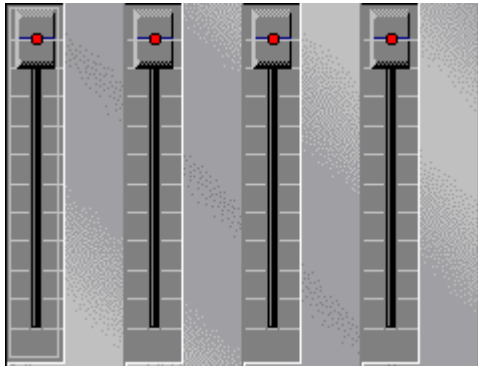
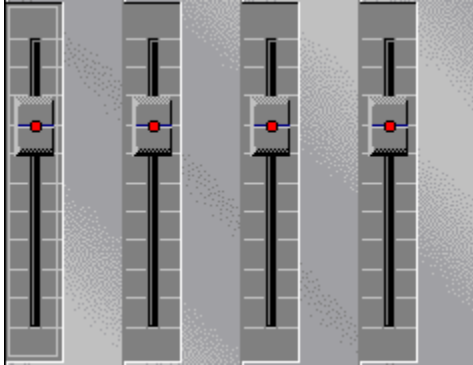
[How to Create a Custom Group](#)

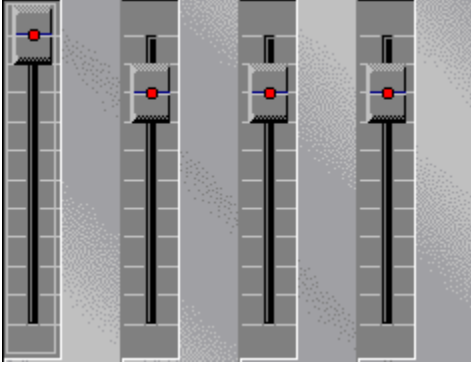
[How to Adjust the Start Value of a Control](#)

[How to Adjust the End Value of a Control](#)

## Absolute

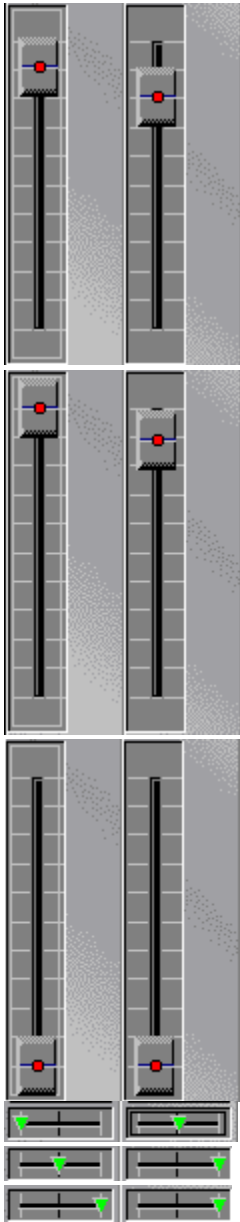
The range of motion in all controls in the group is identical. When you move one control in the group, all other controls in the group move the same amount in the same direction. The controls do not necessarily need to start at the same level. Here are two examples:





## Relative

The range of motion for controls in the group is not the same. All controls in the group have the same value at one point – zero for send, return, and volume levels, and center for pan controls. Here are two examples:





## Custom

Sometimes you want to define a more complex relationship between the controls in a group. For example:

- You want two controls to operate in reverse – when one fader drops, the other increases
- You want two volume faders grouped so that they are locked together at maximum level, but drop at different rates
- You want two faders to be locked together with the same range of motion, but a third fader grouped with them to have a different range of motion

Custom groups let you set the range of motion for each control in the group by entering a starting and ending value. As any one control in the group is moved from its starting position to its ending position, the other controls in the group exercise their full range of motion.

When you have defined a custom group, you can adjust the starting and ending position of each control using the Group Settings dialog box or using inspector menus on the controls in the group.

### **To Add a Control to a Group**

1. Right-click on the control.
2. Choose a group from the Group submenu.

Cakewalk adds the control to the group. Knobs and faders are highlighted with the group's color indicator.

### **To Remove a Control from its Group**

1. Right-click on the control.
2. Choose Ungroup from the menu.

Cakewalk removes the control from the group and displays the control with the neutral color indicator.

### **To Set the Group Type to Relative or Absolute**

1. Right-click on any control in the group and choose Group Settings-Absolute or Group Settings-Relative.

Cakewalk uses the type to determine the range of motion for the group's controls.

### **To Create a Custom Group**

1. Right-click on any control in the group and choose Group Settings-Custom to display the Custom Group Settings dialog box.
2. To change the starting or ending value for a control, click on the control in the list and enter new values in the Start and End box.
3. To swap the starting and ending value, click the Swap button.
4. Click Close when you are done.

Cakewalk uses the type to determine the range of motion for the group's controls.

### **To Adjust the Start Value of a Control**

1. Set the control to the desired starting value.
2. Right click on the control.
3. Choose Set Start = Current.

Cakewalk sets the start value of the control.

### **To Adjust the End Value of a Control**

1. Set the control to the desired ending value.
2. Right click on the control.
3. Choose Set End = Current.

Cakewalk sets the end value of the control.

## Using Remote Control

Cakewalk lets you use a MIDI device to remotely control knobs, buttons, and sliders in the Console view. For example, you can:

- Use a key on your keyboard to temporarily mute a track
- Work the send level in an Aux Bus with your pitch bend wheel
- Set the main volume levels with NRPN messages

If you set up remote control for a grouped control, the remote control works all controls in the group.

The type of MIDI message used to work a control is selected in the Remote Control dialog box. The options are as follows:

Message Option	Message Effect on Buttons	Message Effect on Sliders and Knobs
None	No remote control	No remote control
Note On	The button state is toggled	The slider/knob is alternately maximized and minimized
Note On/Off	The button state is toggled when Note On is received, and toggled again when Note Off is received	The slider/knob is maximized when Note On is received, and minimized when Note Off is received
Controller	Not applicable	The slider/knob value is set to the controller value
Wheel	Not applicable	The slider/knob value is set to the wheel value, with the values mapped from their original range of 8,192 to 8,191 to a range of 0 to 127
RPN	Not applicable	The slider/knob value is set to the RPN value, with the values mapped from their original range of 0 to 16,383 to a range of 0 to 127
NRPN	Not applicable	The slider/knob value is set to the NRPN value, with the values mapped from their original range of 0 to 16,383 to a range of 0 to 127

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For step by step instructions:

[How to Set up Remote Control for a Knob, Button, or Fader](#)



### **To Set up Remote Control for a Knob, Button, or Fader**

1. Right click on the control and choose Remote Control from the menu.
2. Choose the remote control type, as described in the table above.
3. Set the note or controller number if applicable.
4. Click OK.

You can now work the control from your MIDI device.

## Recording Automation Data

You can move the knobs and faders in the Console view while playing back a project to adjust the playback levels and panning. In addition, you can record changes that you make to these controls so that the changes become a part of your project. Recording changes so that they play back automatically is known as **automation**.

There are two general approaches to recording control movements:

Approach...	How it works...
Snapshot	You set all the controls to the values you want, and then create a “snapshot” of these settings at a particular Now time. When you play back the project later, all the controls will snap back to these settings when you reach the appropriate Now time.
Real-time Recording	You move controls in any way you like during either recording or playback. The changes you make are recorded so that they become part of your project. When you play back the project later, the controls move exactly as you recorded them.

The first approach is useful, for example, when your project contains a variety of distinct sections, and you want to make a sudden change in one or more settings between the sections.

The latter approach is most useful when you want to create smooth transitions from one section to another. For example, you could crossfade two audio tracks, or gradually change the stereo balance on an aux bus. Once you record these changes, they will play back along with your project automatically.




Cakewalk is smart about recording data in real time. Automation data is only recorded for the controls you actually manipulate, and only for the period of time in which you adjust the control. This lets you record automation data in multiple passes – the first time through you record one control’s movements, the second time you record a different control’s movements, etc.

The Console view lets you record and re-record automation data as many times as necessary. When you record new movements for a control, any old events for that control during the same time interval are replaced by the newer ones. Movements of other controls are unaffected.

You can re-record moves again and again until you’ve got the movement exactly how you want it. You can also edit automation data using the Controllers pane in the Piano Roll view.

Automation data for an individual track is saved as a series of controller events on the corresponding track. Automation data for an aux bus or main is saved as a series of controller events on a special track, with a track name of “Console Automation Data.” This track is displayed in the track view; deleting the track will remove all aux and main automation data. However, this track is not displayed in the Console view.

There are three tools in the Console view toolbar that are used to control recording and automation:

Icon...	Tool...	What it’s for...
	Update	Makes the knobs and faders in the console update automatically during playback
	Snapshot	Records a “snapshot” of the current position of all knobs and faders
	Record	Activates real time recording of all knob and fader movements

If you are not happy with the automation data you recorded, you can always use Undo to remove it. The automation data you record using the Console view can be displayed and edited using either the Controllers pane in the Piano Roll view, or the Event List view. For more information on the Controllers pane, see [Controllers, RPNs, NRPNS, and Automation Data](#). For more information on the Event List view, see [The Event List View](#).

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For step by step instructions:


[How to Record a Snapshot while Playback is Stopped](#)

[How to Record a Snapshot while Playback is in Progress](#)

[How to Record Control Changes in Real-Time](#)

[How to View and Edit a Control's Automation Data](#)


## **To Record a Snapshot while Playback is Stopped**

1. Set the Now time to the point in the project where you want the settings to take effect.
2. Adjust the knobs and faders to the desired settings.
3. Click .

Cakewalk records a snapshot of the current control settings.






If the Now Time is the very beginning of the project, then the snapshot will change the track parameters to match the controls in the panel, instead of recording automation events.

## To Record a Snapshot while Playback is in Progress

1. Make sure the  button in the Console view toolbar is not pressed so that update is disabled.
2. Change the Now Time to a few bars or seconds before the time you wish to take the snapshot.
3. Adjust the knobs and faders to the desired settings.
4. Start playback.
5. When you have reached the appropriate time, click on the Snapshot button.

Cakewalk records a snapshot of the current control settings.

## To Record Control Changes in Real-Time

1. Make sure the  button in the Console view toolbar is pressed so that update is enabled.
2. Make sure the  button in the Console view toolbar is pressed so that automation recording is enabled.
3. Set the Now time to a few bars or seconds before the time at which you want to record knob and fader movements.
4. Click  or press the Space bar to start playback.
5. Adjust the controls as you wish while playback is in progress.
6. When you are done, click  or press the Space bar to stop playback.
7. Click the  button in the Console view toolbar to turn off real-time recording.

Cakewalk saves controller messages for any knob or slider you moved during playback. The data replaces any previous data in that time period, for that controller, on that track.

### **To View and Edit a Control's Automation Data**

1. Right-click on the control and choose Edit Automation Data.
2. In the Controllers pane of the Piano Roll View, edit the controller data as desired.

For more information about editing controller data in the Piano Roll view, see [More About Editing](#).

## Preparing Audio for Distribution

You can use Cakewalk to prepare audio files or hybrid audio/MIDI files for distribution via the Word-Wide Web or other electronic means. Three formats are supported:

Format...	Definition...
Wave	The standard digital audio format used under Windows, with a file extension of .wav
RealAudio	Digital audio encoded and compacted for streaming over Internet, with a file extension of .ra
RealMedia	A hybrid file that incorporates both RealAudio and MIDI data in a form that can be streamed over the Internet (see below for more information)

If your audio hardware is configured for stereo playback, Wave files are created in stereo; if your audio hardware is configured for monophonic playback, the Wave file is created in mono.

The Tools-Export-RealMedia command is used to export an entire project as MIDI and audio data. When you export a project to RealMedia format, Cakewalk writes up to three files: a RealMedia metafile (extension .RTS), a MIDI file (extension .MID) containing the project's MIDI tracks, and a RealAudio file (extension .RA) containing the project's audio tracks. RealNetworks is expected to release an updated RealMedia player that will stream RealMedia format files in the second quarter of 1998.

If your project contains audio data, the RealAudio Settings dialog box lets you define the settings for the RealAudio data, as follows:

Option	Meaning
Title	Title of the file.
Author	Author of the file.
Copyright	Copyright statement.
Enable Selective Record	Lets people save the file to their hard drive for later listening off-line.
Enable Perfect Play	Lets people with low-bandwidth connections download a higher resolution version of the audio, at the expense of download time.
Formats	The RealAudio formats saved in the file.

You may choose several formats if you wish. The RealAudio 2.0 formats are good for backwards compatibility with older players, and for 14.4 Kb capability. The remaining formats let you choose Mono or Stereo playback. Stereo formats trade bandwidth for stereo, so use these only when the stereo aspect is important.

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For step by step instructions:

[How to Export Audio to Wave File Format](#)

[How to Export Audio to RealAudio Format](#)

[How to Save a Project in RealMedia Format](#)



### **To Export Audio to Wave File Format**

1. Select the track or tracks you want to export.
2. Choose Tools-Export Audio to display the Export Audio dialog box.
3. Choose Wave from the Save as Type list.
4. Enter a file name and click Save.

The audio is exported to the Wave file.

### **To Export Audio to RealAudio Format**

1. Select the track or tracks you want to export.
2. Choose Tools-Export Audio to display the Export Audio dialog box.
3. Choose RealAudio from the Save as Type list.
4. Enter a file name and click Save to display the RealAudio Settings dialog box.
5. Select options as described in the table above and click OK.

The audio is compacted and exported to the RealAudio file.

### **To Save a Project in RealMedia Format**

1. Choose Tools-Export Audio to display the Export Audio dialog box.
2. Choose RealMedia from the Save as Type list.
3. Type a file name in the File Name box. This name will be used as a base for all three files.
4. Click OK.
5. If the project contains audio data, the RealAudio Settings dialog box opens. Select options as described in the table above.
6. Click OK.

The audio is compacted and exported to the RealAudio file.

Cakewalk saves the RealMedia metafile, and the corresponding MIDI and RealAudio files as appropriate. To use the file on the web, upload the files to your web site and create a link from your web page to the .RTS file. If you selected multiple formats, they will automatically work correctly to support bandwidth negotiation.

## Instrument Definitions

Instrument definitions are a powerful feature of Home Studio that gives you greater access to the features and capabilities of your MIDI instruments. An instrument definition is a file that contains information about the banks, patches, controllers, and other features of an instrument. Instrument definitions for many popular MIDI instruments are included with Cakewalk or available on the Cakewalk web site ([www.cakewalk.com](http://www.cakewalk.com)). If an instrument definition is not available for your instrument, and you are familiar with MIDI and how it works, you can use Cakewalk to create your own instrument definition.

Most MIDI instruments available today are General MIDI (GM) compatible, which means that they come with the standard set of sounds or patches defined by the GM standard. Cakewalk generally assumes that your MIDI instruments are GM compatible. The lists of patches and controllers that you normally see displayed throughout Cakewalk are drawn from the GM specification.

At the same time, many MIDI instruments provide additional sounds, controllers, and other capabilities, beyond those required by the GM standard. In addition, some older MIDI instruments are not GM-compatible. If you are using one of these instruments with Cakewalk, you can use instrument definitions to make sure that the lists of banks, patches, and so on are appropriate for the equipment you have available.

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See also:

[Assigning Instruments](#)

[Importing Instrument Definitions](#)

[Creating Instrument Definitions](#)

## Assigning Instruments

Cakewalk lets you assign a MIDI instrument definition to each available MIDI port and channel. The assignments you make determine the MIDI bank names, patch names, note names, and controller names that you see during your Home Studio session.

Suppose that you have a Roland GS compatible synthesizer attached to MIDI port 1. By assigning all 16 channels of MIDI port 1 to the Roland GS instrument definition, you ensure that the bank, patch, note and controller name lists you see displayed in Home Studio are the ones that match your synthesizer.

Often, you want to assign a different instrument to channel 10, which is usually used for percussion. For example, you might assign the Roland GS instrument definition to channels 1 through 9 and 11 through 16, but you would most likely want to assign the Roland GS Drumsets instrument definition to channel 10. If you have several MIDI ports, with a different instrument attached to each one, you would normally assign a different instrument to each MIDI port.

For convenience, you can assign a block of channels to one instrument, and then change the assignment of one or more of those channels without changing the others. For example, you can highlight all 16 channels of the first MIDI port and assign them to the Roland GS instrument definition. Then, you can highlight channel 10 of the first MIDI port and assign it to the Roland GS Drumset instrument definition. Channels 1 through 9 and 11 through 16 on the first MIDI port will stay assigned to Roland GS.

You might also want to split channels to different instruments if you have several instruments attached to a single MIDI port. For example, you might have a Roland synth receiving on MIDI channels 1-9, a Roland drum machine receiving on channel 10, and a basic GM-compatible synth receiving on channels 11 through 16. In this case, you'd use three different instrument definitions for your one and only MIDI port.

---

For step by step instructions:

[How to Assign Instruments to MIDI Ports and Channels](#)

[How to Clear Instrument Assignments](#)

## **To Assign Instruments to MIDI Ports and Channels**

1. Choose Tools-Instruments to display the Assign Instruments dialog box.
2. Select one or more MIDI ports and channels from the Port/Channel list (use Shift-click and Ctrl-click to select multiple ports and channels).
3. Choose the instrument to which the selected ports and channels should be assigned from the Uses Instrument list. A black line connects the two lists.
4. To save these changes permanently, check the Save Changes for Next Session box.
5. Click OK when you are done.

From now on, the bank, patch, controller and note names from the assigned instrument are used throughout Home Studio.

### **To Clear Instrument Assignments**

1. Choose Tools-Instruments to display the Assign Instruments dialog box.
2. Select the MIDI ports and channels whose assignments you want to remove from the Port/Channel list.
3. Choose <default> from the Uses Instrument list. A black line connects the two lists.
4. Click OK when you are done.

From now on, the default bank, patch, controller and note names are used throughout Home Studio.

## Importing Instrument Definitions

When you install Home Studio, a few common instrument definitions are already set up for you and ready to use. Home Studio also includes several hundred additional instrument definitions that you can import.

These instrument definitions are stored in files, organized largely by manufacturer. For example, all the instrument definitions for Roland gear are stored in the `ROLAND.INS` file; all the instrument definitions for Yamaha gear are stored in the `YAMAHA.INS` file. The file `MISC.INS` contains miscellaneous instrument definitions. If you don't see a file for the manufacturer of your instrument, look in this file to see if it contains the instrument you are looking for.

If Home Studio does not include an instrument definition for your MIDI instrument, you can find additional and updated instrument definitions on the Downloads section of the Cakewalk World-Wide Web site ([www.cakewalk.com](http://www.cakewalk.com)). Simply download the file to your Home Studio folder, unzip them if necessary, and import the instrument definitions as described below.

When you import an instrument definition, it is added to the master instrument definition file `MASTER.INS`. The contents of this file determines the list of instruments that appear in the Assign Instruments dialog box.

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For step by step instructions:

[How to Import Instrument Definitions](#)



## **To Import Instrument Definitions**

1. Choose Tools-Instruments to display the Assign Instruments dialog box.
2. Click Define to display the Define Instruments and Names dialog box.
3. Click Import to display the Import Instrument Definitions dialog box.
4. Choose the file that contains instrument definitions for your manufacturer and click Open. Home Studio displays a list of all the instrument definitions in the file.
5. Choose one or more instruments from the list, and click OK.
6. Click Close to close the Define Instruments and Names dialog box.

The instrument definitions you imported should now appear in the Uses Instrument list in the Assign Instruments dialog box.

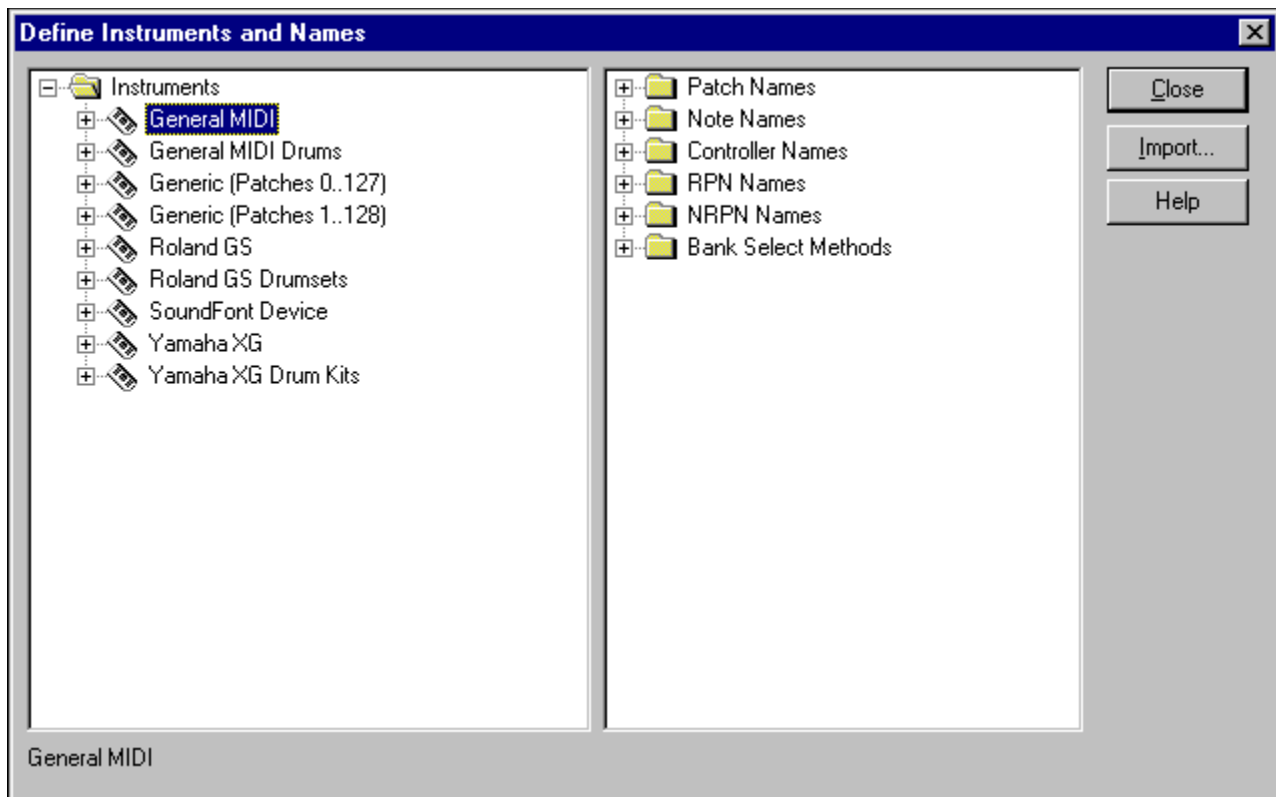
## Creating Instrument Definitions

Home Studio lets you create and edit instrument definitions. To create an instrument definition, you must answer these types of questions:

- What are the names of the patches in each bank?
- Which note names should be used for each patch?
- What are the names of the MIDI Controllers for this instrument?
- Which RPN and NRPNs are available on the instrument?
- Which Bank Select method does the instrument use?

To collect this information, you need the MIDI documentation for your instrument.

You define instruments in the Define Instruments and Names dialog box, shown below:



The Define Instruments and Names dialog box contains two trees:

- The Instruments tree lists all defined instruments and their characteristics.
- The Names tree shows all the resources you use to define an instrument

You expand or collapse the folders and lists in each tree by clicking on the + or – key shown to the left of each item. You can also right-click on an item and choose Expand or Collapse from the menu, or double-click on an item to expand or collapse it.

To define an instrument, you drag resources from the Names tree to the appropriate branches on the Instruments tree. Each resource is color-coded – for example, you can only drag a Names list to an Instrument tree branch of the same color.

Here's a general outline of the steps you must follow:

- Create a new instrument
- Create any new name lists that are required for the instrument
- Drag name lists and other resources to each instrument

- Save the instrument definition

There are six components to an instrument definition:

- Method for bank selection
- Patch names, such as Piano and Bass.
- Note names, which are most frequently used to name drum notes, such as kick or snare.
- Controller names, like volume and pan
- Names for Registered Parameter Numbers (RPNs).
- Names for Non-Registered Parameter Numbers (NRPNs)

The instrument definitions organize all names (patches, notes, controllers, RPNs, and NRPNs) into lists. You may be able to define a new instrument using existing name lists. For example, two models of synthesizers made by a particular manufacturer may have identical patch name lists, but use different NRPNs. In this case, you can use the same patch lists for both instruments, but you would need to use a different NRPN list (or perhaps create a new NRPN list) for the second synth.

