

Metro

Getting Started Guide

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1 Getting Started

When you work with Metro to compose a piece of music, you are creating a Metro document file. This can include a song with up to 32 Sections, each of which can contain up to 99 tracks of MIDI or audio data; each MIDI track can contain 64 SubSections (placing a Section within another Section creates a “SubSection”) and Output definitions for 254 Outputs. Metro can simultaneously play up to 64 tracks of stereo audio files (audio performance is dependent on CPU speed and Hard Disk throughput). All of these elements of a Metro document file, and others, including references to audio files, are loaded or saved under a single file name, usually the title of the song. All processing of audio files in Metro is constructive and disk-based. In other words, Metro never alters or overwrites an original audio file, instead it creates a new file which is substituted for the original file.

The following section is a quick tutorial to get you set up and recording MIDI right away.

1.1 Quick Setup for OS X

For MIDI in OS X, Metro uses MIDI System Services (MSS) also referred to as Core MIDI. To set up Metro, we recommend that you first install OS X version 10.2 or greater. 10.2 contains the Audio MIDI Setup (AMS) program which is very useful for maintaining the locations of MIDI instruments and devices. The AMS program, found in the utilities folder on your hard drive, links MIDI programs with MIDI hardware. This section assumes you have successfully configured AMS so that your Studio Setup Document reflects your MIDI setup.

Note: When running in OS 10.1.5 you will not see useful device names for your MIDI equipment. Ports will be generically named and Outputs must be setup manually.

If you are not interested in OS 9 skip the next section and continue with ‘Quick Setup Continues’.

1.2 Quick Setup for OS 9

To set up Metro, we recommend that you first install OMS, the program that links MIDI programs with MIDI hardware. Install OMS from the Metro CD or www.opcode.com and follow the OMS directions to create a Studio Setup Document. However, you can run Metro without OMS. See “MIDI Setup Without OMS” below in the detailed setup section.

1.3 Quick Setup Continues

Once you have a Studio Setup Document, create a new Metro project, called a Metro document:

1. Select Save from the File menu.
2. Type a name for your Metro document, then click OK to save it to a drive or diskette.

Tip : You may want to create a folder named “Metro documents” within the documents folder.

Now create some outputs:

1. From the Special menu, choose Modify Outputs and Busses. The Modify Outputs and Aux Busses dialog box appears.

2. Click the 'Make Outputs reflect MIDI setup document' button. Metro duplicates the Outputs that are in your Studio Setup Document. **Note:** if running OS 10.1.5 you will need to create Outputs manually.

Select your recording criteria:

1. Choose Record Criteria from the Setup menu. The Record Criteria dialog box appears.
2. Check the data types you want to record. **Note:** Check the Audio checkbox if you want to record audio into Metro.
3. Click OK.

Set record and play preferences:

1. Choose Record/Play from the Setup menu. The Record and Play Setup dialog box appears.
2. Select how you want Metro to begin playing and recording: No Countoff, Countoff or Wait for first note before recording.
3. Under Record Mode, choose Replace or Overdub.
4. Click OK.
5. In the Switches menu, make sure Partial Track Recording is checked if you plan to do any punch recording.

Set up the metronome:

1. Open the Transport window (Command-B).

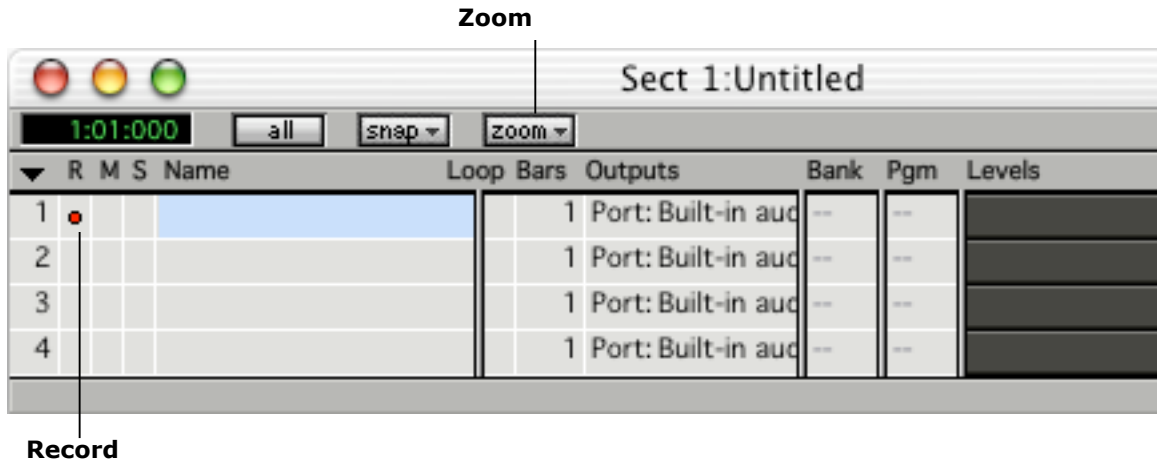


Metronome Door

2. Find the metronome icon in the lower right corner and click the little door on its lower right corner. The Metronome dialog box appears.
3. Click the factory settings button.
4. Click OK.

The metronome icon must be highlighted for the metronome to sound. Now pick a MIDI Output and track to record on:

1. Open the Tracks window (Command-K).



2. In the “R” column on the far left, click a track to record enable it.
3. In the Name column, option-click the name field, type a track name, and press Enter.
4. Click in the Bars column, type the number of bars you want the track to last and press Enter.
5. Choose an Output from the Outputs column popup menu (for right now, don’t select an Output that says “Port” in front of it).
6. Click the Pgm column, enter a program number, and press Enter.

Record the track you record enabled:

1. Press Option-R to start recording.
2. Play your controller.
3. Press the Spacebar to stop recording.

Play back your track:

1. Press the Spacebar to start or stop playback.
2. Press Return to return the counter to the beginning.

Save your recording:

Choose Save from the File menu.

Save your record and play preferences:

From the Metro menu (or under OS 9 the file menu), choose Preferences and click the Save button.

To set up audio recording, see “Setting Up Audio Outputs” on page 7 of Chapter 3. The next section covers more MIDI setup topics.

1.4 Detailed Setup

This section explains setup in more detail than the Quick Setup tutorial. It steps you through setting up your recording environment, covering the following topics:

- Opening Metro

- MSS/OMS MIDI Setup
- MIDI Setup Without OMS
- Setting Up MIDI Time code
- Selecting Record Criteria
- Setting Record and Play Preferences

Opening Metro

To open Metro:

1. Double-click the Metro application icon located in the Metro folder on your hard drive. If you are running Metro for the first time, you must be connected to the Internet to qualify your license.
2. Click OK.

Once Metro is open, the next step is to indicate your MIDI setup and recording preferences. We recommend that you install OMS before setting up MIDI.

MSS/OMS MIDI Setup

Metro's MIDI Setup dialog box appears differently when running under OS X, OS 9 with OMS or OS 9 without OMS installed. If you are not running OS X or OMS under OS