If you want your changes to be remembered the next time you run Cakewalk, make sure the Save Changes For Next Session option in the Assign Instruments dialog box is checked before clicking OK. Otherwise, to make only temporary changes, be sure to remove the check from that option.

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For step by step instructions:

[How to Create a New Instrument](#)

[How to Rename an Instrument](#)

[How to Delete an Instrument](#)

[How to Save an Instrument Definition](#)

[How to Export an Instrument Definition](#)

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See also:

[Creating Lists](#)

[Copying Name Lists](#)

[Assigning the Bank Select Method](#)

[Assigning Patch Names](#)

[Assigning Note Names](#)

[Assigning Controller, RPN, and NRPN Names](#)

### **To Create a New Instrument**

1. Right-click on the word Instruments at the top of the Instrument tree, and choose Add Instrument from the menu.
2. Type a name for the new instrument and press Enter.

The new instrument is provided with default settings for all of its characteristics.

**To Rename an Instrument**

1. Right-click on an Instrument name and choose Edit from the menu.
2. Type the new name and press Enter.

**To Delete an Instrument**

1. Right-click on an Instrument name and choose Delete from the menu.
2. Confirm that you want to delete the instrument.

**To Save an Instrument Definition**

1. Click Close to close the Define Instruments and Names dialog box.
2. Click OK.

Cakewalk will save the instrument definition in the MASTER.INS file.

### **To Export an Instrument Definition**

1. Right-click on the instrument name and choose Export from the menu to display the Export Instrument Definition dialog box.
2. Enter a file name and click Save.

The instrument definition is saved in a file.



## Creating Lists

You can create and edit the various lists that make up each instrument definition. Patch name, note name, and controller name lists can contain up to 128 entries, numbered 0 through 127. RPN and NRPN name lists can contain up to 16,384 entries, numbered 0 through 16,383.

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For step by step instructions:

[How to Manage Name Lists](#)

## To Manage Name Lists

1. To create, edit, or work with name lists, follow the directions in the table:

To do this...	Do this...
Create a new name list	Highlight a name list and press the Ins (Insert) key; highlight the folder and press Shift-Insert; or right-click on any folder or name list and choose Add Names List from the menu. Then enter the name of the list.
Delete a name list	Highlight the names list and press the Del (Delete) key; or right-click on the name list and choose Delete from the menu. You will see a warning if the list is used by any instrument definition. If you delete the list anyway, the instrument definition will change automatically.
Add the next item in a name list	Highlight a name and press the Ins (Insert) key, or right-click on a name and choose Add Name from the menu. Then enter the name.
Add a name any where in a list	Highlight the name of a list and press Shift-Insert, or right-click on the name of a list and choose Add Name from the menu. Then enter the name.
Delete names from a list	Highlight the Names List or Name, and press Del. You can also right-click, and choose Delete.
Edit a name in a list	Highlight the name or name list and press F2, or right-click and choose Edit from the menu. Then enter the new name.

## Copying Name Lists

You can easily create new lists that are similar to other lists. For example, suppose you want to create a new patch name list called NewList that is almost identical to the General MIDI patch list, but with one or two small changes. Here's how you proceed:

- Create a new patch name list called NewList.
- Drag the new list branch onto the General MIDI branch. You will be asked if you want to base NewList on the General MIDI list.
- Click OK. NewList will now be listed under the General MIDI branch. Any patch names that exist in the General MIDI list apply to NewList, too.
- Add new patch names to NewList. These names will override those in the list on which NewList is based.

If you change your mind about NewList, and want to make it a stand-alone, separate list, simply drag it to the Patch Names root folder.

## Assigning the Bank Select Method

Your synthesizer uses one of four bank select methods to switch back and forth between banks of sounds. To find the method used for your instrument, check the User's Guide or the manufacturer's web site. The four methods are as follows:

Method...	Used for...
Normal	Instruments that respond to Controller 0 or Controller 32 bank select messages.
Controller 0 only	Instruments that only respond to Controller 0 bank select messages.
Controller 32 only	Instruments that only respond to Controller 32 bank select messages.
Patch 100..127	Instruments that let you change banks by sending patch changes between 100 and 127.

The bank selection method you choose affects the bank numbers that you assign to each patch list, as described in the following section. Here's how you compute the bank numbers:

Bank Select Method...	To compute the bank number...
Normal	Take the value of Controller 0, multiply it by 128, and add the value of Controller 32 to derive the bank number. A synthesizer manufacturer may refer to Controller 0 as the MSB (Most Significant Byte) and to Controller 32 as the LSB (Least Significant Byte).
Controller 0 only	The value of Controller 0 is the bank number
Controller 32 only	The value of Controller 32 is the bank number
Patch 100..127	Take the patch number and subtract 100 to derive the bank number

Here is an example of the Normal bank select method. According to the documentation for the Roland JV-1080 synthesizer, the PR-A Bank has a Controller 0 value of 81, and a Controller 32 value of 0. You compute the bank number that you enter in the instrument definition as follows:  $(81 \times 128) + 0 = 10368$ .

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For step by step instructions:

[How to Change the Bank Select Method](#)

## To Change the Bank Select Method

1. Highlight and expand the instrument in the Instrument tree.
2. Expand the Bank Select Method branch in the Names tree.
3. Drag the desired Bank Select method from the Names tree to the Instrument tree.

## Assigning Patch Names

A MIDI instrument can have up to 16,384 banks of 128 patches each. Patches can have names, like “Piano” for patch number 0, “Bass” for patch number 1, and so on. Normally, each bank contains a different set of patches, so each bank needs a separate patch name list. Most synthesizers start with a patch number of 0.

You can assign a patch name list to each bank. You can also assign a default patch name list to the instrument, which is used for all banks for which you haven’t assigned a specific list. The previous section describes how to compute the bank numbers to which each patch name list is assigned.

Each bank can also be assigned a special Drum flag, which indicates that all patches in this bank contain drum sounds. If you set this flag, the Piano Roll view will display drum notes as diamonds, and the Staff view will use percussion notation.

---

For step by step instructions:

[How to See the Assignment of Patch Name Lists to Banks](#)

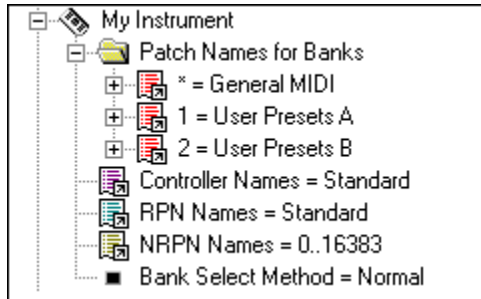
[How to Add a Bank or Change the Patch Names for a Bank](#)

[How to Remove a Bank or Patch Name List](#)

[How to Set or Clear the Drum Flag](#)

## To See the Assignment of Patch Name Lists to Banks

1. Expand the instrument definition by clicking the + sign next to the instrument name.
2. Expand the Patch Names for Banks folder by clicking the + sign. The list expands to show the bank numbers and the patch name list that is assigned to each bank.



### **To Add a Bank or Change the Patch Names for a Bank**

1. Drag a patch name list from the Names tree to the Patch Names for Banks folder.
2. Enter a bank number, or enter –1 to indicate that this list of patch names should be used as the default.
3. Home Studio displays the updated banks and patch name lists. If necessary, Home Studio adds a new bank to the instrument definition.

**To Remove a Bank or Patch Name List**

1. Highlight the bank and patch names list in the Instrument tree.
2. Press the Del (Delete) key, or right-click on the bank name and choose Delete from the menu

### **To Set or Clear the Drum Flag**

1. Right-click on the bank in the Instrument tree, and choose Drums from the menu.



## Assigning Note Names

Each patch may have a list of up to 128 names for notes. Usually, note names are labels for percussion instruments. For example, the pitch C3 may really be “Kick Drum,” and D3 may be “Snare.” Because a drum machine may provide different drum kits for each patch, Cakewalk lets you specify a different list of note names for each patch. The Piano Roll and Event List views show you these note names.

You can assign a note name list to each patch. You can also assign a default note name list to the instrument, which is used for all patches for which you haven’t assigned a specific note name list.

Each patch can also be assigned a special Drum flag, which indicates that this patch contains drum sounds. If you set this flag, the Piano Roll view will display drum notes as diamonds, and the Staff view will use percussion notation.

There are several standard note name lists provided with Pro Audio:

Note name list...	Contents...
0..127	The numbers 0 through 127
Diatonic	The default MIDI note names (like C4, E5, and so on)
General MIDI Drums	The default instrument names for the General MIDI drum patch

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For step by step instructions:

[How to See the Assignment of Note Name Lists to Patches](#)

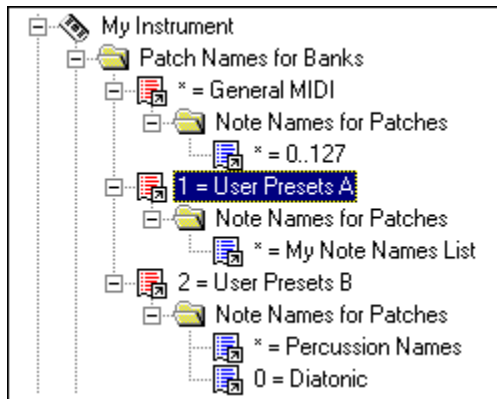
[How to Change the Note Names for a Patch](#)

[How to Remove a Note Name List](#)

[How to Set or Clear the Drum Flag](#)

## To See the Assignment of Note Name Lists to Patches

1. Expand the instrument definition by clicking the + sign next to the instrument name.
2. Expand the Patch Names for Banks folder by clicking the + sign.
3. Continue expanding the tree by clicking the + sign, until the tree is fully expanded.



### **To Change the Note Names for a Patch**

1. Drag a note name list from the Names tree onto the Note Names for Patches folder.
2. Enter a patch number, or enter -1 to indicate that this list of note names should be used as the default.
3. Home Studio displays the updated patch and note name lists. If necessary, Home Studio™ adds a new patch to the instrument definition.

### **To Remove a Note Name List**

1. Highlight the patch in the Instrument tree.
2. Press the Del (Delete) key, or right-click on the note name list and choose Delete from the menu.

### **To Set or Clear the Drum Flag**

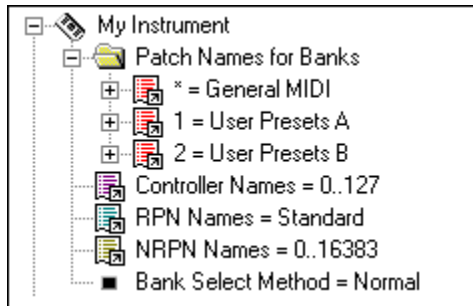
1. Right-click on the patch in the Instrument tree, and choose Drums from the menu.

## **Assigning Controller, RPN, and NRPN Names**

Home Studio lets each instrument have its own lists of controller names, RPN names, and NRPN names. There is always exactly one list of each type per instrument.

## To See the Controller, RPN, and NRPN Name Lists

1. Expand the instrument definition by clicking the + sign next to the instrument name.



**To Change the Controller, RPN, or NRPN name List**

1. In the Names tree, expand the branch containing the Controller name lists, RPN name lists, or NRPN name lists.
2. Drag the desired name list from the Names tree onto the corresponding branch of the Instrument tree.
3. Home Studio displays the updated Controller, RPN, or NRPN name lists.



## StudioWare

StudioWare panels are software interfaces to external MIDI devices such as samplers, keyboards, automatable mixers, and effects units. These interfaces allow you to manipulate the controls on any external MIDI device from graphical controls on your screen. The changes you make to these controls can even be recorded and then played back as part of your projects.

Cakewalk includes a wide variety of StudioWare panels for popular MIDI devices, with new panels constantly under development here at Cakewalk, by equipment manufacturers, and by Cakewalk users. Check the Cakewalk web site ([www.cakewalk.com](http://www.cakewalk.com)) from time to time for new and updated StudioWare panels.

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See also:

[StudioWare Panels](#)

[Using Panels](#)

## StudioWare Panels

Cakewalk comes with a variety of StudioWare panels. Some are designed to control a specific external MIDI device, while others are useful with a variety of devices. Here is a listing of some of the panels that are included with Cakewalk:

Panel Name...	What it's for...
AWE	Controls the wavetable synthesizer on Sound Blaster AWE sound cards.
General MIDI	Provides parameters and control for any General MIDI compatible synthesizer
Roland GS	Control panel providing parameter manipulation for any GS compatible synth
Tascam RC-808	Control Interface modeled after the Tascam RC-808 remote control unit, used with the DA-38, DA-88 and DA-98 multitrack recorders.

You can also create a basic StudioWare panel that contains a standard set of controls for selected tracks in a project. This panel will provide functionality similar to that provided by the Console view.

When you open or create a StudioWare panel, it is configured to be part of the current project. You can open several different panels and use them all with a single project. You can also open several different copies of the same panel, and have each one linked to a different open project.

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For step by step instructions:

[How to Open a StudioWare Panel](#)

[How to Create a New Panel](#)

**To Open a StudioWare Panel**

1. Choose File-Open to display the Open File dialog box.
2. Choose StudioWare from the Files of Type list.
3. Choose a StudioWare file and click OK.

Cakewalk opens and displays the StudioWare panel.

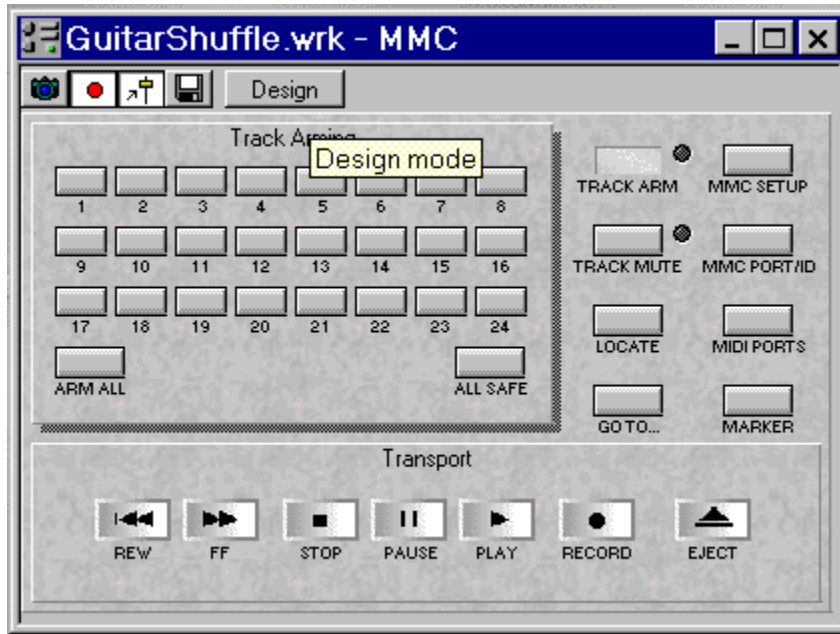
### **To Create a New Panel**

1. Select one or more tracks from the Track view.
2. Choose File-New to display the New File dialog box.
3. Choose StudioWare Panel from the list.
4. Click OK.

Cakewalk displays a StudioWare panel with a set of standard controls for each selected track. You can also create a new panel by right-clicking on the selected tracks and selecting StudioWare from the menu.

## Using Panels

Every StudioWare panel is made up of a collection of controls and other information displays. The controls are software representations of the knobs, buttons and sliders on an external MIDI device. By moving the controls on the screen, you adjust the controls on the external MIDI device. If you want, you can also configure the StudioWare panel so that moving the controls on the external device adjusts the controls on your computer screen. Some StudioWare panels contain controls that perform other functions within Cakewalk, such as changing track parameters.



There are a variety of ways to adjust the values of buttons, sliders and knobs:

<b>To change this...</b>	<b>Do this...</b>
--------------------------	-------------------

The status of a button	Click on the button
------------------------	---------------------

The value of a slider	Click on the desired slider position to move the slider to that position, or drag the slider to the desired position
-----------------------	--

The value of a knob	Click along the outer edge of the knob to move the knob to that position, or drag the outer edge of the knob in a circular motion to set the desired position
---------------------	---

To change the value of a knob or slider using the keyboard, you must first select the control:

- To select a control that has a numeric value display or label, click on the value or the label.
- To select a control without a numeric value display, click on the control, being careful to click at the current control position. If you do not click at the current control position, the control will change values as a result of the mouse click.

To adjust a knob or slider using the keyboard:

- Press the - and + keys to decrease or increase the value of the selected control by the smallest amount
- Press the [ and ] keys to decrease or increase the value of the selected control by steps of 10

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See also:

[Grouping Controls](#)

[Recording Control Movements](#)

[Control Settings](#)

[StudioWare Panel Drawing Speed](#)

## Grouping Controls

Cakewalk lets you create groups of StudioWare controls. When several controls are in a single group, you can move a single control and have the remaining controls in the group adjust automatically. This is useful for many different mixing and crossfade applications.

When you create a group of controls, each control in the group has a starting and an ending value. Here's how these values are used:

- When you move any control in the group to its starting value, all controls in the group are set to their starting value.
- When you move any control in the group to its ending value, all controls in the group are set to their ending value.
- When you position any control in the group somewhere between its starting and ending value, all controls in the group are set to the same relative position between their starting and ending value.

The initial range for each control is set based on the position of the controls at the time you group them.

You can adjust the range for any individual control even if it is part of a group, simply by holding the Shift key while you move the control. When you adjust an individual control by holding the Shift key, either its maximum or minimum is adjusted; which one is adjusted depends on whether the entire group is closer to its minimum or maximum value.

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For step by step instructions:

[How to Create a Group of Controls](#)

[How to Remove Controls from a Group](#)

[How to Adjust a Single Control in a Group](#)

[Example: To Set Two Faders for a Crossfade](#)

**To Create a Group of Controls**

1. Select any control by clicking on it with the mouse.
2. Hold down the Ctrl key and click on one or more additional controls.

Cakewalk creates a group from the selected controls.



### **To Remove Controls from a Group**

1. Hold down the Ctrl key and click on any control in the group.

Cakewalk removes the control from the group.

### **To Adjust a Single Control in a Group**

1. Hold down the Shift key and drag the control to a new value.

The range for the control is adjusted so that its current position corresponds with the current position of other controls in the group.

## Example: To Set Two Faders for a Crossfade

1. Move the two faders to their midpoint.
2. Click on the first fader, and then Ctrl-click on the second to create a group.
3. Move both faders to their highest position.
4. Shift-drag the second fader to its lowest position.
5. Drag the first fader to its lowest position.
6. Shift-drag the second fader to its highest position.

These two controls are now grouped so that they move in opposite directions. Their minimum and maximum values look like this:

Fader	Starting Value	Ending
#1	0	127
#2	127	0

To set faders that are always the same distance apart, set the ranges something like this:

Fader	Starting Value	Ending Value
#1	0	63
#2	64	127

To set faders to move over different ranges of values, set them something like this:

Fader	Starting Value	Ending Value
#1	0	127
#2	0	100

## Recording Control Movements

You can move the controls in a StudioWare panel while playing back a song to adjust the levels or other MIDI activity that the panel is designed to accommodate. In addition, you can record changes that you make to the controls in a panel so that these changes become a part of your project. Recording changes so that they play back automatically is known as **automation**.

There are two general approaches to recording control movements:

Approach...	How it works...
Snapshot	You set all the controls to the values you want, and then create a “snapshot” of these settings at a particular Now time. When you play back the project later, all the controls will snap back to these settings when you reach the appropriate Now time.
Real-time Recording	You move controls in any way you like, recording the series of changes you make so they become part of your project. When you play back the project later, the controls move exactly as you recorded them.




The first approach is useful, for example, when your project contains a variety of distinct sections, and you want to make a sudden change in one or more settings between the sections.

The latter approach is most useful when you want to create smooth transitions from one section to another. For

example, you could slowly add modulation to a MIDI piano, or move the faders on a digital mixing console. Once you record these changes, they will play back along with your project automatically.

StudioWare lets you record and re-record automation data as many times as necessary. When you record new movements for a control, any old events for that control are replaced by the newer ones. Movements of other controls are unaffected. You can re-record moves again and again until you've got the movement exactly how you want it. You can also edit automation data using the Controllers pane in the Piano Roll view.

There are three tools in the StudioWare toolbar that are used to control recording and automation:

Icon...	Tool...	What it's for...
	Update	Makes the controls in the panel update automatically during play back or when MIDI data is received by the panel
	Snapshot	Records a "snapshot" of the current position of all controls
	Record	Activates real time recording of all control movements

Most StudioWare panels are designed both to send and receive MIDI data. This means two things:

- If you move the controls on your external MIDI device, the StudioWare panel will be notified of the changes
- When you play back a project containing automation data, the StudioWare panel is notified of the automation changes

The Update button in the StudioWare toolbar indicates whether these changes are played back visually on the StudioWare panel. Press this button to make sure that automation parameters and changes made on the external MIDI device are displayed in the StudioWare panel. Turn this option off if you do not want to see these changes.

If you are recording a snapshot while playback is in progress, you should probably disable Update. Otherwise, some of the controls may move as a result of previously recorded automation events, even while you are trying to position them correctly.

When you are recording real-time control movements, you probably want Update enabled, so that the controls will show the events that have already been recorded.

If you record automation data on a track that contains linked clips, Cakewalk automatically unlinks the clips so that the automation data does not apply to other instances of the linked clip. As an example, suppose you have four repetitions of a particular riff, stored in four linked clips that play in sequence. When you record a fade-out over these four clips, Cakewalk automatically splits the clips into four independent clips, each with automation data representing some portion of the fade.

If you record a snapshot of control positions on a track that contains linked clips, the clips remain linked, and the snapshot applies to all copies of the linked clip.

If you are not happy with the automation data you recorded, you can always use the Undo command to remove it.


The automation data you record using a StudioWare panel can be displayed and edited using either the Controllers pane in the Piano Roll view, or the Event List view. For more information on the Controllers pane, see [Controllers, RPNs, NRPNs, and Automation Data](#). For more information on the Event List view, see [The Event List View](#).

---

For step by step instructions:

- [How to Record a Snapshot while Playback is Stopped](#)
- [How to Record a Snapshot while Playback is in Progress](#)
- [How to Record Control Changes in Real-Time](#)


### **To Record a Snapshot while Playback is Stopped**

1. Set the Now time to the point in the project where you want the settings to take effect.
2. Move the controls to the settings you desire.
3. Click .

Cakewalk records a snapshot of the current control settings.







If the Now Time is the very beginning of the project, then the snapshot will change the track parameters to match the controls in the panel, instead of recording automation events.

## **To Record a Snapshot while Playback is in Progress**

1. Make sure the  button in the StudioWare toolbar is not pressed so that update is disabled.
2. Change the Now Time to a few bars or seconds before the time you wish to take the snapshot.
3. Start playback.
4. When you have reached the appropriate time, click on the Snapshot button.

Cakewalk records a snapshot of the current control settings.

## To Record Control Changes in Real-Time

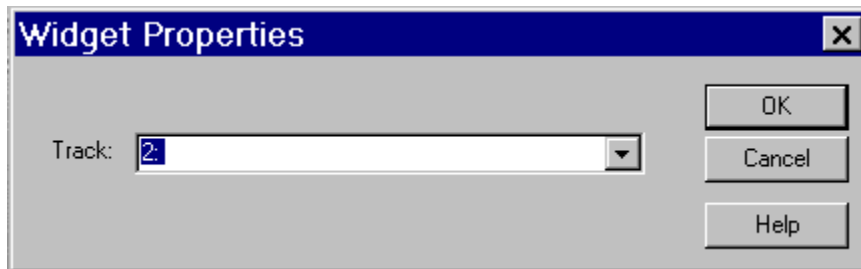
1. Make sure the  button in the StudioWare toolbar is pressed so that update is enabled.
  2. Make sure the  button in the StudioWare toolbar is pressed so that recording is enabled.
  3. Set the Now time to a few bars or seconds before the time at which you want to record control movements.
  4. Click  or press the Space bar to start playback. (Note: Do not press the Record button in the Transport toolbar!)
  5. Adjust the controls as you wish while playback is in progress. Each time you adjust a control, the Record tool  is activated.
  6. When you are done, click  or press the Space bar to stop playback.
  7. Click the  button in the StudioWare toolbar to turn off real-time recording.
- Cakewalk records the control changes that you entered while playback was in progress.

## Control Settings

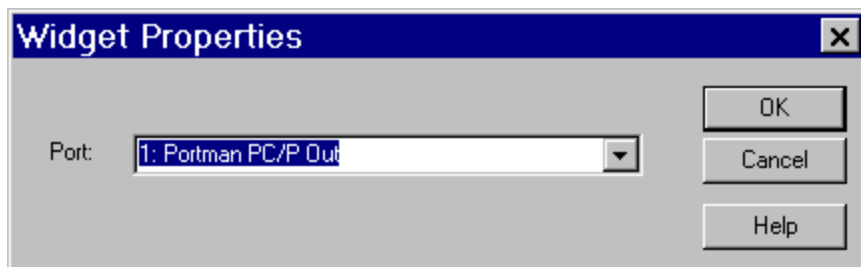
The controls in a StudioWare panel are designed to send and receive various types of MIDI information. This information can be transmitted to two possible destinations:

- a specific track in your project
- a MIDI output port

When you want to record the movements of controls within a panel, you must make sure that MIDI data from the control is directed to a track, and not to a MIDI port. To find out where the data from a control is headed, right-click on the control to display the Control (Widget) Properties dialog box and check the list:



Data from this control is routed to a track, and can be recorded



Data from this control is routed to a MIDI port, and cannot be recorded



## StudioWare Panel Drawing Speed

Some StudioWare panels use bitmap graphics to enhance their appearance. These graphics can slow down the speed with which a panel is displayed on some slower PCs. You can turn off these bitmap graphics by adding this line to the [WinCake] section of the CAKEWALK.INI file:

```
PanelsShowWidgetBitmaps=0
```

To turn bitmap graphics on again, change the entry to:

```
PanelsShowWidgetBitmaps=1
```

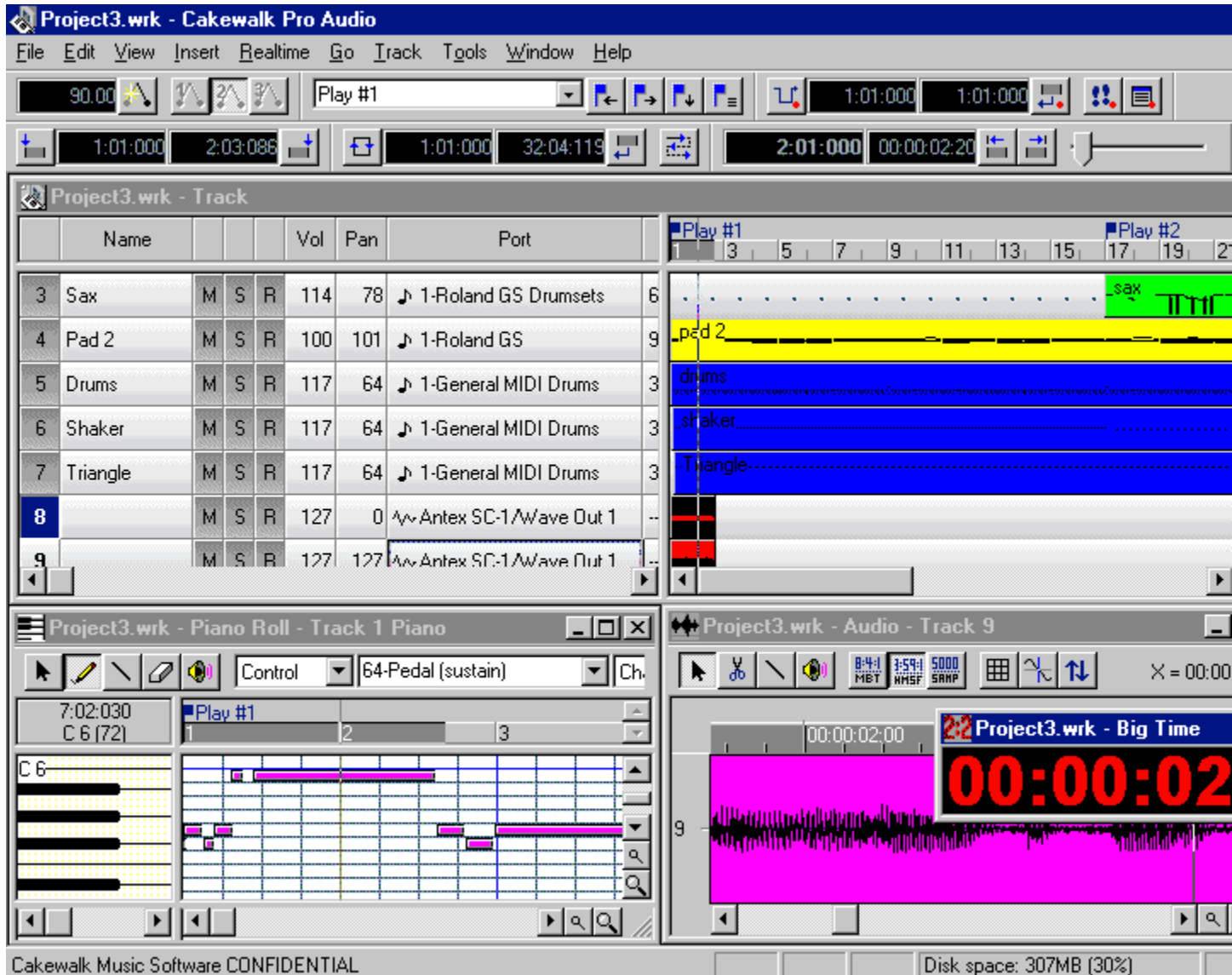
For more information about the CAKEWALK.INI file, see [Initialization Files](#).

## Using Layouts and Templates

A **layout** is the current arrangement of all the views that pertain to a particular project. The layout of each project is stored automatically as part of every project file. In addition, you can save the current layout or load any saved layout and apply it to the current project. You might want to create a layout so that you can easily arrange the views in a convenient size and position on the screen.

A **template** is a special file used as a pattern to create other similar files. You might create a template file that defines a particular musical ensemble (say, a string quartet) or a particular studio configuration (MIDI instruments, audio ports, etc.). Templates make it fast and easy to create and configure new projects.

Note that Toolbars are not part of a file layout or template. The toolbar arrangement you choose is stored automatically from session to session.



See also:

[Layouts](#)  
[Templates](#)

## Layouts

The layout of the views that are currently displayed for a project is stored automatically in the project file when you save the project. By default, the layout of all the views is restored when the file is opened.

In addition, you can save the current layout in a separate list – the global layout list. Once you have saved the layout in this list, you can apply it to any open project. The global layout list can contain as many layouts as you want. Layouts in the list can be updated, renamed, and deleted.

There are two options that control how layouts are used, as described in the table:

Option...	Meaning...
Close Old Windows Before Loading New Ones	If checked, Cakewalk will close all the views of the current project before applying the layout. If you leave this option unchecked, existing views remain open, and additional views are created according to the settings in the layout.
When Opening a File, Load its Lay out	If checked, the views of a project are automatically arranged according to the stored layout when the project file is opened. If this option is not checked, only the Track view (and File Info view, if applicable) are displayed when the project file is opened.

---

For step by step instructions:

[How to Create or Save a Layout](#)

[How to Update a Layout](#)

[How to Load a Layout](#)

[How to Delete a Layout](#)

[How to Rename a Layout](#)

[How to Set Layout Options](#)

### **To Create or Save a Layout**

1. Arrange the views for the current project the way you want.
2. Choose View-Layouts to display the Window Layouts dialog box.
3. Click Add to display the New Global Layout dialog box.
4. Enter a name for the layout, and click OK. The layout is added to the list.
5. Click Close to exit the Window Layouts dialog box.

## **To Update a Layout**

1. Arrange the views for the current project the way you want.
2. Choose View-Layouts to display the Window Layouts dialog box.
3. Choose the layout you want to update from the list.
4. Click Add to display the New Global Layout dialog box.
5. Leave the layout name unchanged, and click OK.
6. Click OK to confirm that you want to update the layout.
7. Click Close to exit the Window Layouts dialog box.

**To Load a Layout**

1. Choose View-Layouts to display the Window Layouts dialog box.
2. Choose the layout you want from the list.
3. Click Load.

Views of the current project are arranged according to the layout settings.

**To Delete a Layout**

1. Choose View-Layouts to display the Window Layouts dialog box.
2. Choose the layout you want to delete from the list.
3. Click Delete.
4. Click OK to confirm that you want to delete the layout. The layout is removed from the list.
5. Click Close to exit the Window Layouts dialog box.

**To Rename a Layout**

1. Choose View-Layouts to display the Window Layouts dialog box.
2. Choose the layout you want to rename from the list.
3. Click Rename to display the Rename Existing Layout dialog box.
4. Enter a new name for the layout, and click OK. The layout is renamed in the list.
5. Click Close to exit the Window Layouts dialog box.



**To Set Layout Options**

1. Choose View-Layouts to display the Window Layouts dialog box.
2. Check the options you want.
3. Click Close when you are done.

## Templates

Template files make it easy to create new projects with certain predefined settings. To create a template file, create a new project file and arrange the project settings the way you want, and then save the project as a template file. Template files have a file extension of .TPL. When you create a new project, you can use the template as the basis for the new project. Cakewalk looks for template files in a particular folder on your hard disk. By default, this folder is the program folder. To change the template directory, choose Tools-Global Options and click the Folders tab.

Every time you start Cakewalk, a new, empty project is displayed. If you want, you can determine the settings for this default project by creating and saving a special template file, called NORMAL.TPL. If you create or update the NORMAL.TPL file, Cakewalk will display this template automatically when the program is started.

As a rule, any parameter that is saved in a project file is also saved in a template file. Listed below are some useful parameters that are saved in template files:

- Track configuration and track parameters
- Timebase
- Sysx banks
- File information and comments
- Tempo settings
- Meter and key settings
- Synchronization information
- MIDI data
- MIDI In/Out/Thru settings
- MIDI metronome settings
- Selection start and end times
- Record mode and punch-in times

The following parameter are saved globally, and are not stored in template or project files:

- Initialization file parameters
- Big Time font settings
- MIDI device settings
- Instrument definitions
- Autosave options
- Color settings

---

For step by step instructions:

[How to Create a Template](#)

[How to Create a New Project from a Template](#)

### **To Create a Template**

1. Create a new file, using the File-New command.
2. Set one or more parameters to be the way you want.
3. Choose File-Save As to display the Save As dialog box.
4. Choose Template from the Save as Type list.
5. Enter a template file name and click Save.

Cakewalk saves the template file.

### **To Create a New Project from a Template**

1. Choose File-New to display the New Project File dialog box. The list contains the names of all existing templates.
2. Choose a template from the list.
3. Click OK.

Cakewalk creates the new project and displays it in the Track view.

## Template Example: Three MIDI instruments

Suppose that you own three different synthesizers:

- One synthesizer set to receive on channels 1-8
- A general MIDI synthesizer module set to receive data on all 16 channels.
- A drum machine set to receive on MIDI channel 10

Here's how you can use a template to make it easy to create new projects that are already configured for the instruments you own.

---

For step by step instructions:

[How to Create the Example Template File](#)

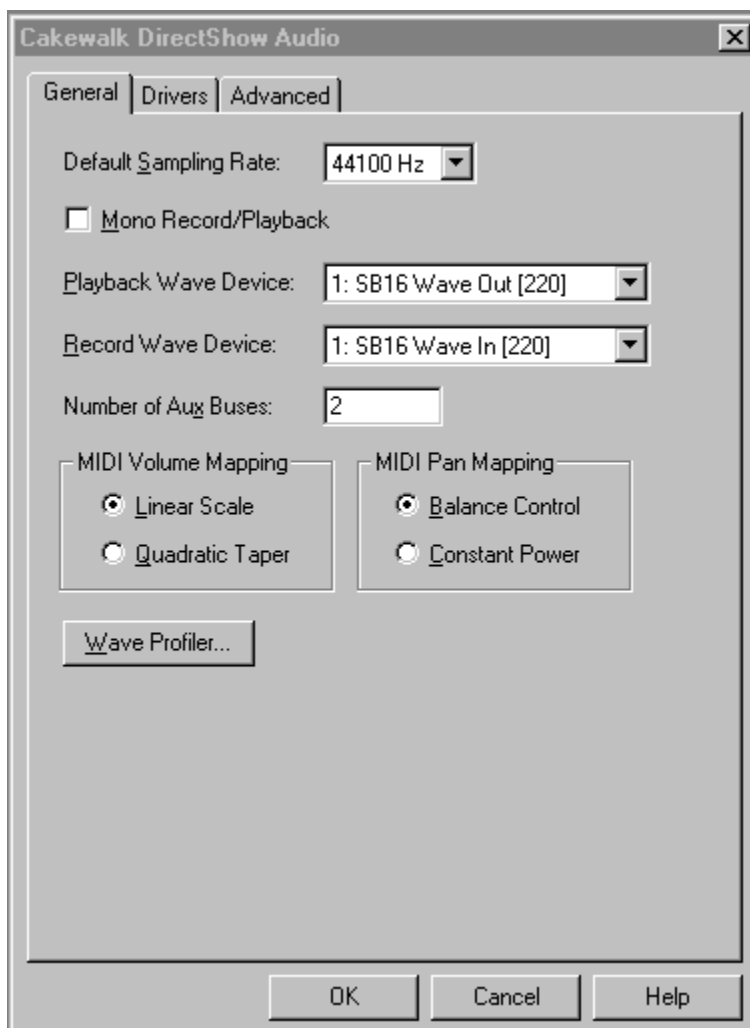
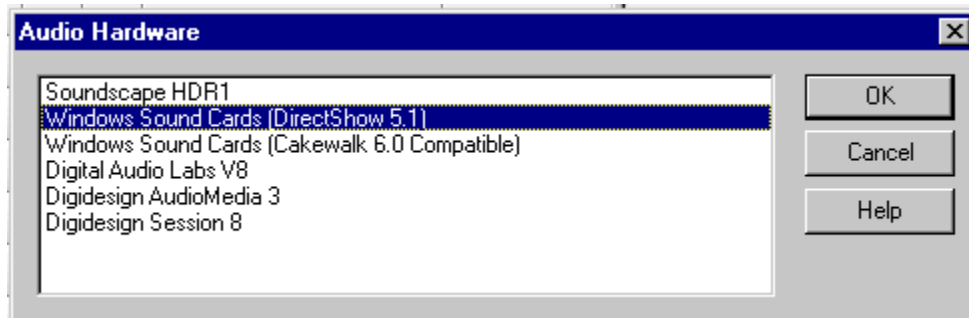
## **To Create the Example Template File**

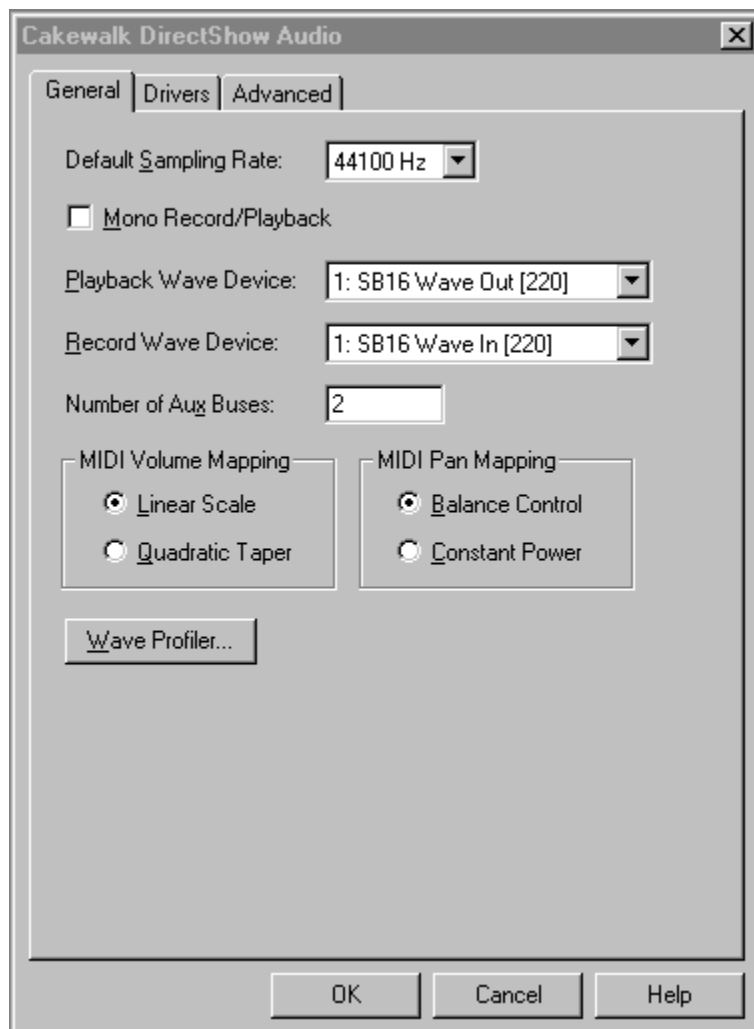
1. Choose File-New to create a new project file.
2. Enter the number 10 in the channel column of track 10. The drum machine responds to channel 10. For consistency, the drums can be placed on track 10.
3. The second synthesizer responds to channels 1-8. These can be placed on tracks 1-8. Fill in the Channel column for each track with the corresponding channel number. You should now have tracks 1-8 set to channels 1-8.
4. The third synthesizer can respond to 16 MIDI channels, but the only channels left are 9 and 11-16. Enter these numbers in the corresponding tracks. You will need to mute the unused channels on the third synthesizer (1-8, and 10) so they won't play. These are assigned to the drum machine and the second synthesizer.
5. Give each track a name and set any track parameters such as starting patch, volumes, panning, and transposition.
6. If you like, configure other parameters needed in your projects such as auto-send sysx banks, tempo settings, and comments.
7. Choose File-Save and save the file as a template named my3synths.

Now, each time you want to start working on a new project, you can simply load your template and start recording.

## Managing Audio Files

Digital audio files are very large, and the processing of digital audio places a heavy load on a desktop computer. Cakewalk includes a large number of features and advanced settings that help you manage disk space more efficiently and get better performance. This topic, and the topics listed below, describe these features and settings.





See also:

[Audio System Configuration](#)

[Digital Audio Data Management](#)

[Improving Performance with Digital Audio](#)



## Audio System Configuration

There are many different types and configurations of audio hardware. Cakewalk can usually automatically detect the type of sound card that you have installed, and configure its settings for best performance. Sometime, though, you may need to change these settings, as in the topics listed below.

---

See also:

[The Wave Profiler](#)

[Configuring your Audio Hardware](#)

## The Wave Profiler

The Wave Profiler is a utility that analyzes all the sound cards in your computer, and finds the optimum DMA (Direct Memory Access) settings for communicating with Cakewalk. These settings are used to ensure that a project that contains both MIDI and digital audio plays back both type of material in tight synchronization. If the DMA settings are incorrect, MIDI and digital audio material may not play back correctly

The Wave Profiler utility runs automatically the first time you run Cakewalk, and you don't need to run it again unless you install a new sound card or an updated driver for an existing sound card. The Wave Profiler determines the correct settings at three sample rates (11kHz, 22kHz, and 44kHz). It assumes that the same settings should be used for both the 44kHz and 48kHz sample rates. If you find that audio and MIDI don't play in sync at 48kHz, you may need to enter the settings manually, as described in the next section.

You can also manually configure the DMA settings for your sound card, overriding the settings that were determined by the Wave Profiler. This is not recommended except under special circumstances outlined below.

Most sound cards can report their current position (sample number) in the audio stream (this position is known as the wave out position). Because the reported position is not always accurate, Cakewalk may choose to use or ignore this information based on the type of card. If Cakewalk uses the wave out position information, the DMA settings are ignored, and vice versa. Some newer sound cards report themselves as having sample-accurate wave out position reporting. If Cakewalk detects this capability, the wave out position option is enabled automatically. You can always override this setting and force Cakewalk to use or to ignore the wave out position information.

If you experience MIDI and audio synchronization problems during playback, there are two things you can try before contacting technical support:

- Check the Cakewalk World-Wide Web site ([www.cakewalk.com](http://www.cakewalk.com)) to see if there is any updated information about the optimal DMA settings for your sound card.
- Try using the Wave Out Position for Timing option.

---

For step by step instructions:

[How to Run the Wave Profiler](#)

[How to Manually Change the DMA Settings](#)

[How to Use the Wave Out Position Information](#)

## To Run the Wave Profiler

1. Choose *Tools-Audio Options* and click the General tab.
2. Click Wave Profiler. The Wave Profiler examines each of your sound cards in turn.
3. If the Wave Profiler identifies the card, it displays the information and asks if you want to use the default settings. You should answer Yes, unless there is some unusual situation you are trying to resolve.
  - If you answer Yes, the Wave Profiler continues with the next sound card, if there is one.
  - If you answer No, the Wave Profiler automatically tests the card to identify appropriate DMA settings, and then goes on to the next sound card, if there is one.
4. If the Wave Profiler cannot identify the card, it automatically tests the card to identify appropriate DMA settings, and then goes on to the next sound card, if there is one.
5. The Wave Profiler continues its work until all sound cards have been tested, and displays a message when it is finished.

If you receive an error from the Wave Profiler, contact [Technical Support](#).

### **To Manually Change the DMA Settings**

1. Choose *Tools-Audio Options* and click the Advanced tab.
2. In the DMA box, confirm that the correct Device is selected from the Device list.
3. Enter the size and offset settings recommended by your audio hardware documentation.
4. Click OK when you are done.

The DMA settings you entered are used for synchronization of playback.

### **To Use the Wave Out Position Information**

1. Choose *Tools-Audio Options* and click the Advanced tab.
2. In the Playback and Recording box, check or uncheck the Use Wave Out Position for Timing box.
3. Click OK when you are done.

## Configuring your Audio Hardware

Cakewalk uses the Microsoft DirectShow Version 5.1 architecture for audio streaming through sound cards.

Cakewalk allows you to choose the audio device whose clock should be used to control recording and playback timing. Every sound card's clock crystal is slightly different, which causes minor differences in the actual playback rate on each card. These differences may lead to slight synchronization problems if you use one card for recording and a different one for playback. Therefore, you should choose your highest quality sound card for both record and playback timing.

There are several other options you can use to control certain aspects of audio playback, as shown in the table:

Option. . .	How to use it. . .
Queue Buffers and Buffer Size	These values control the number and size of audio data "packets" that are sent to your output device. In general, lower numbers result in lower latency. If they are lowered too much, you may hear audio glitches and dropouts if you interact with Cakewalk (for example, if you open and close views) while play back is in progress. Cakewalk ignores the Buffer Size if you set it to be below the DMA size. These options appear on the Advanced tab of the Audio Options dialog box.
Enable Simultaneous Record/Play back	Cakewalk tries to determine automatically if your audio hardware supports simultaneous record and playback. If it fails to determine this setting automatically, you can check this option. You can also turn off simultaneous record and playback if this causes problems with your equipment. This option appears on the Advanced tab of the Audio Options dialog box.
Clip Audio Mix Upon Overflow	When this option is enabled, Cakewalk will clip overloaded audio instead of letting it "wrap," or overflow. This often reduces the audio artifacts of mixing too hot, and creates a warmer, more pleasing type of distortion when you over drive tracks. You may find it especially useful on guitar-heavy mixes. This option may reduce audio throughput. This option appears on the Advanced tab of the Audio Options dialog box.
Mono Record/Playback	This option forces monaural recording and playback. It is required for full-duplex recording on the Roland RAP-10. This option appears on the General tab of the Audio Options dialog box.

For step by step instructions, see [How to Choose the Wave Devices](#)

**To Choose the Wave Devices**

1. Choose *Tools-Audio Options* and click the General tab.
2. Choose the Playback Device from the list.
3. Choose the Record Device list.
4. Click OK when you are done.

## kDigital Audio Data Management

Digital audio requires a large amount of disk storage. The table below shows the disk space requirement for a single minute of digital audio at various sampling rates:

Rate	Monophonic	Stereophonic
11 kHz	1MB	2MB
22 kHz	2MB	5MB
44 kHz	5MB	10MB
48 kHz	5.5MB	11MB

Cakewalk stores audio data separately from the rest of your projects, in files placed into a special folder called the **wavedata folder**. These audio files are in the same format as regular Wave files, but they have a special file extension of .WAV. This special file extension lets Cakewalk know that these are audio files associated with Cakewalk projects. When you record a piece of digital audio, or insert a digital audio file into a project, the audio is stored in one of these special files in the wavedata folder.

Cakewalk stores audio data in a way that conserves disk space. If you copy an audio event from one project to another, for example, Cakewalk doesn't actually make a copy of the audio file. Instead, it tells both of the project files that they share the same audio file. If you subsequently edit a portion of the audio in one of the projects, the edited portion is stored in a separate audio file, and the corresponding portion of the original file is no longer shared. On playback, Cakewalk combines all the audio files together as needed to recreate the song.

Suppose you have a song called MYSONG.WRK, which contains several audio events. The audio portion of the project is stored in a number of files with an extension of .WAV. The exact number of files depends on how many events were recorded, how much editing was performed on the audio portion of the project, whether or not the same audio events are shared by other projects, and other factors.

There are several benefits to this system:

- You can record and edit digital audio without having to enter file names for every piece of audio
- You use much less disk space than would otherwise be required
- You don't have to manually organize and keep track of all your audio files

Cakewalk includes several features and commands to assist in working with digital audio data:

Feature/Command...	What it's for...
Bundle files	A single file that incorporates all project information and audio data. Useful for creating backups of your work or for moving projects from one computer to another.
Clean Audio Disk	Deletes audio files that are not used by any project to free up disk space
Compact Audio Disk	Compacts all the audio data used by a project into a single file, increasing the efficiency of playback
Take Vault	Forces all recorded audio to be saved in standard Wave files with the .wav extension, thereby bypassing the automatic audio file management process
Manage Imported Files	Imported wave files are copied into the wavedata folder, and managed automatically



These features and commands are described in the topics listed below.

Note that some dedicated audio systems (such as the Session 8) have their own hard disk storage for audio files. When you use one of these systems, the audio data are stored on the external device, and not in the wavedata folder.

---

See also:

[Changing the Wavedata Folder](#)

[Deleting Unused Audio Files](#)

[Compacting Audio Files](#)

[Backing Up Projects with Digital Audio](#)

[Take Vault & Audio Data Handling](#)

[Imported Audio Files](#)

## Changing the Wavedata Folder

You are permitted to change the location of the folder that is used to store audio data. This may be necessary if, for example, your hard disk is full and you want to move all audio data storage to a different hard disk. We strongly recommend that you do not change the location of the wavedata folder unless absolutely necessary.

If your original wavedata folder contains any audio files with the extension .WA~, you must manually move these files to the new wavedata folder using the Windows Explorer or some other file management program. Otherwise, you will receive an error message when you open your project files.

---

For step by step instructions:

[How to Change the Wavedata Folder](#)

### **To Change the Wavedata Folder**

1. Choose *Tools-Audio Options* and click the Advanced tab.
2. Enter the name of the wavedata folder in the Data Directory box.
3. Click OK when you are done.
4. Use the Windows Explorer or some other program to move all audio files from the old wavedata folder to the new wavedata folder.

All audio files will be stored in the new wavedata folder.

## Deleting Unused Audio Files

The Clean Audio Disk command is used to delete digital audio files in the wavedata folder that are no longer used by any of your projects. You should use this command from time to time to free up disk space.

This command searches all of your floppy drives, hard disks, and network drives for project files, and then compiles a list of all the audio files in your wavedata folder that are not in use by any of these projects. You can then choose to delete these audio files.

Under Windows 95, deleted files are normally placed in the Recycle Bin. As a result, you should empty the Recycle Bin after using the Clean Audio Disk command, or the unused files will still physically remain on your hard disk.

If you are using another utility program that protects you from accidentally deleting important files (such as Norton Protect), you may need to disable that program. Otherwise, the next time you use the Clean Audio Disk command you may once again find these not-quite deleted files.

---

For step by step instructions:

[How to Delete Unused Audio Files](#)

## To Delete Unused Audio Files

1. Make sure all project files that contain audio are immediately accessible on a hard disk, network drive, or floppy disk.
2. If you are running Windows 95, empty the Recycle Bin.
3. Choose *Tools-Clean Audio Disk* to display the Clean Audio Disk dialog box.
4. Click the Find button. Cakewalk searches your hard disk for audio files that appear to be unused by any existing projects, and displays the names of these files in the list.
5. Follow the instructions in the table:

To do this...	Do this...
Listen to a file	Highlight the file name in the list and click Play
Delete a file	Highlight the file name in the list and click Delete
Delete all files	Click Delete All, and click Yes to confirm

- 6 Click Close when you are done.

## Compacting Audio Files

The Compact Audio Data command places all digital audio used in the current project into a single digital audio file. This can improve the efficiency of playback, particularly if you have performed lots of audio editing.

Individual audio events in the project “point to” specific portions of this single file. Audio events may continue to use the same portion of the audio data file in order to reduce disk usage. When this command is complete, all of the original audio files remain in the wavedata folder. To reclaim disk space, use the Tools-Clean Audio Disk command.

---

For step by step instructions:

[How to Compact Audio Files](#)

## **To Compact Audio Files**

1. Choose Tools-Compact Audio Data.
2. Confirm that you want to compact your audio data.

Cakewalk compacts all audio data for the current project into a single file.

## Backing up Projects with Digital Audio

A bundle file is a single file that contains all the information – including digital audio – used in a project. A bundle files includes everything that is stored in a normal project file, plus all the digital audio that is used in the project. Use a bundle file when you want to:

- Make a backup copy of a project that contains digital audio
- Transfer a project containing digital audio from one computer to another

Because a bundle file makes an extra copy of all the digital audio in your project, it will require extra disk space. Bundle files are not intended to be your primary means of storing a song. Bundle files have a file extension of .BUN.

When you open a bundle file, the audio data are placed into the wavedata folder, and the remainder of the song is loaded into memory. Use the File-Save command if you want to save the project as a regular project (.WRK) file.

If you close this file without saving it, the audio data are automatically deleted from the wavedata folder. If you save the file as a project (.WRK) file, the audio data are left in the wavedata folder. If you save the project as a bundle file, the audio data are removed from the wavedata folder.

---

For step by step instructions:

[How to Create a Bundle File](#)

[How to Open a Bundle File](#)



### **To Create a Bundle File**

1. Choose *File-Save As* to display the Save As dialog box.
2. Choose Bundle from the Save as Type list.
3. Enter a file name and click OK.

Cakewalk compacts all the audio and merges it with the remaining project data in a bundle file.

### **To Open a Bundle File**

1. Choose *File-Open* to display the Open dialog box.
2. Choose a file with a .bun extension.
3. Click Open

The file is opened and the audio data placed into the wavedata folder.

## Take Vault & Audio Data Handling

The Take Vault feature can help safeguard against accidental loss of recorded takes. The Clean Audio Disk command and the Undo command can both result in audio files being deleted from your hard disk. When you enable the Take Vault and choose a Take Vault folder, all newly recorded material will be saved as .wav files in the specified folder. The time and date of creation are used as the file name. Cakewalk will never delete files in the Take Vault. You must delete Take Vault files by hand. Do not use the take vault unless you are prepared to manage audio files individually.

---

For step by step instructions:

[How to Enable the Take Vault](#)

[How to Disable the Take Vault](#)

### **To Enable the Take Vault**

1. Choose *Tools-Audio Options* and click the Advanced tab.
2. Check the Take Vault box.
3. Choose the folder in which audio takes should be stored.
4. Click OK when you are done.

From now on, audio takes will be stored as Wave files in the specified folder.

### **To Disable the Take Vault**

1. Choose *Tools-Audio Options* and click the Advanced tab.
2. Make sure the Take Vault box is not checked.
3. Click OK when you are done.

Audio takes will now be stored in the wavedata folder.

## Imported Audio Files

By default, Cakewalk will make a copy of any audio data imported via the Insert-Wave File command, and place the imported audio into the wavedata folder. You can disable this option if, for example, you want to import large quantities of audio data into a project and don't want to consume time and disk space by making copies of the files. Automatic handling of imported files is enabled by default. Do not disable this option unless you are prepared to manage the audio files individually.

---

For step by step instructions:

[How to Change Handling of Imported Files](#)

### **To Change Handling of Imported Files**

1. Choose *Tools-Audio Options* and click the Advanced tab.
2. Check or uncheck the Copy and Manage Imported Files box.
3. Click OK when you are done.

Imported files will be handled based on the settings you have chosen.

## Improving Performance with Digital Audio

When a project contains many tracks of digital audio, or when many real-time effects are in use, your computer may have difficulty keeping up during playback. When this occurs, you'll hear portions of the audio drop out. In an extreme case audio playback may stop altogether.

The maximum number of audio tracks you can expect to play on your computer depends on the audio sample rate, the speed of your hard disk, and the speed of your computer's CPU.

The table below shows the number of KB (kilobytes) per second that must be played from a hard disk to play a single audio track for various sampling rates:

Sampling Rate	Amount of data
11 kHz	22.1 KB/second
22 kHz	44.1 KB/second
44 kHz	88.2 KB/second
48 kHz	96.0 KB/second

If your hard disk has an average transfer rate of 1.4MB/second, your hard disk would support a maximum of about 16 tracks of CD-quality audio (1400 KB/second divided by 88.2 KB/second).

Unfortunately, the effect of your CPU on audio track throughput is much more difficult to quantify. Throughput is affected by the type of chip (e.g., Pentium versus Pentium II or Pentium MMX), clock speed, the number and type of real-time effects in use, cache size and settings, and many other factors.

There are a variety of things you can do to increase the number of audio tracks and effects you can play on your computer, as outlined in the following table:

Approach...	How it works...
Archive unused audio tracks	Audio tracks that are muted continue to place a load on your processor. To lessen the burden and free up cycles to handle more audio, archive all unused audio tracks. See <a href="#">Silencing Tracks</a> for more information.
Enable disk caching	By default, Cakewalk bypasses all disk caching, which typically results in better performance with audio data. If your computer has a very large amount of RAM (128MB or more) and your audio tracks include many repeated sections, enabling caching may improve Cake walk's audio performance. Choose <i>Set tings-Audio Options</i> and click the Advanced button to change the disk cache settings.
Exit other programs	The more programs you have open, the more CPU cycles you are taking away from your project. Exit any programs unnecessary to the task at hand.
Record audio at a lower sampling rate	If you don't require CD quality 44.1 kHz audio, then record your audio at a lower sampling rate of 22.05 kHz or 11.025 kHz. Choose <i>Settings-Audio Options</i> to change the sampling rate. This method is useful only before you



	start work on a project. Once the audio sampling rate for a project has been set, it cannot be changed.
Disable the Display Clip Contents options	Drawing the contents of audio clips in the Clips pane uses some CPU cycles. If you are using a slow machine, you may want to disable this feature. To do so, right-click in the Clips pane, choose <i>View Options</i> , and disable the Display Clip Contents option.
Avoid compressed disks	If you use DoubleSpace, Stacker, or some other disk compression system, it will slow down playback of audio tremendously. Configure your system so that the wavedata folder is on a hard disk that is not compressed.
Defragment your hard disk	If your hard disk is fragmented, playback of audio will be slower. Use the Disk Defragmenter to correct the situation.
Refrain from other activity during playback	If you open and close windows or do lots of editing while playback is in progress, you may steal CPU cycles that would otherwise be used for playback.
Turn off the option to draw audio as it plays	The DrawPlayingAudio setting in the initialization file, if enabled, causes audio waveforms to be drawn as the track or audio scrolls during playback. Disable this option to conserve CPU cycles. To do so, make sure that DrawPlayingAudio=0 appears in the wincake.ini file. For more information on initialization files, see <a href="#">Initialization Files</a> .

## Technical Support

If you need more information than you can find in the *User's Guide* or the on-line help, here are two great places to look:

- Check the Support page of our World Wide Web site ([www.cakewalk.com](http://www.cakewalk.com)) for updated technical information and answers to frequently asked questions
- Post messages to the Pro Audio user community using one of the Cakewalk newsgroups. For more information about the newsgroups, visit [www.cakewalk.com](http://www.cakewalk.com).

You can also get technical support directly from Cakewalk. In order to obtain technical support, you must submit the product registration card that is included with your Cakewalk product, or register your product on our World Wide Web site. You can obtain technical support for this product in the following ways:

- E-mail your questions to [support@cakewalk.com](mailto:support@cakewalk.com). Be sure to include your serial number in your e-mail.
- Call Cakewalk Technical Support at (617) 441-7891 on weekdays, 10:00AM to 6:00PM, Eastern time. Be sure to have your serial number ready when you call.

Technical support hours, policies, and procedures are subject to change at any time. Check our web site for the latest support information.

## System Exclusive Data

Home Studio's System Exclusive (Sysx) librarian provides you with 256 banks in which to hold MIDI System Exclusive messages. A *bank* is a storage area plus some associated parameters such as a destination port and an optional description. Each bank can hold any number of messages; the amount of data it can hold is limited only by available memory. The banks are saved in the Home Studio song file. Each bank can also be saved as a .SYX file in the format used by the public domain MIDIEX utility.

---

See also:

[What is System Exclusive?](#)

[Using the System Exclusive View](#)

[Transmitting Banks During Playback](#)

[Real-Time Recording of System Exclusive](#)

[Saving MIDI Files Containing Sysx Banks](#)

[Sysx .INI File Settings](#)

[Troubleshooting](#)

## **What is System Exclusive?**

System Exclusive data is MIDI's way of letting each synthesizer manufacturer transmit private data about their products. A System Exclusive message has a manufacturer ID; the rest of the message is completely proprietary and varies for each manufacturer, even for each of their products. Home Studio does not understand what this data means; it simply can "hold onto it" for you. You can take "snapshots" of your equipment's configuration and store it in Home Studio's System Exclusive banks for transmitting back to the equipment. You may want to do this simply to back up your equipment, much like backing up your computer's hard drive in case something goes wrong. Or you may configure your equipment differently for each song's requirements, which is why storing System Exclusive banks with each Home Studio song file can be useful. Of course, for merely backing up your equipment, you can have a file containing only System Exclusive data and no notes.

## Sysx Events

Cakewalk provides two distinct kinds of sysx events: **Sysx Bank** and **Sysx Data**.

- **Sysx Bank.** You can use Sysx Bank events to transmit one of the song's 256 banks of System Exclusive data. These banks can be recorded, viewed and edited in Sysx view, and each bank can contain one or more very large System Exclusive messages. Sysx Banks may also be marked "Auto," so that they are sent when the file is loaded, rather than during the start of playback (see page 6 for more on this.)
- **Sysx Data.** You can also use Sysx Data events, which can each contain a single System Exclusive message up to 255 bytes long. You can view and edit the message bytes in the Event List view.

You can save Sysx Data events in project (.WRK) files. Any tracks containing these event types will be discarded if the song is loaded into Home Studio 5.0 or earlier.

Sysx Bank and Sysx Data events can be recorded in real time. See [Real-Time Recording or System Exclusive](#) for more information.

## Using the System Exclusive View

The System Exclusive window has a list box for the 256 banks, plus buttons. Most of the buttons affect whatever bank you have selected in the list. Certain buttons will be disabled if the selected bank is empty. To open the System Exclusive view, choose the **Sysx** command from the **View** menu.

Click on one of the following for a description of the buttons in the Sysx view.

[Send](#)

[Send All](#)

**Send**

Send transmits the current bank's System Exclusive message. If nothing seems to happen, make sure you have correctly set the Port. This button is disabled if the current bank is empty.

**Send All**

Send All transmits all nonempty banks.

## **Name**

You may enter a description for a bank by clicking this button. Names are saved only in .WRK files.



## **Auto**

The Auto option tells Home Studio to transmit that bank every time it loads the song file. You might use this option for banks that contain System Exclusive messages that load a set of sounds for a synthesizer at or before the start of a song.

Before transmitting, Home Studio asks your permission. This is a safety feature for loading a file you have received from someone else; if it happens to contain data for your synthesizer(s), you might lose your patches and configuration information. However, if you don't want to be asked, choose Tools-Global Options, click the general tab, and uncheck the box labeled Ask Before Sending Sysx.

## **Port**

Each bank is transmitted to a particular MIDI port, just as a track is. Click this button to change the port.

**Delete**

This deletes the selected bank.

## Transmitting Banks During Playback

Home Studio has a special meta-event, Sysx Bank, that lets you play a system-exclusive bank at a specified time in your song. You can use a Sysx meta-event to send any of the 256 available Sysx banks at any time in a sequence. To do this, you have to insert a new event in the Event List using the Insert key on the PC keyboard. Next you have to double-click Event Kind and change it to System Exclusive. In the Values column, select the bank (0-255) that you want to send.

MIDI is a serial data transmission, meaning it can do only one thing at a time. If you try to upload a huge sampler dump during a fast drum solo, playback will noticeably lurch. MIDI must complete the System Exclusive message before it can resume playback. The Sysx meta-event is appropriate only for very short System Exclusive messages. The exact length depends on various factors such as the speed of your computer; but as a rule of thumb, 100 bytes is a likely maximum, and even that may often be too large.

You don't need to use Sysx meta-events for sending system-exclusive information at the beginning of your song. Instead, use the Auto option for system-exclusive banks. Banks that are marked Auto are transmitted automatically by Home Studio when it loads the song file they are stored in. Use the Sysx meta-event only when you need to change a synthesizer setting during the middle of the song.

## **Real-Time Recording of System Exclusive**

You can record short System Exclusive messages in real-time. These will end up in the track as the new Sysx Data types of events, which can hold System Exclusive messages up to 255 bytes long. To do so, choose Tools-Global Options, click the MIDI Filter tab, and check the System Exclusive item. Change the desired Input Port if necessary (only one port can be recorded from). The Buffers setting may be left at 128 unless the data is not being recorded.

## **Saving MIDI Files Containing Sysx Banks**

If a MIDI file has System Exclusive Auto-Send banks, then Cakewalk saves these in a MIDI file as System Exclusive messages at the very beginning of the song (1:1:0). If the song has other MIDI data starting at 1:1:0 — for example, notes — it won't be played correctly because the System Exclusive transmission will delay the start. The beginning of the song will sound garbled.

The solution is to start the song at measure 2, leaving room for the System Exclusive. (A good rule of thumb is to slide everything later by 1 measure, but you could use an even longer duration if need be.) If you have tempo changes, meter/key changes, or markers in your song, you'll have to use cut and paste to cut the entire song and paste it a measure later. If you have only notes in your song, you can use the File-Open command instead, which requires fewer steps.

Make sure you set the Sysx bank to Auto send in the Sysx view before saving the .MID file. Once saved as a .MID file, use the File-Open command to load it again and open the Sysx view. You'll notice that the Sysx has been split up into many different banks. You can send all these banks of Sysx sub-messages by clicking the Send All button in the Sysx view. There is a necessarily small delay after each Sysx bank is sent. Any names you give the banks will not be saved as part of the .MID file.

## Sysx .INI File Settings

The TTSSEQ.INI initialization file contains settings that govern the sending and receiving of System Exclusive information. If you are experiencing difficulties using Sysx, you will probably be able to correct the problem by adjusting these settings.

The options listed below occur in the [Options] section of the TTSSEQ.INI file. You can edit this file using the Windows Notepad. Every time you add or change one or more lines in TTSSEQ.INI, you must restart Cakewalk in order for the change to take effect.

SysxSendDelayMsecs=n

SysxDelayAfterF7=n

**SysxSendDelayMsecs= $n$** 

This setting causes Cakewalk to delay  $n$  milliseconds if it encounters an F7 in a System Exclusive bank.

$n$  = 60     Default value (in milliseconds)



**SysxDelayAfterF7=*n***

This setting causes Cakewalk to delay Sysx transmission for a certain amount of time if it encounters an F7 in a System Exclusive bank. This gives some instruments the required amount of “breathing” time necessary to process the Sysx transmission. The default delay is 1/18 of a second, but can be changed by also adding the SysxSendDelayMsecs=*n* line.

The possible values of *n* are 0 and 1. Their significance is as follows:

*n* = 0     No delay

*n* = 1     Delay between each Sysx string

**SysxSendPacketSize=*n***

System Exclusive bytes are transmitted in packets, with a 1/18-second default delay between each packet. Setting this value to a smaller number will help slower synthesizers to avoid overflowing their internal buffers. This line sets the number of bytes between each Sysx transmit delay.

*n* = 1024 Default value (in bytes)

## Troubleshooting

[Synthesizers reporting MIDI data errors](#)

[My equipment is not receiving Sysx from Cakewalk](#)

## **Synthesizers reporting MIDI data errors**

Some synthesizers will report data errors when you try to send Sysx information to them. This usually happens when Pro Audio sends data at a rate too fast for the synthesizer to keep up. You can use the SysxSendPacketSize=<number> setting in TTSSEQ.INI to make Pro Audio transmit Sysx data more slowly.

Try setting <number> to 64. If that does not solve the problem, try successively smaller values. If 64 works, you may try larger values until it stops working; go back to the largest value that worked and you will have the fastest transmission rate that the problematic synthesizer can keep up with.

## **My equipment is not receiving Sysx from Cakewalk**

Make sure the instrument is set up to receive System Exclusive messages. In the Sysx View, make sure the right destination port is selected. Verify that the Sysx message originally transmitted from the same kind of instrument. An instrument will not recognize Sysx messages from a different make or model of instrument.

Finally, try adjusting the parameters in the TTSSEQ.INI file.

## Synchronization

Your computer is often used in conjunction with other equipment: sound cards, MIDI equipment, and digital tape decks or other digital recording tools. All of these types of devices can have their own built-in clock or timing mechanism.

When several pieces of equipment are used together, it's important that they operate in perfect synchronization. For this to happen, all of the equipment must rely on the same source of clock or timing information.

---

See also:

[MIDI Synchronization](#)

## MIDI Synchronization

MIDI Synchronization, or **MIDI Sync**, is usually used to synchronize Home Studio with drum machines, stand-alone MIDI hardware sequencers, and sequencers built into MIDI keyboards.

When MIDI devices are synched together, the master device sends messages to all other devices to start and stop playback and to keep all the devices in sync. To change the tempo of a song, you adjust the tempo on the master device. The playback tempo on all slave devices is then set automatically.

The following MIDI messages are sent by the master device to support MIDI Sync:

Message...	How it is used...
Start	This message tells slave devices to start playing from the beginning of the currently loaded sequence
Stop	This message tells slave devices to stop playback
Continue	This message tells slave devices to continue playing from the current location in the currently loaded sequence
Song Position Pointer (SPP)	This message tells slave devices to change the current location to the designated point in the song. Pro Audio normally issues an SPP message immediately prior to any Start or Continue message.
Clock	The master sends clock messages to each slave device at the rate of 24 per quarter note. The slave devices use these messages to establish the tempo and stay in sync.

When you start playback on the master MIDI device, for example, it sends a Start message to all the slave devices, announcing that playback has started. If the slave devices are set up correctly, they receive the message and start playing back along with the master device. When Home Studio is set up as the master device, you can enable or disable these messages.

---

See also:

[Home Studio as the Master](#)

[Using MIDI Sync with Drum Machines](#)

[Troubleshooting MIDI Sync](#)

## Home Studio as the Master

- There are several options you can use when Home Studio is the MIDI Sync master device:

### Option...

### What it's for...

Use Start, Never Continue

If you are using an external drum machine to play a repeated drum pattern or loop, you might always want playback on the drum machine to start at the beginning of the loop. When this option is chosen, Home Studio sends a Start message to all slave devices when playback is started, even if you are in the middle of a song (normally, Home Studio would send a Continue message if playback starts from the middle of a song).

Transmit MIDI Song Position Pointer (SPP)

When this option is checked, Home Studio sends an SPP message before starting or continuing playback. If you are using a drum machine as described above, you might want to disable this option.

Locate Delay for SPP Recipient

Some older MIDI devices take a small amount of time to respond to SPP messages. This option causes Home Studio to delay briefly after sending an SPP message, in order to give the slave device time to respond. The delay is in 1/18ths of a second. Enter 1 for a 1/18th second delay, 2 for 2/18ths of a second, or 18 for a full second delay.

---

For step by step instructions:

[How to Use MIDI Sync with Home Studio as the Master](#)

## To Use MIDI Sync with Home Studio as the Master

1. Configure your external MIDI device to receive MIDI Sync.

0 2. Click  or



in the Sync toolbar to use the MIDI or Audio clock source.

1 3. Choose Tools-Project Options and click the MIDI Out tab.

2 4. Check the Transmit MIDI Start/Continue/Stop/Clock box.

3 5. For most applications, check the Transmit MIDI Song Position Pointer box.

4 6. If you are using a drum machine to play patterns or loops, check the Use Start, Never Continue option, and disable the Transmit MIDI Song Position Pointer option.

5 7. Click OK when you are done.

From now on, the transport controls in Home Studio control playback on the external MIDI devices.



## Using MIDI Sync with Drum Machines

The most flexible way to use a MIDI drum machine is to record the notes it generates into Home Studio, and then use it as a MIDI playback device. This lets you edit, cut, paste, and copy your drum parts just like any other clip. You can use MIDI Sync to record the notes from the drum machine into Home Studio as follows:

1. Use the drum machine's pattern-composing facilities to compose your drum part.
- 0 2. Configure the drum machine to be a slave device that receives MIDI Sync messages.
- 1 3. Configure Home Studio to send MIDI Stop/Start/Continue/SPP messages.
- 2 4. Record the drum part from Home Studio. The drum machine starts automatically when recording begins, and stops automatically when you press Stop.
- 3 5. Switch the drum machine out of MIDI Sync mode, so that it acts simply as a sound-producing module.

## **Troubleshooting MIDI Sync**

If you experience problems with MIDI Sync when Cakewalk is the master device, verify that your external devices are configured correctly to respond to MIDI Sync. Most devices have a Clock option that should be set to External or MIDI.

0 If your computer locks up when using MIDI Sync, it is probably caused by a MIDI loop with an external device. To solve this problem either turn off MIDI Thru (sometimes called MIDI Echo) on the external unit; or choose Settings-Project Options and click the MIDI Input tab, then check None under Echo Mode and click OK.

## Track Properties

[Track view](#)/right click on Track pane/Track Properties  
Double click on a [track](#) to open the dialog box directly

This command lets you edit the properties of one or more tracks.

See [Changing Track Settings](#).

To specify a source for music to be recorded into a track, see [Choosing a Source](#).

## Track View Options

[Track view](#)/right click on Clips pane/View Options

This command lets you specify display options for [clips](#).

See [Displaying Clips](#).

## Drag and Drop Options

[Track view](#)/right click on Clips pane/Drag and Drop Options

This command lets you specify drag and drop options.

See [Moving and Copying Clips](#).

To make linked copies of [clips](#), see [Working with Linked Clips](#).

## Clip Properties

[View/Track](#)/right click on control/Group Properties

This dialog box lets you name a clip and specify its position and color.

See [Arranging Clips](#).

## Unlink Clips

[Track view](#)/Clips Pane/Unlink

This command lets you specify when unlinking selected [linked clips](#) whether to form a new linked group or to make them independent.

See [Working with Linked Clips](#).

## Split Clips

[Track view](#)/Clips Pane/Split

This command lets you specify how to break selected [clips](#) into more clips.

See [Splitting and Combining Clips](#).



## Audio Event Properties

[View/Audio](#)/right click on clip/Event Properties

This command lets you edit the properties of an [audio clip](#).

See [Editing Event Properties](#).

## Group X Properties

[View/Console](#)/right click on control/Group Properties

This command lets you specify the relations of [controls](#) in a group.

See [Using Control Groups](#).

## Remote control

[View/Console](#)/right click on control/Remote Control

This command lets you use a [MIDI](#) device as a remote control for knobs, buttons, and sliders in the console view.

See [Using Remote Control](#).

## Define Instruments and Names

[Tools/Instruments](#)/Assign Instruments dialog box/Define button

This dialog box lets you define your MIDI instrument, if it is not General MIDI standard.

---

See:

[Assigning Instruments](#)

[Importing Instrument Definitions](#)

[Creating Instrument Definitions](#)

## Import Instrument Definitions

[Tools/Instruments](#)/Assign Instruments dialog box/Define button/Define Instruments and Names dialog box/Import button

This dialog box lets you choose instrument definitions from the manufacturer of your instrument.

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See:

[Assigning Instruments](#)

[Importing Instrument Definitions](#)

[Creating Instrument Definitions](#)

## Percussion Notation Key

[View/Staff](#)/Layout button/ Staff View Layout dialog box/click Percussion Settings button

This dialog box lets you define your percussion notation exactly to your taste.

See [Setting up a Percussion Staff or Line](#).

## New Global Layout

[View/Layouts](#)/Window Layouts dialog box/Add button

This dialog box lets you add new layouts to your list of layouts in the Window Layouts dialog box:

See [To Create or Save a Layout](#).

## Rename Existing Layout

[View/Layouts](#)/Window Layouts dialog box/Rename button

This dialog box lets you assign a new name to a layout already in your Window Layouts dialog box.

See [Layouts](#).



## Step Size

[Realtime/Step Record](#)/Step Record dialog box/Other button (on Step Size side)

This dialog lets you specify a step size in number of ticks.

See [Step Recording](#).

## Duration

[Realtime/Step Record](#)/Step Record dialog box/Other button (on Duration side)

This dialog lets you specify a step duration in number of ticks.

See [Step Recording](#).

## SoundFont Locations

[Tools/SoundFonts](#)/SoundFont Banks dialog box/Locations button

This dialog box lets you type in one or more directories (multiple directories separated by semicolons). Cakewalk uses these as a search path for the SoundFont files. If it finds multiple files, it uses the one with the same name as the one you specify in the [SoundFont Banks dialog box](#).

## Delay

File/Open/Play List/Open browse box/<Title>Delay button

This dialog box lets you specify what kind of delay you want between songs.

## Kind of Event

[View/Event List](#)/double click on Kind box.

This dialog box lets you edit the type of the event.

See [The Event List View](#).

## Chord Properties

View/Staff/right click guitar chord or chord symbol

This dialog box lets you create and edit the guitar chord.

See [Adding Chord Symbols](#).

## Event Filter

If you want information about the Event Filter Search dialog box, see [Searching for Events](#).

If you want information about the Event Filter Select Some dialog box, see:

[Event Filters](#)

[Selecting Events](#)

## Lyric Properties

[View/Staff](#)/right click on a word or syllable in the lyrics

This dialog box lets you edit the spelling and time of the specified word or syllable.

See [Working with Lyrics](#).



## Hairpin Properties

[View/Staff](#)/right click on a hairpin

This dialog box lets you specify the properties of the selected [hairpin](#).

See [Adding Hairpin Symbols](#).

## Expression Text Properties

[View/Staff](#)/right click on a text expression.

This dialog box lets you edit the text and location of your [expression](#) text.

See [Adding Expression Marks](#).

## Note Properties

[View/Staff](#) or [Piano Roll](#)/right click on a note.

This dialog box lets you edit the note's time, pitch, velocity, and other [MIDI](#) properties.

See [Selecting and Editing Notes](#).

## Markers

F5 F5

This dialog box lets you choose any marker. Closing the box and the associated Go dialog box moves the [Now time](#) to the specified [marker](#).

See [Creating and Using Markers](#).

## **No MIDI Inputs - Cakewalk**

Startup, or when Tools/MIDI Devices/MIDI Ports dialog box has nothing selected on the Import Ports side

This dialog box lets you choose, or decide not to choose, an input port.

## **No MIDI Outputs - Cakewalk**

Startup, or when Tools/MIDI Devices/MIDI Ports dialog box has nothing selected on the Output Ports side

This dialog box lets you choose, or decide not to choose, an output port.

## Migrate Cakewalk Preferences

First start-up after install

This dialog box lets you transfer a variety of configuration preferences from earlier Cakewalk installations.

See: [Migrating Preferences](#).

## **Retain Cakewalk Preferences**

First start-up after install/Migrate Cakewalk Preferences dialog box/Yes

This dialog box lets you specify from which previous installation you want to transfer configuration preferences to your new installation.

See: [Migrating Preferences](#).



## **Percent Done**

Cakewalk has done the indicated percent of the task you requested. Be patient.

## Ask Auto-send

View/[Sysx](#)/Auto button

This dialog box lets you choose whether to send System Exclusive data automatically to your MIDI instrument.

See [Auto](#)

## Chord Fret Number

This dialog box lets you insert a fret designation.

See [Adding Chord Symbols](#)

## Note Names and Drum Mode

This dialog box lets you specify whether to use the settings assigned in the Assign Instruments dialog box or different settings you specify, or drum mode.

See:

[Assigning Instruments](#)

[Assigning Note Names](#)

[Percussion, Drum Notes, and Note Names](#)

## Pedal Properties

[View/Staff](#)/right click on a pedal mark

This dialog box lets you specify the properties of the selected [pedal mark](#).

See [Adding Pedal Marks](#).

## Staff View Print Configure

[View](#)/[Staff](#)/[Print Preview](#)/Configure button

This dialog box lets you choose a rastral size for the printed staff view.

## Pick Track

[View/Staff](#), [Event List](#), [Piano Roll](#), [Audio](#), or [Lyrics view](#)/Pick Tracks button

This dialog box lets you choose which track you want to see.

## Pick Tracks

[View/Staff](#), [Event List](#), [Piano Roll](#), [Audio](#), or [Lyrics view](#)/Pick Tracks button

This dialog box lets you choose which tracks you want to see.



## Staff View Layout

[View/Staff](#)/Layout button

This dialog box lets you specify how you want your staff view to look in detail.

---

See:

[Beaming of Rests](#)

[Setting up a Percussion Staff or Line](#)

## Module Manager

[View/Console](#)/Module Manager button

This dialog box lets you specify which of the modules for your project you want to see in the Console view.

## Bank Name

[View/Sysx view](#)/Name button

This dialog box lets you specify the the name of the [bank](#) you want.

See [Using the System Exclusive View](#).

## Bank Port

[View/Sysx view](#)/Port button

This dialog box lets you specify which [MIDI](#) port you want the bank transmitted to.

See [Using the System Exclusive View](#).

## Snap to Grid

[View/Staff](#), [Piano Roll](#), [Audio](#), or [Tempo view](#)/Shift-click Snap To Grid button

This dialog box lets you specify the resolution of the snap to grid command.

See [Defining and Using the Snap-To Grid](#).

## Marker

[View/Markers](#)/Add or Change button

This dialog box lets you specify or edit a [marker's](#) name, where to put it, and whether you want it locked to [SMPTE](#) time.

See [Creating and Using Markers](#).

**aftertouch**

MIDI property controlling how much pressure is applied. See [key aftertouch](#), [channel aftertouch](#).

**arm**

Enable a track for recording.

See [Choosing a Source](#).



**audio, digital audio**

Music or sound recorded digitally, as on a compact disk, and not recorded by means of [MIDI](#).

## audio clip

Clip containing digital audio events.

## audio track

Track recorded digitally.

**automation**

Cakewalk snapshot or dynamic recording of the positions of all the [controls](#) through a portion of sound or music.  
See [Recording Automation Data](#).

**bank**

Up to 128 [patches](#). Storage for sounds.

**channel**

Path through which MIDI transmits information.

## **chord**

What appears in a [guitar chord grid](#). See [Adding Chord Symbols](#).

**channel aftertouch (ChanAft)**

MIDI property regulating the pressure applied to all the notes of the instrument on the specified channel.



## **chord symbol**

The **c** among the [expression marks](#) on the [staff](#). Put one above the notes where you want to define a [guitar chord grid](#). See [Chords and Marks](#).

**clip**

Piece of sound and music. Your project consists of clips. You can [link](#) clips.

**controls**

Sliders, faders, knobs, and buttons on the console or your on-line equivalent of [controllers](#). See [Mixing](#).

## **controllers**

Pedals, knobs, and wheels on your electronic instrument that you can use to change the sound while you're playing.  
See [Controllers, RPNs, NRPNs, and Automation Data](#).

**decibel, dB**

Measure of loudness. See [Decibel Scale](#).

**duration**

Length of time.

**effects, audio effects**

Systematic changes you can make to parts or all of the music, like reverb, chorus, and delay. See [Audio Effects](#), [Using Real-Time Effects](#).

**event**

Note, [MIDI](#) action, or [audio clip](#).



**expression**

Lyric, chord symbol, text of any sort (like ff or con amore), hairpin, or pedal mark.

## **expression marks**

Dynamic markings and other musical instructions (like decrescendo, con amore) in your [Staff view](#). See [Adding Expression Marks](#).

**fade, fade-in, fade-out**

Gradual increase (crescendo) or decrease (decrescendo) in volume. See [Applying Fades with the Draw Tool](#).

**frame**

Smallest units for SMPTE synchronization. Frame rate indicates the number of frames per second.

**frame rate**

Speed of playback.

**from time**

The beginning of a selection. Set it in the [Select toolbar](#). See [Now time](#).

**global layout**

[Layout](#) you can save to use with other projects. See [Layouts](#).

**group**

An entity consisting of multiple controls or buttons and specifying relationships between or among them.



## **guitar chord grid**

Grid for notating guitar chords. See [Chords and Marks](#).

**hairpin symbol**

Crescendo or decrescendo mark. See [Chords and Marks](#).

**inspector menu, context menu**

Menu appropriate for a particular location or item. Display a context menu by right-clicking on the location or item.

**key aftertouch (KeyAft)**

MIDI property regulating the pressure applied to an individual note.

**key offset**

The number of half-steps by which to transpose the track. A value of 12 raises the notes an octave. You can transpose all note in a track on playback by setting this value (Key+) in the [Track](#) pane.

**key signature**

Key of the piece, how many sharps or flats it has, and how the music displays in the various views.

See [What is Key?](#)

## **kill**

Delete an entire [track](#), including all its [properties](#), [clips](#), and [events](#). You can undo a **kill**, but not paste it.

**layout**

Current arrangement of all views in a particular project. See [Using Layouts and Templates](#).



**link, linked clips**

Clips so specified that any change made to one applies to all.

See [Working with Linked Clips](#).

**locked (SMPTE) time**

Locks a [marker](#) to a specified time from the start of the music. Not affected by changes in [tempo](#) or [time signature](#).  
See [Creating and Using Markers](#).

**loop, playback loop**

Repetition of a part or of the whole of a piece of music, especially multiple repetitions.

**lyrics**

Words to go along with music. See [Working with Lyrics](#).

**marker**

Flag marking a specific time in the music. See [Markers](#).

## **MBT**

Measure, Beat and Tick number.

9:04:0060 is the 60th tick of the fourth beat of the ninth measure.

## **MCI command, Media Control Interface command**

Special event in [Events List](#) that lets you control other multimedia hardware and software.

**meter, time signature**

Divides time into rhythmic pulses. Specifies the number of beats per measure and the note value of each beat.  
See [Setting the Time Signature and Key Signature](#).



**MIDI**

Musical Instrument Digital Interface. The means by which computers communicate with most sound cards, keyboards, and other electronic instruments. Compare [audio](#).

**mute**

Set a track to be silent during play.

**normal template**

Project template for all projects.

**Now time**

The current time in a project. Where you are in the music.

See [The Now Time and How to Use It.](#)

**NRPN**

Non-Registered Parameter Numbers.

See [Controllers, RPNs, NRPNs, and Automation Data](#).

**offset**

Shift (time, key, velocity) by a specified number of units. For example, you could offset the start of a [track](#) by two measures.

**overload**

Loss of audio information caused by the audio level exceeding 0 [dB](#).

**pan**

Degree to which a sound or piece of music comes from the left or right speaker.



**patch**

Particular sound in an electronic device. Patches are stored in [banks](#), in groups of 128.

## pedal mark

Expression mark indicating when the player should hold down the pedal and release it.



**pitch bend**

Controller that changes the pitch of a MIDI note.

**pitch wheel**

Controller that changes the pitch of a MIDI note.

**port**

Computer connector for sending or receiving data.

**property**

Any attribute or value belonging to an object. Often you can see these by right-clicking on the object. For example, right-clicking on a [clip](#) and choosing Properties from the resulting menu, displays the [Clip Properties dialog box](#), which lists its properties as its name, start time, length, and color.

**quantize**

Correct human imperfection in start and duration of selected notes so they line up with a specified time grid.

**record**

Capture [audio](#) or [MIDI](#) sound in a reproducible fashion.



**resolution**

Smallest note or number of ticks you want effective in a piece for quantizing purposes.

## **RPN**

Registered Parameter Numbers.

See [Controllers, RPNs, NRPNs, and Automation Data](#)

**ruler, time ruler**

Bar showing evenly-spaced measure intervals. It appears in the [Track](#), [Piano Roll](#), [Staff](#), and [Audio](#) views.

**sampling rate**

Level of accuracy with which audio data is stored. The higher the better the sound quality, but the more costly in computer time.

See:

[Audio Options](#)

[Recording a Sound](#)

**scrub**

Drag a vertical bar over the view, so you can hear the notes in the [track](#). You can scrub forward or backward at any speed. See [Selecting and Editing Notes](#).

**sensitivity (window)**

Distance from a timing grid a note has to be to be unaffected, or affected less, by [quantizing](#).

## **SMPTE**

Society of Motion Picture and Television Engineers. SMPTE format measures time in hours, minutes, seconds, and frames.

00:06:10:5 is the fifth frame of the tenth second of the sixth minute of a project. You can put time zero anywhere.

**solo**

Set a track to be audible during play.



**source**

Input for music or sound to be recorded into a [track](#).

See [Choosing a Source](#).

**split point**

In the Staff view, the point at which you split a track into treble and bass staves. Notes at or above the split point go into the treble staff, those below into the bass staff.

**staff**

A set of horizontal lines on which you write music.

**strength**

Measure of how much an adjustment should approach perfection.

**stripping**

Recording an analog time code signal onto a [track](#).

**swing**

Systematic uneven spacing of notes on a timing grid, to give music a swing feel.

**Sysx**

Cakewalk's System Exclusive library, which can store, record, and display for viewing or editing 256 [banks](#), each holding any number of [patches](#). See [System Exclusive Data](#).

**take**

Single instance of recording the same thing. You might want to record several takes, then choose the best to keep.



**template**

Special file used as a pattern to creat other, similar projects. See [Using Layouts and Templates](#).

**tempo**

Number of beats per minute.

**thru time**

Time up to which the music is to be played back or recorded. Set it in the [Select toolbar](#). See [Now time](#).

**tick**

Subdivision of quarter notes. It show the timebase of a piece of music.

**time**

In Cakewalk, Now time, from time, or thru time. When an event takes place in the music.

**timebase, PPQ**

Timing [resolution](#), measured in pulses (ticks) per quarter note. Determines how finely you can specify notes. Home Studio supports timebases in files from 48 PPQ to 480 PPQ.

**track**

Cakewalk's representation of one or more lines of music with shared [properties](#), for example, music played by one instrument.

**velocity**

How fast or how hard a key is struck when a track is recorded.



**velocity offset**

Adjustment of all track events by a specified amount of time.

See [Adjusting the Time Alignment of a Track](#).

**Virtual Jukebox**

Stand-alone media file playlist program. See [Playing Files in Batch Mode](#).

**Virtual Piano**

Utility that lets you use your computer keyboard and mouse to make music. See [Using the Virtual Piano](#).

**volume**

Loudness of a sound or piece of music.

## **wipe**

Deletes a track's clips and events, but leaves its properties. You can undo a **wipe**, but not paste it.

**xRPN**

RPN and NRPN.

## Troubleshooting

If you're having a problem with Home Studio, don't panic. This appendix lists some common problems and how to solve them.

If you don't find an answer here, there are two other important places to look for help:

- Check the Readme file that came with your software. It contains additional information that wasn't available when this User's Guide was printed.
- Visit our World Wide Web site at [www.cakewalk.com](http://www.cakewalk.com), where you'll find answers to frequently asked questions, tech support documents, program patches and updates, and more.

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See also:

[When I Play a File, I Don't Hear Anything](#)

[I Can't Record from My MIDI Instrument](#)

[When I Play a File Containing Audio, the Audio Portion](#)

[I Can't Record Any Audio](#)

[The Music Is Playing Back with the Wrong Instrument Sounds](#)

[How Do I Use Home Studio to Access All the Sounds on My MIDI Instrument](#)

[My Keyboard Doubles Every Note I Play](#)

[I Don't See the Clips Pane in Track View](#)

[Why Can't Home Studio Find My Audio Files?](#)

[Why Do I Get Errors from the Wave Profiler?](#)

## When I Play a File, I Don't Hear Anything

Open the song called 2-PART INVENTION #13 IN A MINOR.WRK and click the Play button. If you don't hear any music, try the following suggestions:

### Possible problem...

### What to do...

Your speakers aren't connected properly or the volume is turned down.

Make sure your speakers are on and the volume is turned up.

Your sound card isn't hooked up correctly.

See if other programs play sound correctly through your speakers. A good program to try is the Media Player (**Start-Programs-Accessories-Multi-media-Media Player**). If other programs do not work, check your sound card documentation to make sure it is properly installed and configured.

No MIDI output device is selected.

Choose Tools-MIDI Devices, and check the Output device list. Make sure that your computer sound card is highlighted and at the top of the list. If this doesn't work, try choosing different output devices, one at a time, to see if any of them produces sound.

Your sound card or MIDI interface is not set up correctly.

Make sure you have installed and tested each card according to the manufacturer's instructions.

You may have too many MIDI drivers.

Make sure you only install the drivers that you need, and remove any old or unused drivers. To access the driver list, choose **Start-Settings-Control Panel**, then double-click Multimedia and click on the Advanced tab.

Your MIDI driver is incorrect or outdated.

Make sure that the driver you have installed is the correct driver for your hardware. Also try downloading and installing the latest driver release from your hardware manufacturer.

Your MIDI driver is configured incorrectly.

Make sure the driver's IRQ and port address settings match the physical settings on the card.

If none of these suggestions works, check our web site for additional suggestions or contact technical support.



## I Can't Record from My MIDI Instrument

If you are unable to record music from your electronic keyboard, synthesizer, or other MIDI instrument, first test to see if you are able to play back a song through the keyboard. Then try the following:

### Possible problem...

### What to do...

No MIDI input device is selected.

Choose ***Tools-MIDI Devices***, and check the Input device list. Make sure that the MIDI input on your computer sound card is highlighted.

Your MIDI cables are reversed.

Make sure that the MIDI Out plug is connected to the MIDI In jack on your keyboard and that the MIDI In plug is connected to the MIDI Out jack on your keyboard.

You have not set up Pro Audio to record

Make sure that 1) you have chosen a source for the track; 2) you have armed the track for recording; and 3) you have pressed the Record button, and not the Play button.

If none of these suggestions works, check our web site for additional suggestions or contact technical support.

## When I Play a File Containing Audio, the Audio Portion Doesn't Play

Opening the song called RIFF FUNK AUDIO AND MIDI DEMO.BUN and click the Play button. You should hear four instruments: Keyboards, Guitar, Bass, and Drums. If not, try the following:

### Possible problem...

Your speakers aren't connected properly, or the volume is turned down.

Your sound card isn't hooked up correctly.

The volume setting is turned down on your software mixer.

Your audio tracks are assigned to the wrong port.

Pro Audio doesn't recognize your sound card.

### What to do...

Make sure your speakers are on and the volume is turned up.

Run the Microsoft Sound Recorder (**Start-Programs-Accessories-Multi media-Sound Recorder**). Open any wave file and see if it plays sound correctly through your speakers. If not, check your sound card documentation to make sure it is properly installed and configured.

Double-click on the yellow speaker icon in the Windows task bar to display the mixer, and make sure all the volume settings are turned up and that none are muted.

Check the port assignment for your audio tracks in the track pane.

Choose **Tools-Audio Options**, click the General tab, and then click the Wave Profiler button to test your audio hardware. Then, re-open Riff Funk Audio and MIDI Demo.bun and try again.

If none of these suggestions works, check our web site for additional suggestions or contact technical support.

## I Can't Record Any Audio

If you are unable to record audio through your sound card, try the following suggestions:

Possible problem...	What to do...
The track is not set up to receive audio input.	Make sure that the Source column for the track you are recording (in the Track view) is set to an Audio left or Audio right input before recording.
The software mixer is not set up properly.	Double-click on the speaker icon in the Windows task bar to display the mixer. Choose <b>Options-Properties</b> , select Adjust Volume for Recording, and click OK. Make sure all the Select boxes have checkmarks and the input volume is turned up.
Your sound card isn't hooked up correctly.	Try recording audio using the Microsoft Sound Recorder ( <b>Start-Programs-Accessories-Multimedia-Sound Recorder</b> ). If it fails, check your sound card documentation to make sure it is properly installed and configured.
You have not set up Pro Audio to record.	Make sure that 1) you have chosen a source for the track; 2) you have armed the track for recording; and 3) you have pressed the Record button, and not the Play button.

If none of these suggestions work, check our web site for additional suggestions or contact technical support.

## **The Music Is Playing Back with the Wrong Instrument Sounds**

If the tracks in your song are assigned to the same MIDI port and channel, the same sound will be used for all of them. To fix this problem, simply assign each track to a different channel (using the Chn column in the Track view), and then choose the sound (or “patch”) you want to use for each one. If you are playing songs through your MIDI keyboard or synthesizer, you need to 1) check that your instrument is able to receive MIDI data on multiple channels, and 2) configure your instrument to play a different patch on each channel (this is called “Multi Mode” on many instruments). See the documentation for your instrument for more information.

Another possibility is that you are playing back a GM (General MIDI)-authored MIDI file on a non-GM compatible device.

## How Do I Use Home Studio to Access All the Sounds on My MIDI Instrument?

Home Studio is normally set up to access the 128 sounds that are part of the General MIDI standard. Home Studio also includes custom instrument definitions that match the sounds on many popular instruments. To use a custom instrument definition:

1. Choose **Tools-Instruments** to display the Assign Instruments dialog box.
2. Click the Define button to display the Define Instruments and Names dialog box.
3. Click Import, and then choose the file for the manufacturer of your instrument.
4. Choose your instrument from the list and click OK.
5. Click Close to return to the Assign Instruments dialog box.
6. Select from the Port/Channel list all the ports and channels that are being sent to that instrument.
7. Click on the instrument in the Uses Instrument list.
8. Click OK when you are done.

If your manufacturer or instrument doesn't appear, check our web site to see if an updated instrument definition is available. You can also create your own instrument definition. For more information on instrument definitions, see [Instrument Definitions](#).

## My Keyboard Doubles Every Note I Play

When your keyboard doubles the notes, each note seems “heavier” or “thicker” than usual, as if two notes of the same pitch are emitted when you press the key. Also, you may find that you can play only half as many notes at one time before some of the held notes drop out.

This can occur when MIDI echo is enabled. The keyboard plays the note for the key you’ve pressed. At the same time, the note is sent through the MIDI interface and echoed back to the keyboard, where it is played a second time.

The best way to resolve the problem is to disable Local Control on the keyboard, following the instructions that came with the keyboard. This stops the keyboard from playing independently. The keys you play still produce sound on the keyboard because they are echoed back by the MIDI interface. In many cases, Home Studio disables local control automatically when the program is started, but this is not always possible.

An alternate solution is to disable echoing, as follows:

1. Choose **Tools-Project Options** and click the MIDI Input tab.
2. Under Echo Mode, check None.
3. Click OK when you are done.

This alternate solution may cause other problems if you are working with several MIDI devices at once.

It’s also possible that your keyboard is transmitting information on two channels at once. To see if this is so, create a new project and record two notes from the keyboard. Then look at what you’ve recorded in the Event list view. If you see four notes displayed instead of two, then your keyboard is transmitting on two channels. See the documentation for your keyboard to learn how to correct the problem.

## I Don't See the Clips Pane in Track View

The splitter bar may be so far to the right that the Track pane fills the entire Track view. Here's how to solve the problem:

1. Place your cursor over the splitter bar. It is located on the far right side of the Track view, just to the left of the



vertical scroll bar. When you place the cursor over the splitter it will look like this:

2. Drag the splitter bar to the left, and you should be all set.

## Why Can't Home Studio Find My Audio Files?

Home Studio looks for all audio data in a certain folder, called the wavedata folder. If you have renamed or moved either Home Studio or the wavedata folder, the Home Studio may not be able to find your audio files. If you know where the audio files are stored, choose **Tools-Audio Options**, click Advanced and enter the full path name of the folder in the Data Directory box. If you don't know where the audio data are stored, choose **Start-Find-Files or Folders** and search for files named \*.WA~.

For more information about the wavedata folder, see [Digital Audio Data Management](#).



## Why Do I Get Errors from the Wave Profiler?

Audio devices such as voice modems or speakerphone devices can cause an error message from the Wave Profiler. Sometimes these errors are harmless; on other occasions you need to disable the voice modem or speaker-phone device before running the Wave Profiler. To do so:

1. Choose **Tools-Audio Options** and click the Drivers tab.
2. Make sure that the voice modem or speaker-phone device is not selected in both the Input and Output device lists.
3. Click OK.
4. Choose **Tools-Audio Options**, click the General tab, and run the Wave Profiler again.

## **Tips & Tricks**

Home Studio includes literally hundreds of features that make it easy to configure your work environment and get your project work done more efficiently. This appendix lists some of the features not covered elsewhere in the manual and highlights some shortcuts and tricks you can use to be more productive and efficient.

## Playing Files in Batch Mode

Home Studio includes two ways you can play several files in sequence automatically, like a jukebox. You can use these features in live performance applications or just for fun.

- Home Studio's Play List view lets you create and work with a series of project, MIDI, and bundle files. As each file plays, it is loaded into Home Studio and displayed in the Track view and other views like any other project file.
- The Virtual Jukebox is a stand-alone program that lets you play back a series of project, MIDI, bundle, and wave files. You can use the Virtual Jukebox without using Home Studio.

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See:

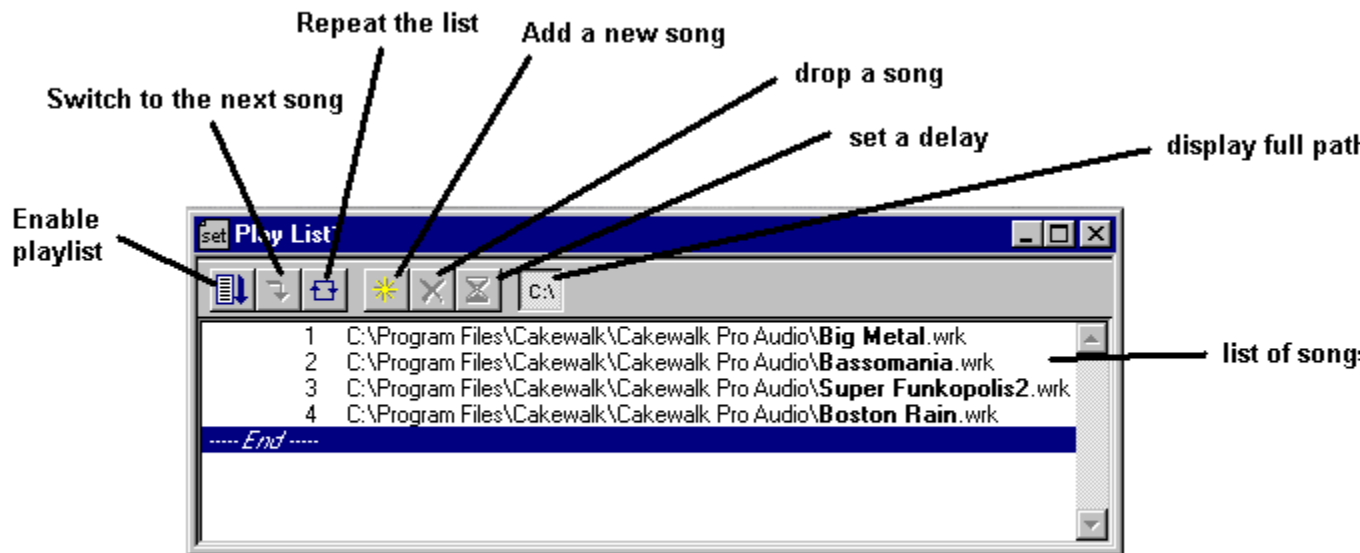
[The Play List View](#)

[Virtual Jukebox](#)

## The Play List View

The Play List view lets you create, edit, and save a **playlist** (or **set**) of up to 128 Home Studio projects. Once you've created the list, you can play back the entire sequence automatically. You can even program the list to pause between songs for a fixed amount of time or to wait for a keystroke before proceeding.




The Play List view looks like this:



Playlists can be saved for future use. Playlist files have the extension **.SET**.





## To Create and Edit a Playlist

1. To create and edit a playlist in the Play List view, follow the instructions in the table:

To do this...	Do this...
Open an existing playlist	Choose File-Open, choose Play List from the Files of Type list, choose the file you want and click Open
Create a new playlist	Choose File-New, choose Play List Set from the list, and click OK
Add songs to the playlist	Click  or press Insert, choose a file from the Add Song to Play List dialog box, and click Open
Set the delay after a song	Click on the song in the playlist, click  , enter the delay you want, and click OK
Change the order of songs	Drag the file to a new location in the playlist
Copy a song to another location in the playlist	Ctrl-drag the file to a new location in the playlist
Remove a song from the playlist	Select the song and click  or press the Delete key
Save the playlist	Choose File-Save; or choose File-Save As, enter a file name, and click Save

## To Play Files from the Play List View


1. To play back files from the Play List view, follow the instructions in the table.

To do this...	Do this...
Activate the playlist	Click  in the Play List view tool bar so that the button is pressed. If this button is not pressed, only a single file will play when you start playback.
Choose the starting song	Double-click the file you want to start with. The project is opened and displayed as usual.
Start playback	Click  , choose Realtime-Play, or press the space bar.
Stop playback	Click  , Choose Realtime-Stop, or press the space bar.
Skip to the next file	Click  in the Play List view tool bar.

Loop continuously over the  
playlist

Click the  button in the Play List  
view toolbar.

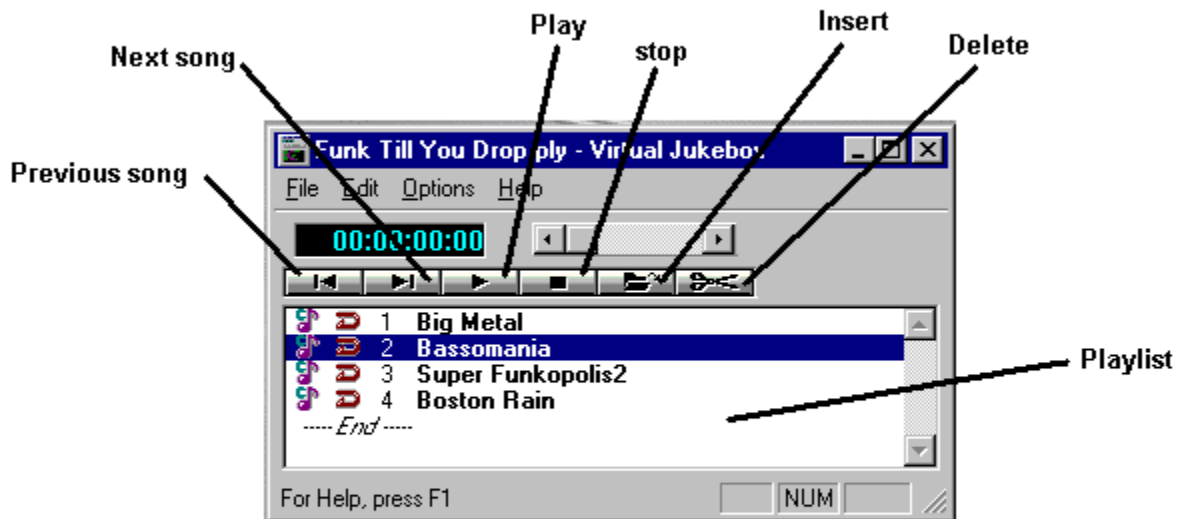
Show or hide file name  
extensions and folder names  
(path). names

Click the  button to enable or  
disable the display of folder

## Virtual Jukebox Program

The Virtual Jukebox is a stand-alone program that lets you play up to 999 songs or audio files in sequence. Virtual Jukebox lets you create playlists (.PLY files) containing files in the following formats: project (.WRK), bundle (.BUN), playlist (.SET), MIDI (.MID), and wave (.WAV). You can create and edit a playlist using menu commands or using drag-and-drop editing. By default, the Virtual Jukebox plays all the files in the playlist in sequence. You can modify the playback mode for all files at once or for each individual file. If your playlist includes files that contain any MIDI data, you must choose a MIDI output device before you can play the file.

The Virtual Jukebox looks like this:



You can drag files from the Windows Explorer into the Virtual Jukebox. The files that you drag into the Virtual Jukebox window are inserted into the playlist before the current selection.

You can also drag files from the Virtual Jukebox into Home Studio as follows:

- To open a project, drag the .WRK, .MID, or .BUN file from the Virtual Jukebox into Home Studio
- To insert an audio event into a project, drag a .WAV file from the Virtual Jukebox to a specific position in the Audio view

**To Start the Virtual Jukebox**

1. In Home Studio, choose Tools-Virtual Jukebox, or click the Windows Start button and choose Programs-Cakewalk-Home Studio-Virtual Jukebox.



**To Choose a MIDI Output Device**

1. Choose Options-Configure MIDI Devices to open the MIDI Ports dialog box
2. Choose a device from the Output Ports list, and click OK.

## To Create or Edit a Playlist

1. To create or edit a playlist, follow the directions in the table:

To do this...	Do this...
Create a new playlist	Choose File-New Playlist. If you made any changes to the currently open playlist, you will be prompted to save the changes.
Open an existing playlist	Choose File-Open Playlist, choose the file you want, and click Open.
Add files to the playlist	Choose File-Add Files to Playlist, Edit-Insert, or click the Insert button to open the Add Files to Playlist dialog box, and then select one or more files from the list. The files you select are inserted into the playlist before the current file in the list.
Move a file	Drag the file to a new location in the list.
Copy a file to another location in the playlist	Ctrl-drag the file to the location where you want the copy.
Edit the playlist	Use the standard Edit menu commands (Cut, Copy, Paste, and Delete) to edit the playlist.
Remove a File from the playlist	Select the file in the list and click the Delete button.
Save the playlist	Choose File-Save, or choose File-Save As and enter a new file name.
Find a specific file in the playlist	Choose Edit-Find, type the first few letters of the file name, and click OK. The playlist moves to the first matching file. Choose Edit-Repeat Last Find (or press F3) to find the next matching file.

## To Control Playback

1. Here's how to control playback with the playlist:

### To do this...

Play the playlist

Stop playback

Move forward or backward in the current file

Skip to the next or previous file while playback is in progress

Skip to any other file while playback is in progress

### Do this...

Double-click a file to start playback on that file, or click on a file in the list and click the Play button.

Click the Stop button.

Use the scroll bar next to the Sequence time display.

Use the Forward and Back buttons.

Click on the file you want to play while playback is in progress. The current file will stop playing, and the file you selected will start playing.

## To Change the Playback Mode

1. To modify the playback mode for all files at once, use the following commands:

Command...	How it works...
Options-Set Playback Mode (All Files)-Auto Advance	Causes the Virtual Jukebox to move onto the next file in the playlist as it finishes playing each file
Options-Set Playback Mode (All Files)-Wait for Keypress	Tells the Virtual Jukebox to wait for a keypress before playing the next file in the playlist
Options-Set Playback Mode (All Files)-Time Delay	Lets you set a time delay between successive files in the playlist
Options-Randomize Play	Causes the Virtual Jukebox to select the next file to play at random

To modify the playback mode for a single file, right-click the file and choose a playback mode from the pop-up menu.

## To Set Other Virtual Jukebox Options

1. There are several options you control with the following menu commands:

### To do this...

Keep the Virtual Jukebox on top of all other program windows

Display the full folder and file name of files in the playlist

Display the File Information dialog box for each file as it plays

### Do this...

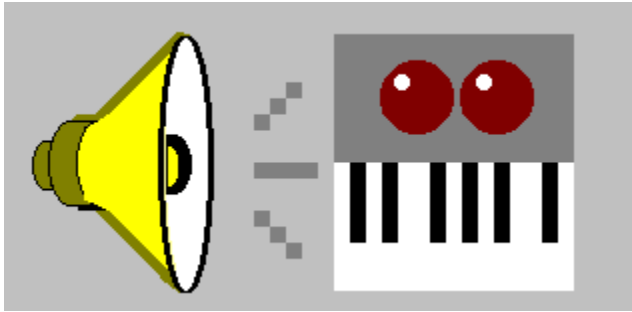
Choose Options-Always on Top

Choose Options-Show Full Path

Choose Options-Show Cakewalk File Information

## Windows Taskbar Indicators

When Home Studio is running, you'll normally see two indicators in your Windows Taskbar, right next to the clock:



The MIDI activity monitor contains two lights that indicate MIDI input and output. When you play your MIDI keyboard, the first light flashes when each note is pressed, and it flashes again when each note is released. When you play back a project that contains MIDI, the second indicator lights up.

The volume control is used to control the playback and record volumes on your sound card. Double-click on this indicator to open a dialog box that lets you control the levels for audio, MIDI, CD playback, and record.

The volume control is available only if your sound card is using a native Windows driver. If your sound card does not use a native Windows driver, no volume control will be displayed in the taskbar. In this case, your sound card probably came with a separate program to control input and output levels. See your sound card documentation for more information.

## Undo, Redo, and the Undo History

Home Studio provides very powerful Undo and Redo commands that let you move forward or backward through any portion of an editing session. Every project has its own independent “undo history.” This means you can return to any open project and use the Undo and Redo commands, even if you’ve spent the last hour working on a different project.

Remembering everything that is necessary to undo the changes you have made can use a lot of memory. If a change you are about to make requires too much memory and cannot be “undone,” you will be advised that the operation is too big to undo later and asked if you want to go ahead anyway. If you do choose to perform the operation, you will not be able to undo it. Therefore, you may want to save your project first.

The Edit-History command displays a complete history of the commands and actions you can undo for the current project. The History dialog box looks like this:



The History command is grayed out until you make a change to the current project that can be undone.

The History list is updated every time you make a change to a project. For example, if you insert a new note into a project using the Piano Roll view, that action is added to the History list. This entry remains on the list — even if you undo the change — so that you can redo the change later on. If you use the Erase tool to delete the note, this change is added to the History list.

You can click the Clear button in the History dialog box to erase the undo history for the current project and free up some memory. If Home Studio is low on memory, it may offer to erase the History list.

To revert to an earlier version of a project, highlight the entry in the History list that represents the point to which you’d like to return, and click OK. Home Studio performs the necessary undo or redo actions to take you to that point. Once you edit the project (for example, by inserting a note), the History list is truncated at that point. Then, as you do further work, the History list grows again. Any events occurring before the event you highlighted remain on the list.

By default, Home Studio keeps a history of up to 128 editing actions for each open project. Once that limit is reached, each new action pushes out the oldest item from the History list. You can raise or lower that number in the History dialog box.

## Screen Colors and Wallpaper

Home Studio lets you customize the colors that are used for virtually all parts of the program using the Tools-Colors command. This command also lets you change the background bitmap that is displayed in the Home Studio window.

For any Home Studio screen element, you can assign a color in two ways:

- Choose one of the colors that is part of your Windows color scheme.
- Assign a custom color.

The table below identifies each of the screen elements in Home Studio:

Screen element...	Explanation...
Window background	Background color for the entire program window
Window text	Text color
Rules	Vertical lines used to mark values or time
Major rules	Major lines used to mark larger intervals of values or time
Values	Color of selected events and tempo changes in the Tempo view
Drawing	Colors used to show your drawing in the Piano Roll and Tempo views
Erasing	Color used to show your erasing in the Piano Roll and Tempo views
Event List Note	Color of note events in the Event List view
Event List KeyAft	Color of key aftertouch events in the Event List view
Event List Control	Color of controller events in the Event List view
Event List Patch	Color of patch events in the Event List view
Event List ChanAft	Color of channel aftertouch events in the Event List view
Event List Wheel	Color of pitch wheel events in the Event List view
Event List Sysx	Color of System Exclusive events in the Event List view
Event List Special	Color of other, special events in the Event List view
Note that is on	Color of currently playing notes
Events	Color of events in the Piano Roll and Audio views
Clips playing on MIDI ports	Default color of clips on tracks assigned to MIDI ports in Track view



Clips playing on Audio ports

Default color of clips on tracks  
assigned to Audio ports in Track view

Markers

Color of markers in the Track view,  
Audio view, Piano Roll view, Staff  
view, and Tempo view

Note that if you set any other screen element to the same color as Window background, you'll make that screen element invisible!

## **To Assign Custom Colors**

1. Choose Tools-Colors to display the Colors dialog box.
2. Choose the screen element whose color you want to change from the Screen Element list.
3. Assign a color to the screen element in one of two ways:
  - To use a color from the Windows color scheme, choose one of the options in the Follow System Color list
  - To use a custom color, check Use Specific Color, click the Choose Color button, and select the color you want
4. To save these changes from session to session, check the Save Changes for Next Session box.
5. Click OK when you are done.

Home Studio uses the colors you have chosen.

### **To Restore the Default Colors**

1. Choose Tools-Colors to display the Colors dialog box.
2. Click the Defaults button.
3. Click OK.

Home Studio uses the default colors for all screen elements.

## To Change the Wallpaper

1. Choose Tools-Colors to display the Colors dialog box.
2. Choose the desired wallpaper according to the table:

### To do this...

Use the default wallpaper

Not use any wallpaper

Use a custom bitmap

### Do this...

Check Default in the Wallpaper list

Check None in the Wallpaper list

Check Custom, choose a bitmap file,  
and click Open

3. Click OK when you are done.

## Music Notation for Nonconcert Key Instruments

For historical reasons, certain musical instruments are traditionally notated in a transposed key rather than the actual key. For example, a normal (Bb) trumpet part is written in the key one whole step higher than the actual “concert” key, and an Eb alto sax part is written a major sixth higher. Musicians have traditionally learned to read and refer to the notes they play using the proper transposition interval for their instrument.

Home Studio supports these nonconcert instrumental keys through use of the Key+ column in the Track view. Simply enter or record the notes into the instrument's track transposed as the musician would expect them, and then set the proper transposition interval in the Key+ column to make it play in the correct key. For example, a Bb trumpet track should have all its notes a whole note higher than concert pitch, and should have Key+ set to -2 to transpose it two chromatic steps back down. Remember, not all trumpets are Bb instruments!

The Staff view automatically transposes the key signature for each track according to the track's Key+ value. Multiple tracks appear and can be printed as an orchestral score, with the proper different key signatures for each track.

Note that this Key+ information is saved in Home Studio .WRK files, but not in standard MIDI files. If you save a file as a MIDI file, the Key+ transposition will be applied to each note event, so that the file will sound the same, but the Key+ information will be lost. If you're reading in a MIDI file, you can easily set up the nonconcert instrument tracks and then save the file as a normal project file. First set the Key+ offset to reflect the nonconcert instrument's key signature. Then, use Transpose to compensate for the Key+ offset.

## **Advanced Setup**

This topic and the topics that follow contain additional details on installing Home Studio and configuring your equipment for use with Home Studio.

## **Step 1. Install Windows 95 or NT**

Before installing Home Studio, make sure that Windows 95 or NT is installed properly.

Try some of the sample programs that come with Windows, such as Media Player and Sound Recorder. If you experience problems, try to resolve them before installing Home Studio, using the technical support services provided by Microsoft or your system vendor. It is generally easier for you to solve one problem at a time, and it is much easier for us to help you when you have a reliable Windows installation. Make sure that you have the most recent video, printer, and sound card drivers to ensure maximum performance of Home Studio.

## Step 2. Install Cakewalk Home Studio

1. Start your computer and start Windows. Close any open programs, but leave Windows running.
2. Place the Cakewalk Home Studio CD-ROM in your CD-ROM drive.
3. Cakewalk AutoRun starts automatically, showing you a dialog box with several buttons. Click the Install Cakewalk Home Studio button, and a dialog box welcomes you to Cakewalk Home Studio Setup.

**Note:** If you exit Setup without completing the installation, choose **Start-Run**, type `D:\AutoRun.exe` (where `D:` is your CD-ROM drive), and click OK. This will reopen the AutoRun window, and you can click Install Cakewalk to start installation again.

4. When Setup starts, a dialog box welcomes you to the Cakewalk Home Studio Setup. Click Next to continue.
5. Setup asks you to enter your name, company (if any), and serial number. Cakewalk uses your name as the default author and copyright holder of songs. These credits appear on printed scores.

**Note:** You can use the File-Info command to change a song's author and copyright holder.

6. Choose the installation type and destination directory. By default, Home Studio is installed to `c:\Program Files\Cakewalk`. If you want to change the destination directory, click Browse and specify a new directory.
7. Select a Start menu for the program. By default, Setup creates a new menu on the Start-Programs menu and names it Cakewalk. You can give the new menu a different name or choose an existing menu from the list.
8. Setup now asks you to confirm the installation options you have selected. You can click Back to go back and change something, or click Next to proceed with the installation.
9. Setup installs the Home Studio files to the installation directory, and it creates an item for the Cakewalk folder in the Windows Programs menu. The folder contains icons for Home Studio itself, for the Virtual Piano utility, the Virtual Jukebox utility, and for the README.RTF file.
10. Setup also asks if you would like to register MIDI files (files with extensions `.MID` and `.MFF`) as Cakewalk file types. Choosing Yes means that Home Studio will automatically open these files when you double-click them.

Home Studio can be uninstalled from the Add/Remove Programs section of the Windows Control Panel. Any `.MID` files on your system may still be registered as Cakewalk files after you do this; if you still need to open the `.MID` files, you can register them with other applications. See your Windows documentation for more on registering files.



## **Audio Files and Disk Caching**

By default, Home Studio bypasses the Windows disk cache when reading and writing digital audio files. You can selectively re-enable disk caching in the Advanced Windows Multimedia Configuration dialog box. For more information, see [Managing Audio Files](#).

### **Step 3. Read the README File**

Cakewalk Home Studio Setup installs a README.RTF item in the Start menu. Choose this to view the file; it contains important notes about changes or additions not covered in the manual.

## **Step 4. Install a MIDI Driver**

If you've already installed Windows multimedia MIDI or sound card drivers, you can skip this section. Just make sure that there are no conflicts between the driver and the sound card.

Home Studio uses the multimedia extensions in Windows to "talk" to MIDI interfaces and sound cards. The multimedia extensions provide a way for applications to talk to different kinds of MIDI interfaces and sound cards through drivers. For Home Studio to work with your device, you must use the Control Panel to install a driver.

Make sure that the driver you install is the correct one for your MIDI interface. The Home Studio CD contains a driver for MPU-401 compatible MIDI interface cards. If you have such a MIDI interface card installed in your system, you should install this driver using the following steps. However, if your MIDI interface is not MPU-401 compatible, or if your MIDI interface is provided by your sound card, then you must not use this MPU-401 compatible driver for your MIDI interface. It will not work properly. Instead, use the MIDI driver provided with your MIDI interface card or sound card. Consult your card's accompanying documentation to determine which driver to use and how to install and configure that driver.

If you plan to record and play back digital audio on a Windows-compatible sound card, make sure you have installed the wave driver for that sound card. Also make sure that you install a 16-bit sound card.

If you have followed the above guidelines and you're having problems with your sound card, contact the card's manufacturer.

## **Installing Drivers in Windows 95**

This section contains instructions for installing, uninstalling, and changing the settings of multimedia drivers under Windows 95. Please contact the manufacturer of your multimedia device for specific information about Windows 95 drivers, configuration, and compatibility.

### **To Install a Driver Not Included with Windows 95**

1. Click the Start button, and choose Settings-Control Panel.
2. In the Control Panel, double-click the Add New Hardware icon.
3. In the Add New Hardware Wizard, click Next.
4. When the Add New Hardware Wizard asks you, "Do you want Windows to search for your new hardware?" select No.
5. In the list of hardware types select sound, video, and game controllers, and click Next.
6. Click Have Disk.
7. Insert the manufacturer's diskette, specify the correct drive and path, then click OK.
8. Select the driver from the list, and click OK.
9. Click Finish.
10. In the Driver Set Up dialog box, select the hardware settings that match your multimedia hardware, and click OK.
11. Remove the manufacturer's diskette and click Yes to restart your computer.

## **To Install a Driver Included with Windows 95**

Windows 95 includes drivers for most common multimedia devices. To install a driver included with Windows 95, do the following:

1. Click the Start button, and choose Settings-Control Panel.
2. In the Control Panel, double-click the Add New Hardware icon.
3. In the Add New Hardware Wizard, click Next.
4. When the Add New Hardware Wizard asks you, "Do you want Windows to search for your new hardware?" select No.
5. In the list of hardware types select sound, video, and game controllers, and click Next.
6. Select the manufacturer and model of your multimedia device, and click Next.
7. Select the Resource IRQ, port, and DMA settings that match your multimedia hardware, then click Next.
8. Click Finish.
9. Click Yes to restart your computer.

## **To Examine and Change Driver Resources**

At some point you may wish to examine and edit the resource settings of a driver (for example, if you have resource conflicts). To examine the resource settings, do the following:

1. Click the Start button, and choose Settings-Control Panel.
2. In the Control Panel, double-click the System icon.
3. Select the Device Manager tab.
4. In the list of hardware items, double-click the sound, video, and game controllers. The list will expand to show the complete list of installed multimedia drivers.
5. Highlight the driver you want to verify, and click Properties.
6. Select the Resources tab to examine the multimedia driver settings.

If you need to change DMA, IRQ, or port settings, deselect the Use automatic settings checkbox and reconfigure the driver with the correct DMA, IRQ, and port addresses.

## **To Remove a Driver**

1. Click the Start button, and choose Settings-Control Panel.
2. In the Control Panel, double-click the System icon.
3. Select the Device Manager tab.
4. In the list of hardware items, double-click the sound, video, and game controllers. The list will expand to show the complete list of installed multimedia drivers.
5. Highlight the driver you want to remove, and click Remove.

The changes will take effect the next time you restart your computer.



## Installing Drivers in Windows NT 4.0

This section gives you general steps for installing and setting up multimedia drivers under Windows NT 4.0. Please contact the manufacturer of your multimedia device to find out about Windows NT 4.0 drivers, configuration, and compatibility for your specific device.

Many sound cards and MIDI interfaces do not yet have drivers for Windows NT 4.0. Before you purchase or install any device, find out whether it is compatible with NT 4.0. Read the Microsoft Windows NT “Hardware Compatibility List” to find out which devices NT 4.0 supports.

If you don’t log on with NT Administrator privileges, you can’t install or remove drivers.

1. If you have a sound card or MIDI interface that goes inside the computer, make sure that the card is physically installed. If it isn’t, shut down the computer and install the card now. If you have an external MIDI interface, make sure that it’s connected to the computer.
2. Choose Start-Programs-Administrative Tools. This opens the NT Diagnostics program.
3. Click the Resources tab. Use the information in this window to find the available resources for your sound card or MIDI interface. When you finish, close the Diagnostics dialog box.
4. Choose Start-Settings-Control Panel.
5. In the Control Panel, double-click the Multimedia icon.
6. In the Multimedia dialog box, click the Devices tab.
7. Click the Add button.
8. Scroll through the list of drivers to find one that matches your card or interface. When you have done this, you’ll be prompted to enter IRQ and port address settings for the card or interface.
9. When you finish, click OK and restart NT.

## Step 5. Connect Your MIDI Equipment

If you are using a MIDI interface (such as an MPU-401 or Sound Blaster MIDI option) with an external MIDI keyboard, you need to connect the equipment using MIDI cables.

It is possible to connect your equipment in some rather complex ways that may cause problems. If you call for technical support with a problem concerning equipment that doesn't seem to be responding, we'll probably suggest that you reconnect things in one of the ways listed below before we explore the problem further. Also be sure to check [Troubleshooting](#), before calling us.

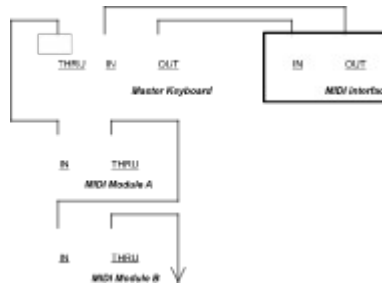
There are two methods that fit many circumstances. The one you choose depends on whether your keyboard has:

- All three types of MIDI jacks: In, Out, and Thru
- Only two types of MIDI jacks: In and Out

If you have only one keyboard, read the "If Your Keyboard Doesn't Have a MIDI Thru Jack" section (regardless of whether you have MIDI Thru or not).

## If Your Keyboard Has a MIDI Thru Jack

If your keyboard has three MIDI jacks — In, Out, and Thru — then use the following diagram.



If you are using a 15-pin joystick adapter cable that splits into two MIDI cables:

- Connect the 15-pin jack to your computer's joystick port.
- Connect the "In" cable to your instrument's MIDI Out jack.
- Connect the "Out" cable to your instrument's MIDI In jack.

Here's a checklist:

Connect this...	To this...
Master keyboard Out	MIDI interface In
MIDI interface Out	Master keyboard In
Master keyboard Thru	Another MIDI module's In
That MIDI module's Thru	Yet another MIDI module's In

Continue the sequence, repeating the last connection for each of your sound modules.

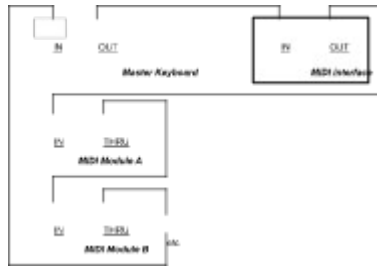
Each MIDI device should be set to a unique MIDI channel or range of channels to avoid note-doubling. Refer to the manuals for your MIDI devices for information on how to set their MIDI channels.

Your MIDI interface may have a Thru jack as well as In and Out jacks. If your master keyboard lacks MIDI Thru, you can add more MIDI modules to your setup by connecting the MIDI interface's Thru to the first module's In. You can then chain subsequent modules onto the first module, as described earlier.

If your master keyboard now seems to double notes (they sound "thicker"), or if you can play only one half as many notes at once, first make sure that no MIDI channel is being used by more than one of your MIDI devices. If no MIDI channel is assigned to duplicate devices and you hear doubling or only half as many notes as you should, see [My Keyboard Doubles Every Note I Play](#).

## If Your Keyboard Doesn't Have a MIDI Thru Jack

If your keyboard has only two MIDI jacks — In and Out — or if you have only one keyboard, use the following diagrams instead:



Each MIDI device should be set to a unique MIDI channel or range of channels to avoid note-doubling. Refer to the manuals for your MIDI devices for information on how to set their MIDI channels.

If your master keyboard now seems to double notes (they sound “thicker”), or if you can play only one half as many at once, first make sure that no MIDI channel is being used by more than one of your MIDI devices. If no MIDI channel is assigned to duplicate devices and you hear doubling or only half as many notes as you should, see [My Keyboard Doubles Every Note I Play](#).

## **Step 6. Configure Your Audio Hardware**

Before running Home Studio, you should ensure that Home Studio knows the capabilities of your audio hardware. How you do this depends upon the kind of digital audio hardware you have.

To use the audio features of Home Studio, you must have a 16-bit sound card. Older, 8-bit sound cards cannot take advantage of Home Studio's features.

The first time you start Home Studio, it will automatically run the Wave Profiler utility. Wave Profiler determines the proper settings for your sound card and writes them to a file that Home Studio consults to use the card. The Wave Profiler is discussed later in the appendix. To find out if your sound card is compatible with Home Studio, check the sound card's documentation.

## **Step 7. Set Up to Record Digital Audio**

In general, the inputs of sound cards take 1/8" stereo minijacks. Sound cards usually have two inputs — one for line level inputs and the other for microphones (at mic level). The line level input is stereo; the mic input could be either stereo or mono. If your final output does not terminate in a 1/8" jack (and it probably doesn't), you will need an adapter to plug it into your sound card.

Most sound cards use the Windows 95 Volume Control to adjust the master input and output volumes and to control which recording inputs are active. If you don't hear audio tracks, or if you can't easily control the audio volume in Home Studio, go to Start-Accessories-Volume Control and check the settings there. See your sound card's documentation for more.

## Electric Guitar Direct-In

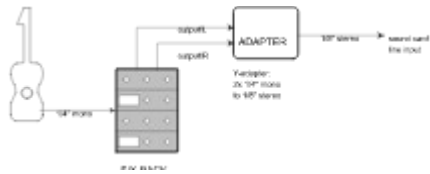
You can connect an electric guitar directly to your sound card using a 1/4" mono to 1/8" stereo adapter. The following diagram shows this setup:



The 1/8" jack should be plugged into the sound card's mic input, although plugging into the line input may also work.

## Electric Guitar Through Effects Rack

You can also plug an electric guitar into an effects rack, then send the output of the rack to the sound card's input, as shown in the following diagram:



This diagram assumes that the output of the rack is at line level. If it is at "pro" level instead (+4 dB), and your card does not accept a +4 dB input, you will need to attenuate (lower) the F/X rack's signal. To do this, use a mixer between the rack's output and the Y-adapter. If the rack has only a mono output, a 1/4" mono to 1/8" stereo adapter should be used instead of a Y-adapter.

If you want to connect a guitar amplifier's direct out to the sound card, you should base your setup on this example.



## Microphone Direct-In

Microphones can be plugged into the sound card's mic input. Some inexpensive microphones are made especially for use with sound cards and come equipped with 1/8" jacks. However, better quality microphones take better quality cables, which do not terminate in 1/8" jacks. The diagram below illustrates how to connect a microphone that terminates in a 1/4" jack:



## Home Stereo, CD Player, Radio Tuner, Preamp Output

The output of a stereo component can be connected to the sound card's line in, using a dual RCA to 1/8" stereo mini Y-adapter. Many portable cassette players come with this kind of adapter, or even with a single cable with all the necessary jacks. In the following diagram, a stereo component is connected to the Y-adapter using standard RCA cables:

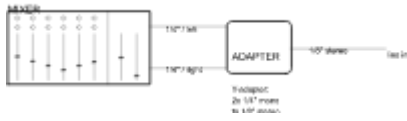


## Internal CD Player

If you are using your computer's internal CD player, and it does not have its audio outs connected internally to the sound card, run a cable from the CD player's Headphone jack to the card's Line In jack. If there is no Headphone jack, you'll need to use an external CD player.

## Mixer

You can connect a mixer to the sound card with a setup of the following kind:



**Note:** If your mixer has buses, use them! This helps avoid feedback.

## Step 8. Start Cakewalk

When you installed Home Studio, the default setup procedure added a Cakewalk folder to your **Programs** menu.



### To Start Home Studio

1. Click the Start button located in the lower-left corner of the screen.
2. Point to Programs to see a list of available programs and folders.
3. Point to the Cakewalk folder to open it.
4. Click on Home Studio.

Here are some other ways to start Home Studio in Windows:

- Right-click on the desktop and choose New-Cakewalk Song. When the song icon appears, type a name for the song. Then double-click the icon to start Home Studio.
- Click the Start button, point to Documents, and choose a previously opened Home Studio song from the menu.
- Select the Home Studio program item or a Home Studio document file using the My Computer icon on the desktop, the Windows Explorer, or the Find menu. All Home Studio file types (.WRK, .BUN, .TPL, .MID, .MFF) are registered with Windows. See your Windows documentation or on-line help for more information.

## **Migrating Preferences**

The first time you run Home Studio, it asks if you want it to search for an older version of Home Studio and transfer (or “migrate”) the preferences you established in that version to Home Studio. Home Studio searches all hard disks in your system for older versions, and if you have more than one older version of Home Studio installed, Home Studio presents a list of them. You may choose one from this list. The preferences and settings stored in the older version’s CAKEWALK.INI and TTSSEQ.INI files are then transferred to the identically named configuration files for Home Studio. Home Studio migrates certain preferences to the Windows Registry rather than to the CAKEWALK.INI file.

## Running Wave Profiler

The first time you start Home Studio, it automatically runs the Wave Profiler utility. Wave Profiler determines the proper MIDI and Audio timings for your sound card and writes them to a file that Home Studio refers to when using the card. Wave Profiler does not change the sound card's DMA, IRQ, or port address settings.

Wave Profiler attempts to detect the make and model of your sound card, which determine the card's audio characteristics. When Wave Profiler determines the kind of card you have, it asks whether you want to use the default settings for that card or override them. If Wave Profiler has identified your sound card correctly, you may accept the default settings. However, the utility is not infallible. If it does not identify your sound card correctly, you must enter the correct settings yourself. To determine those settings, you may need to consult your sound card's manual and consider using [tech support](#).

**Note:** You can run the Wave Profiler again at a later time (for example, if you install a new sound card or driver) by choosing the **Tools-Audio Options** command and clicking Wave Profiler.

## Setting Up the MIDI In and MIDI Out Devices

When you start Home Studio for the first time, it checks your computer to find all the MIDI input and output devices you have installed (such as sound cards and MIDI interfaces). However, sometimes you need to tell Home Studio exactly which devices you want it to use. If you're not getting sound from your sound card or MIDI keyboard, or if you just want to change the MIDI ports and devices that you are using, follow the steps in this section.

Choose Tools-MIDI Devices to open a dialog box in which you select the MIDI In and MIDI Out devices that Home Studio will use. Each item in the list is a MIDI In or MIDI Out port from drivers installed using the Windows Control Panel.

1. Go into Home Studio, and choose Tools-MIDI Devices. You will see the MIDI Ports dialog box, which lets you choose instruments on MIDI input and output ports:



2. Look at the left window. Notice that it shows devices on MIDI Input Ports; make sure that all devices in this window are highlighted. If a device isn't highlighted, click on it once to select it for MIDI Input.
3. Look at the window on the right. Notice that it shows devices on MIDI Output Ports. Home Studio numbers its MIDI Output Ports by the order of the devices in this window. The device on top is on Port 1, the one below it is on Port 2, and so on.
4. Highlight each device in the Output Ports window and click Move Selected Devices to Top to change its order. Then highlight all the devices that appear in the window to select them for output.

**Tip:** Be sure to choose MIDI output devices from Tools-MIDI Devices. If you don't do this, you won't hear any of your MIDI instruments when you play songs in Home Studio.

## Using MIDI Devices After Making Driver Changes

If you later add or remove drivers using the Drivers icon of the Windows Control Panel, Home Studio reacts in the following way:

- If you remove a Control Panel driver, Home Studio will not use the device it belongs to the next time you run the program. Any other devices you had selected using the Tools-MIDI Devices command will remain selected.
- If you add a driver through the Control Panel, Home Studio does not automatically use it. You must use the Tools-MIDI Devices command to add the new driver to Home Studio's list.

**Note:** After you add or remove a driver with the Drivers icon in the Windows Control Panel, you must restart Windows for the change to take effect.

## Defining Your MIDI Instrument or Sound Card

Once you have selected your MIDI Input and Output devices, Professional™, by default, plays back MIDI sequences using a General MIDI instrument definition. If you are using a synthesizer or sound card that does not adhere to the General MIDI standard, you may want to define that instrument. For information about instrument definitions, see [Instrument Definitions](#).



## Support for Multiple Wave Drivers

Home Studio will make use of one wave driver for playback and one for recording. This means that you can use one sound card for recording and a different one for playback. This is good if you need to hear audio that you previously recorded while you record new audio. (If you have only one sound card that lets you do this, it's called a "full-duplex" sound card.)

You might be thinking, "Great! Now I use a pair of SoundBlasters to do 'full-duplex' recording." However, there is no guarantee that two different cards will stay in sync. Only multiple drivers on the same card can ever truly be in sync.

If you have more than one installed sound card, Home Studio has to designate one card as the playback device and one card as the record device. You choose these devices by entering values for Playback Wave Device and Record Wave Device in Tools-Audio Options.

Some sound cards with built-in modems come with a wave driver for internet audio or computer speaker phones. These drivers may cause the Wave Profiler to show errors, and may prevent Home Studio from running properly. You may need to remove these drivers before starting Home Studio.

## **MIDI Files**

The Standard MIDI file format is a file interchange format defined by the MIDI Manufacturers Association (MMA). The purpose of the format is to allow for the exchange of MIDI data between different programs. Any program that can read and write MIDI files has a common language with which to talk to other MIDI software. The compact size of MIDI music files makes them particularly useful for delivering music online.

Home Studio can open standard MIDI files, and can save your projects in standard MIDI file formats. Note that only the MIDI portion of your projects is saved in a standard MIDI file. If your projects contain digital audio, the audio portion of the project will be lost when you save it to a standard MIDI file.

Home Studio supports two different MIDI file formats, MIDI Format 0 and MIDI Format 1. Format 0 MIDI files contain a single track, with all events stored in that track. Format 1 MIDI files can store up to 256 tracks, just like Home Studio project files. When you load a MIDI Format 0 file, Home Studio splits it into 16 separate tracks, based on the MIDI channels assigned to each event. When you save a project to a MIDI Format 0 file, Home Studio collapses MIDI information from all of its tracks into one single track.

Home Studio also lets you save and load files in the RIFF MIDI file format. This is a standard Resource Interchange File Format specification that encapsulates a Standard MIDI File of either format 0 or format 1. These files typically have an extension of .RMI.

A disadvantage of MIDI files is that the way the file sounds on playback varies based upon the sound reproduction hardware you are using. The same song sounds very different on two different synthesizers or two different sound cards. Another problem is that the Standard MIDI File specification leaves some details open to interpretation by software and hardware manufacturers.

### **To Save a Song as a Standard MIDI File or RIFF MIDI File**

1. Choose File-Save As to display the Save As dialog box.
2. Choose the desired format from the Save as Type list.
3. Enter a file name and click Save.

## Supported MIDI File Meta-events

MIDI files can contain meta-events. The types of meta-events that Home Studio supports are listed in the following table:

<b>MIDI File Meta-event...</b>	<b>How it is represented in Home Studio...</b>
Meter and key signature	Meter/key signature map entry
Tempo	Tempo change
General text	Track name
General text in the conductor track of a Format 1 file	Markers view markers
Track name	Track name

## Features Not Supported by MIDI Files

While the MIDI file format is very flexible and extensive, it cannot store the following parameters that are part of a standard project file: key offset, velocity offset, time offset, and forced channel.

When you save a project to a MIDI file, most of these parameters are applied to the individual events. For instance, if you have assigned track 1 to channel 10 in the Track view, Home Studio will write the MIDI file so that every event on track 1 has a channel number of 10. When you subsequently load the MIDI file all of those Track view parameters will have vanished. But the music will sound the same, because Home Studio has made these changes to the events themselves.

## Other MIDI File Handling Notes

Here are a few specific points about how Home Studio works with MIDI files:

- Home Studio places Lyric events found in Format 0 MIDI files into Track 4, in accordance with conventions used by karaoke players.
- Home Studio inserts any Text or Lyric events found at time 0 in a track into the Comments field in the File Info dialog box, unless the Text or Lyric event is preceded by a Note event.
- Home Studio automatically enables the Zero Controllers when Play Stops option (available through the Tools-Project Options command, on the MIDI Out tab) whenever a MIDI file is loaded.
- If a general MIDI file contains a copyright notice, the File Info window will be displayed automatically when the file is opened.

## Special Handling of GM, GS, and XG MIDI Files

General MIDI compatibility of a song file is indicated by the presence of a special System Exclusive message at the beginning of the song. When Home Studio finds a GM, GS or XG reset message, it assumes that you would like to work within the GM Score Production guidelines. This causes Home Studio to use special timing for program change information when writing MIDI Files, and allows it to search more aggressively for track parameters when reading MIDI files. The result is that it is easier than ever to create and use General MIDI song files with Home Studio.

Home Studio does not enforce or even verify compliance with the GM guidelines for your music data. But Home Studio does comply with them when generating events that represent track parameters. If necessary, Home Studio will insert blank setup measures at the start of your song. This makes space for certain events to be inserted at the correct times at the start of each track: bank changes, patch changes, volume, and pan. This means that you can use Home Studio's track parameters for these settings when composing songs: When you save your work as a MIDI File, Home Studio will place these events in the track at the specific clock ticks recommended by the guidelines.

You can tell Home Studio to follow the GM guidelines by loading the "Turn GM System On" sysx bank in the Sysx View (GMSYSTEM.SYX in your Cakewalk directory), and then either inserting a sysx event at time 1:1:0 or using the "Auto" setting for that bank.

When loading a GM file, each track's bank, patch, volume and pan parameters are lifted from the data stream and placed in Home Studio's Track view for you to see and edit onscreen. The GM mode ensures that all patches, banks and controllers are placed at specified times throughout a setup measure when you save a MIDI file. This ensures that all setup information can be digested by your synthesizer before it starts playback. If you don't have a setup measure in your song, Home Studio will insert one for you.

If there is no GM, GS, or XG reset System Exclusive message present at the start of your song, Cakewalk will not operate in this GM mode.

## **If You Have Problems Playing MIDI Files**

A MIDI file can cause playback problems in Cakewalk if all of the following are true:

- The MIDI file is a GM-compatible Standard MIDI Format 1
- All patches, banks and/or controllers are stored in one track
- All related note events are stored in a different track

When Home Studio loads such a file, it may try to "optimize" the program changes, causing incorrect selection of synthesizer voices during playback. (The GM, GS, and XG specifications all recommend the use of Standard MIDI Format 0 for distribution of music data, which would make this problem irrelevant.) If you encounter this problem, simply re-select your instruments and re-save the file.

## If You Plan To Publish Your Songs

If you plan to publish your own songs, we encourage you to follow the General MIDI authoring guidelines. These guidelines are quite detailed about the exact layout of many types of song data, and a complete discussion of them is beyond the scope of this document. However, Home Studio can help you to conform with the GM guidelines if you follow these practices:

- Always save your master copy of any work in progress in Home Studio project (.WRK) file format. When you are ready to publish your work, use the File-Save As command to create a Standard MIDI Format 0 file.
- All of the major publishing guidelines recommend that you use Standard MIDI File Format 0 instead of Format 1. Some sequencers cannot read the more complex Format 1 files, particularly sequencers embedded in some types of hardware such as karaoke players.
- Load the "Turn GM System On" system exclusive bank (GMSYSTEM.SYX in your Cakewalk directory) in the Sysx view, and set the bank to "Auto Send". This message will not only re-initialize a General MIDI compatible sound module to a known state, but will also tell Home Studio to generate GM setup measures for your program changes when you save the song in Standard MIDI Format.
- For best results, you should always place program changes and other MIDI messages in the same tracks as the notes they affect. This keeps the data for each track together as a single unit, and avoids problems that might occur when Home Studio cannot easily correlate the program changes with the note events.



## Initialization Files

Many Windows applications, as well as Windows itself, use files to store information about your preferences and configuration. Often applications store values to these files when you make selections in the program using menus or dialog boxes. However, you can also change these files directly. In some cases, there is no way to change the settings in the application, and changing the file directly is the only way.

This topic documents three initialization files, which are stored in the Home Studio program folder (by default, C:\program files\cakewalk\cakewalk Home Studio):

- CAKEWALK.INI
- TTSSEQ.INI
- AUD.INI

To view and edit the CAKEWALK.INI file, choose Tools-Initialization File. Use the Windows Notepad to open and alter any of the three files. There are several other .INI files in the Home Studio folder, but you should not attempt to edit or modify these files in any way. Changes to these other files could cause Home Studio to stop operating properly.

Before making any changes to any of the .INI files, you should make a backup copy in case you make a mistake. After you have made your changes, save the file and close Notepad. Home Studio reads the settings in these files only when it first starts up. Therefore, if you change any settings while Home Studio is running, you should exit and restart Home Studio in order for the changes to take effect.

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See also:

[Initialization Files](#)

[Initialization File Format](#)

[CAKEWALK.INI](#)

[TTSSEQ.INI](#)

[Variables in the \[MIDI Input Devices\] Section](#)

[Variables in the \[MIDI Output Devices\] Section](#)

[AUD.INI](#)

[Variables in the \[Aud\] Section](#)

## Initialization File Format

Initialization files all follow a common format. They are divided into sections whose names appear in the file in brackets, like this:

```
[Section Name]
```

Within each section, variables are of the form:

```
<variable name>=<value>
```

For example, the DrawPlayingAudio variable belongs in the [Wincake] section in CAKEWALK.INI, and determines whether the audio waveform is redrawn or not when the display is scrolling during playback. If the value is 0 (FALSE), then the waveforms are not redrawn. If the value is 1 (TRUE), then waveforms are redrawn. To redraw waveforms when scrolling during playback, the entry in the file looks like this:

```
[Wincake]
```

```
DrawPlayingAudio=1
```

The variable names contain no spaces. They are not case sensitive.

## CAKEWALK.INI

Many of the items in CAKEWALK.INI are set using Home Studio menus and dialog boxes. However, some items can be changed only by using the Tools-Initialization File command or by directly editing this file using the Windows Notepad.

CAKEWALK.INI is divided into different sections. Unless otherwise noted below, all entries should appear in the section that starts with the line:

[Wincake]

For example, if you want to add the line PanicStrength=1 to CAKEWALK.INI, you should put it on the line under [Wincake], like this:

[Wincake]

PanicStrength=1

The following section lists the different variables you can change in CAKEWALK.INI.

Variable	Type	Default value	What it does...
AudExtDLL=<drive:pathname>	Path	<installation directory>\ttsaudmm.dll	This line determines the location of the audio extension DLL used by Home Studio, and is written during installation. This should never need to be changed.
DrawPlayingAudio=<0 or 1>	Boolean	0 (disable)	This line controls whether the audio waveform is redrawn or not when the display is scrolling during playback. By setting the value to 1, you can force the Track and Audio views to always redisplay audio data, even during playback. This is recommended only for very fast machines.
HyphenDir=<drive:pathname>	Path	<installation directory>\ttshyph.dll	This determines the location of the Hyphenator extension DLL used by Home Studio, and is written during installation. This should never need to be changed.
PanelsShowWidgetBitmaps=<0 or 1>	Boolean	1 (enable)	This line controls whether Home Studio hides (n=0) or shows (n=1) all widget bitmaps while in Use mode (except those in Image widgets).
PanicStrength=<0 or 1>	Boolean	0 (controller 123 only)	The Panic/Reset button stops playback and turns off any "stuck

			notes." There are two ways a MIDI note can be turned off: By a note-off message (n=1) or by MIDI controller number 123 ("all notes off"). By default, Panic uses controller 123 only (n=0).
StaffViewChanSepa rateVoices= <0 or 1>	Boolean	1 (enable)	This line specifies whether or not Home Studio should treat channels assigned to each note as separate voices. This is use ful if you want to force note stems up or down for different voices.
ToolTempFileDir= <drive:path name>	Path	<Windows TEMP directory>	This line specifies where to store tempo rary .WAV files when launching a third party wave editor from the Tools menu.

## TTSSEQ.INI

The TTSESSEQ.INI file can only be changed using the Windows Notepad.

## Variables in the [Options] Section

Variable	Type	Default value	What it does...
GeneralMidiSMFs=<0 or 1>	Boolean	1 (enable)	This line controls whether or not Home Studio cre ates a General MIDI setup measure when load ing Standard MIDI Files
LyricTrack=<num>	Integer	3 (track 4)	This line specifies which track is to contain lyrics from Type 0 Standard MIDI files.
SendLocalOff=<0 or 1>	Boolean	1 (enable)	This line determines whether or not Home Studio should send a "Local Control OFF" message during startup.
SendLocalOn=<0 or 1>	Boolean	0 (disable)	This line determines whether or not Home Studio should send a "Local Control ON" message at exit.
SysxDelayAfterF7=<0 or 1>	Boolean	1 (enable)	<p>This setting causes Home Studio to delay Sysx transmission for a certain amount of time if it encounters an F7 in a Sysx bank. This gives some instruments a required amount of "breathing" time that is necessary to process the Sysx transmission. The default delay is 1/18 of a second, but can be changed by also adding the SysxSendDelayMsecs=&lt;n&gt; line (see below).</p> <p>The possible values are 0 and 1. Their significance is as follows:</p> <p>0: no delay</p> <p>1: delay between each Sysx string (F0 ... F7)</p>
SysxSendDelayMsecs=<n	Integer	60	This setting causes Home Studio to delay a

um>			speci fied number of milliseconds if it encounters an F7 in a Sysx bank.
SysxSendPacketSize=<num>	Integer	1024	This line specifies the number of bytes between Sysx transmit delays. Sysx bytes are transmit ted in packets, with a 1/18 second delay between each packet. Setting this value smaller will help slower MIDI devices (synthesizers, etc.) avoid overflowing their internal buffers.
UseCableMetaEvents=<0 or 1>	Boolean	1 (enable)	This line specifies whether or not Home Studio should use nonstandard “Cable” meta-events for storing Sysx bank port number into Standard MIDI files (by default, n=1).

## Variables in the [MIDI Input Devices] Section

Variable	Type	Default value	What it does...
MaxInPort=<num>	Integer	15 (16 ports)	This variable determines the maximum number of MIDI input ports. The value is 0 based, so a value of 15 means that the limit is 16 ports.

## Variables in the [MIDI Output Devices] Section

Variable	Type	Default value	What it does...
MaxOutPort<num>	Integer	15 (16 ports)	This variable determines the maximum number of MIDI input ports. The value is 0 based, so a value of 15 means that the limit is 16 ports.

## AUD.INI

The AUD.INI file can only be changed using the Windows Notepad.

## Variables in the [Aud] Section

Variable	Type	Default Value	What it does...
PicCacheMB=<size in MB>	Integer	20	This variable specifies the maximum size of the picture cache. The picture cache is located in the directory specified by the PictureDir=<path> variable (defaults to <Cakewalk Folder>\Picture Cache)
PictureDir=<drive:path name>	Path	<Cakewalk directory>\Picture Cache	This line specifies where to store the picture cache.

## Presets

The following is a list of presets provided with Home Studio effects. The FX effects are all new stereo effects for Home Studio 7. The CFX effects are updated versions of the mono effects that shipped with Home Studio 6.

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See also:

[FX Pitch Shifter](#)

[FX Audio Effects Pack](#)

## FX Pitch Shifter

Preset...	Description...
3rd up	Pitch shift a 3rd up.
3rd down	Pitch shift a 3rd down.
4th up	Pitch shift a 4th up.
4th down	Pitch shift a 4th down.
5th up	Pitch shift a 5th up.
5th down	Pitch shift a 5th down.

## Summary of New Features

Home Studio 7 contains many new features and many significant changes from earlier releases of Home Studio. This appendix highlights the major differences between Version 7 and Version 6, and tells you where to look in this User's Guide for more information.

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See also:

- [Toolbars](#)
- [Tools in the Views](#)
- [Menus](#)
- [Multiple File Support](#)
- [Track Selection](#)
- [Mute, Solo, and Archive](#)
- [Console View](#)
- [Right-Click Usage Changes](#)
- [New Audio Mix Engine](#)
- [Effects](#)
- [Selection and Loop Times](#)
- [Recording](#)
- [Playlist View](#)
- [Effects View](#)
- [Audio Meters View](#)
- [System and Song Settings](#)
- [Auto Shuttle Settings](#)
- [Track Arming and Track Sources](#)
- [Wave Profiler](#)
- [Zoom Buttons Auto-Repeat](#)
- [Insert-Time/Measures](#)



## Toolbars

Home Studio 7 includes dockable toolbars like many other Windows applications. Right-click on any toolbar (or choose View-Toolbars) to see the menu of available toolbars. Any toolbar that contains only buttons (and no time fields) can be docked on any edge of the screen, or left floating. The toolbars include a new “small transport” toolbar that displays the basic transport controls in a much more compact fashion than the Version 6 toolbar. The large format toolbar is still available, too.

All toolbar fields have tool-tips, so you can see a description of any item by letting the cursor rest on it briefly. The menus also show the tool icons that are associated with each menu command, so you can easily learn which tools go with which commands.

Your toolbar settings — which ones are enabled, whether they are docked or floating, and their position — is saved when you exit Home Studio and restored the next time you start up.

## **Tools in the Views**

The tools in each of the Pro Audio views have been relocated and reorganized. Most tools are now located at the top of each view.

## Menus

The menus have been streamlined and simplified to reduce the number of keystrokes that are needed to use the program.

- Some menu items have been moved from one menu to another.
- A small number of menu commands have been deleted or moved to the Tools-Global Options dialog box (View-Status Bar, for example).
- A couple of new menu items have been added (Go-Next Marker, Go-Previous Marker, Realtime-Stop, etc.), and key bindings are available.
- Some items have been moved from the File menu to the Tools menu (Export Audio, Sound Fonts).
- The View menu has been completely reorganized. All views can now be accessed directly from the View menu (the View-New submenu has been eliminated). As described below, access to Playlist files is now via the File-Open or File-New commands, rather than from the View menu.
- The Settings menu has been removed, and its contents moved to the Tools menu. Many items were consolidated into the Tools-Global Options or Tools-Project Options commands as property pages.

## Multiple File Support

Home Studio 7 allows you to open any number of project files at one time. The Track view remains the most important view for each project; when you close a project's Track view, all other views of the project are closed as well. The Windows menu lists all open windows for all open projects.

You can use Cut and Paste to move material from one project to another, or simply drag clips back and forth between projects. As a result, the File-Merge and File-Extract commands are no longer required and have been removed.

Each project has its own "undo history," so you can edit and then Undo or Redo changes in any open project. If you drag clips from one project to another, you need to use the Undo command once in each project to undo the change.

If you prefer to work with only one project at a time, choose Tools-Global Options and click the General tab. You'll find a checkbox there that restricts Home Studio to one open file at a time.

## Track Selection

We have modified the way you select tracks in the Track view to be more consistent with Windows standards:

- Click on a track number to select the track (and clear any existing selection).
- Drag over several track numbers to select them all.
- Hold the Shift key and click on track numbers to add them to the selection
- Hold the Ctrl key and click on track numbers to toggle them in and out of the selection

As in Version 6, the current track is treated like any other selected track for most operations.

## **Mute, Solo, and Archive**

The Mute and Solo functions have been separated so that you can solo any number of tracks without affecting the mute status of the remaining tracks. When any track is soloed, all other (non-soloed) tracks are temporarily muted. When you turn off Solo, all tracks are played according to their normal/mute status. New Mute and Solo indicators in the status bar let you know when any tracks are muted or soloed.

For more information on these controls, see [Track-by-Track Playback](#).

## Console View

The new Console view is the biggest addition to Home Studio 7. Choose View-Console or click the Console view button in the toolbar to display the Console view.

The Console view lets you mix your projects; patch real-time effects; change MIDI patch, bank, and other settings; redirect MIDI and audio input and output; and much more — all from one central location. The Console view replaces the Effects view and the Audio Meters view, and for most practical purposes replaces the default StudioWare panels of Version 6.

For complete information about the Console view, see [Mixing](#).

## **Right-Click Usage Changes**

The right-click operation now is used almost universally to display a context-sensitive inspector menu. As a result, some operations that used to be initiated by a right-button click are now initiated with a Shift-click. These include snap-to grid settings, tempo ratios, and so on.



## **New Audio Mix Engine**

Home Studio 7 includes a new audio mix engine that supports the following features:

- More efficient processing when using real-time effects
- Full 32-bit effects processing throughout the effects chain
- Master effects
- Greatly improved performance under Windows NT

## **Effects**

All of the new FX audio effects are 32-bit floating point stereo effects, with an expanded set of parameters. Home Studio 7 also includes an updated version of the older CFX effects so you can open and work with files that used these effects.

## **Selection and Loop Times**

The toolbars now provide access to three time ranges:

- The current selection From and Thru time (in the Selection toolbar)
- The playback loop/auto shuttle start and end times (in the Loop/ Auto Shuttle toolbar)
- The punch-in start and end time (in the Record toolbar).

Buttons in the Loop/Auto Shuttle and Record toolbars copy the From and Thru time from the Selection toolbar. You can now perform loop auto-punch recording with a pre-roll simply by setting the loop/shuttle times to a wider range than the auto-punch times.

## **Recording Takes**

You can now choose to place a series of takes into separate tracks, instead of having them all placed as stacked clips in a single track. Choose Realtime-Record Mode to use this option.

## **Playlist View**

Access to this type of file is now through the File menu. Choose File-Open to open this file, or choose File-New and choose the file type you want to create: a Play List Set. Note that StudioWare panels are no longer accessed using the View-Layouts command or dialog box.

## **Effects View**

This view no longer exists and is no longer required. To patch effects on an individual track, in an effects loop, or on a master bus, open the Console view and right-click in the effects patch point near the top of the console.

## **Audio Meters View**

The Audio Meters view no longer exists and is no longer required. When you arm a track for recording and select an audio source, the Console view displays audio meters next to the volume fader. Use these meters to check your recording level. The disk space indicator has moved to the status bar at the bottom of the screen.

## **System and Song Settings**

Many of the settings and options in Home Studio have been reorganized into two property pages: Global Options and Project Options, both of which are accessible from the Tools menu. The Global Options are general settings that apply to all projects; these settings are saved from session to session. The Project options are settings that apply to the current project; these settings are saved as part of the .WRK file.

Many settings that were previously accessible only by editing the CAKEWALK.INI file can now be accessed using the Tools-Global Options command.



## **Auto Shuttle Settings**

The loop and auto shuttle settings have been changed and expanded slightly to provide additional flexibility. For example, you can now set a playback loop and pause playback without automatically resetting the Now time to the start of the loop. Choose Realtime-Loop/Auto Shuttle to see the changes.

## Track Arming and Track Sources

Home Studio 7 now has track arming, which lets you indicate on which tracks material should be recorded. To arm a track for recording, press the R button (next to the new Mute and Solo buttons) in the Track or Console view. The Track Arm indicator in the status bar lets you know when tracks are armed for recording.

Track sources are now stored with a project file. You can specify a source for each track without arming it; the track sources are saved from session to session. When you want to record on the track, simply click the Arm button.

As a convenience feature for users of earlier versions, the current track is automatically armed for recording (using MIDI Omni as the source) whenever 1) no other specific source has been assigned, and 2) no other track is armed for recording. This means that you can create a new project, click the Record button, and start playing, without having to stop to specify the track source and without having to specifically arm the current track.

## **Wave Profiler**

The Wave Profiler now automatically checks with the sound card to see if the Wave Out Position reported by the card is sample accurate. If it is, the Wave Out Position for Timing option (Tools-Audio Options, on the Advanced tab) is automatically enabled.

## **Zoom Buttons Auto-Repeat**

You no longer need to click repeatedly on the Zoom buttons to change the zoom level of a view. Now you can simply press and hold the zoom or unzoom buttons to zoom continuously.

## **Insert-Time/Measures**

The Insert-Measures command (missing in Version 6) has been restored and expanded. It is now called Insert-Time/Measures.

## **Audio Compact/Clear Audio message**

This command removes the contents of the undo history box and checks whether you want to continue.

Press OK to continue.

Press Cancel to stop the command from executing.

## **Clean Audio Disk – Confirm Delete-All**

This confirmation box gives you a chance to stop before deleting all the files selected in the **Clean Audio Disk dialog box**.

Press OK to continue.

Press Cancel to stop the command from executing.

## **File Exists**

A file with this name already exists. Continuing to save without changing your file's name overwrites the old file.

Press Yes to continue.

Press No to stop the command from executing. Save the file with a different name.



## **Ok message box**

The message box gives you a warning.

Choose one:

- Press OK
- Press Enter
- Press Escape

## **Ok-Cancel message box**

The message box lets you choose to cancel or continue the operation.

Press OK to continue.

Press Cancel to stop.

When in doubt, press Cancel — you can reconsider and execute the command later if you want.

## **Yes-No message box**

This box gives you a choice of Yes or No. Press one.

## **Yes-No-Cancel message box**

This box gives you a choice of Yes, No, or cancel. Press Yes or No as circumstances dictate, or press Cancel to stop the operation.

## RealAudio Encoding Overview

RealAudio™ is an audio encoding scheme, whose purpose is to greatly reduce the bandwidth requirements of digital audio. It is particularly suited – and marketed – for use on the world-wide-web. RealMedia™ is a nifty name for encoding various types of media other than audio; for our purposes there is no difference between the two.

Cakewalk's support for RealAudio makes it much easier to create RealAudio encodings of songs for use as web demos, site audio content, or the like.

It is easy to encode your audio – just use **Tools – Export Audio**, and select the RealAudio option in the *SaveAs Type* field. You will then be able to configure the encoding via the [RealAudio Settings](#), and [RealAudio Formats](#)

## RealAudio Settings

This page provides the most-often-changed parameters for RealAudio™ encoding.

[File Name](#)

[Title](#)

[Copyright](#)

[Author](#)

[Selective Record](#)

[Perfect Play](#)

**See also:**

[RealAudio Encoding Overview](#)

[RealAudio Formats](#)

## RealAudio Formats

### General recommendations:

Your material sounds better at the highest bit rate possible, but there is the unavoidable trade-off between the costs of higher bit rates and their audible advantages.

Selecting several different bit rate levels allows bandwidth negotiation to work for you, enabling people to hear your material at the best quality for the bit rates of their connection.

Naturally use of music formats for musical material and voice formats for speech are indicated, as the codes are optimized for each purpose.

Stereo formats trade off bandwidth for stereo, so use these only when stereo is really important.

Try playing back the various formats with your material, to see which suits it best.

14.4 Music

see 14.4 Music flavors

28.8 Music

see 28.8 Music flavors

56k Music

see 56k flavors

ISDN

see ISDN flavors

Dual ISDN

see Dual ISDN flavors

14.4 Voice

see 14.4 Voice flavors

28.8 Voice

see 28.8 Voice flavors

For more detail, see the Progressive Networks document, "Content Creation Guide", in their "devzone library".

RealAudio's creators, Progressive Networks, call the major choices of formats CODECs, whereas they call the minor choices of format flavors. You are limited to one flavor per CODEC for a particular web link, due to the details of how RealAudio supports bandwidth negotiation.

The good news is the interface for Cakewalk's RealAudio encoding constrains you to just those selections which make sense, so you needn't worry about all the details.

### **See also:**

[RealAudio Encoding Overview](#)

[RealAudio Settings](#)

The name you indicated in the Save As dialog box. This is a read-only parameter. To change it, cancel from *RealAudio Settings* and re-execute *File-Utilities-Export-Audio*.



*Title* of the selection.

Any *Copyright* notification associated with this selection.

Typically the composer or producer's name.

Let's the user save the file to his or her hard drive for later listening off-line.

Lets a person with a low-bandwidth connection download a higher resolution version of the selection, trading off download time for higher quality.

Mono, low-bandwidth encodings suitable for use with music over 14.4 kbps modems

Encodings suitable for music over connections with 28.8k bps modems

Encodings suitable for music over 56k bps modem connections



Supports the moderately high bandwidth capacities of single channel ISDN with mono and stereo encodings.

Supports high bandwidth connections, such as dual channel ISDN connections, with mono and stereo encodings.

Encodings most suitable for speech over 14.4k bps modem connections

Encodings most suitable for speech over 28.8k bps modem connections

## Flavors of 14.4 Music

14.4 Music encoding offers a lower and a higher bitrate encoding. They each work best with different material. More complex material will require the higher bitrate. Here are the details regarding bit rates and bandwidth:

Flavor of 14.4 Music	Bit rate	Bandwidth
Low Bitrate	8 kbps	4.0 kHz
Higher Bitrate	12 kbps	4.0 kHz

## Flavors of 28.8 Music

28.8 Music encoding offers three *flavors* of mono and one of stereo. Each works best with different material.

Flavor of 28.8 Music	Bit rate	Bandwidth
Mono, Narrow Bandwidth	16 kbps	4.0 kHz
Mono, Medium Bandwidth	16 kbps	4.7 kHz
Mono, Wide Bandwidth	16 kbps	5.5 kHz
Stereo	20 kbps	4.0 kHz

## Flavors of 56k Music

56k encoding offers the choice of mono vs. stereo.

Flavor of 56k	Bit rate	Bandwidth
Mono	32 kbps	8.0 kHz
Stereo	40 kbps	5.5 kHz

## Flavors of ISDN (RA 3.0)

ISDN RA3 encoding offers a choice of mono with wider bandwidth and stereo with reduced bandwidth.

Flavor of ISDN	Bit rate	Bandwidth
Mono	40 kbps	11.0 kHz
Stereo	40 kbps	8.0 kHz

## Flavors of Dual ISDN (RA 3.0)

Dual ISDN RA3 encoding offers a choice of mono with wider bandwidth and stereo with slightly reduced bandwidth.

Flavor of Dual ISDN	Bit rate	Bandwidth
Mono	80 kbps	20 kHz
Stereo	80 kbps	16 kHz

## Flavors of 14.4 Voice

14.4 voice encoding offers a choice of various bit rates to trade off quality vs. bit rate.

Flavor of 14.4 Voice	Bit rate	Bandwidth
Low rate	5 kbps	4 kHz
Medium rate	6.5 kbps	4 kHz
Higher rate	8.5 kbps	4 kHz

## Flavors of 28.8 Voice

28.8 voice encoding offers two choices: the version 5.0 codec with wide frequency range, or the version 2.0 codec with its wide acceptance.

Flavor of 28.8 Voice	Bit rate	Bandwidth
28.8 RA 2	15.2 kbps	4 kHz
Wideband voice	16 kbps	8 kHz

A particular detailed configuration of a CODEC, which often just means mono vs. stereo, and/or various bandwidths.

A CODEC refers to an (en)COder-DECoder pair.

Process by which a server automatically delivers content to a client according to the capacity of the connection. Users connected with higher bandwidths will get the higher quality and higher bandwidth data, whereas users connected with slower (e.g. modem) connections will get lower bandwidth data.

## Insert Track

Track pane/right-click

This command inserts a track above the track on which you right-click.



## Delete Track

Track pane/right-click

This command removes the track on which you right-click.

## Combine

[Clips pane](#)/right-click

[View/Audio](#)/right-click

This command combines all selected [clips](#). Right-click on a selected clip and choose the command.

See [Splitting and Combining Clips](#).

## Select All Siblings

[Clips pane](#)/right-click

This command selects all [clips linked](#) to the selected clip.

See [Working with Linked Clips](#).

## Group

[View/Console](#)/right-click on control or button

This command lets you [group controls](#) or buttons in the Console view so they work together in ways you specify.

See [Using Control Groups](#).

## Ungroup

[View/Console](#)/right-click on control or button

This command lets you remove a [control](#) or button in the Console view from its [group](#).

See [Using Control Groups](#).

## Set Start = Current

[View/Console](#)/right-click on control

This command lets you adjust the start value of a [control](#).

See [Using Control Groups](#).

## Set End = Current

[View/Console](#)/right-click on control

This command lets you adjust the end value of a [control](#).

See [Using Control Groups](#).

## **Audio Properties**

Alias this to Audio Event Properties in context dialog boxes



## Split (Audio)

[View/Audio](#) /right click/Split

This command lets you specify exactly where to break a selected [audio clip](#).

See [Splitting and Combining Clips](#).

## View Options

[Track View](#)/right click on Clips pane/View Options

This command lets you specify display options for clips.

See [Displaying Clips](#).

## Add Audio Track

[View/Console](#)/right-click/Track/Audio

This command lets you add an [audio](#) track to the console.

## Add Midi Track

View/Console/right-click/Track/MIDI

This command lets you add a MIDI track to the console.

## Edit Automation

[View/Console](#)/right-click module/Edit Automation

This command opens the Controllers Pane of the Piano Roll View so you can edit the automation data for the selected module.

See [Recording Automation Data](#).

## Hide Module

[View/Console](#)/right-click module/Hide Module

This command makes a module invisible. You can do the same thing by clicking to release the appropriate show button or by clicking the [Module Manager button](#) at the top of the console. To display the hidden module, click either the appropriate show button or the Module Manager button.

See [Configuring the Console](#).

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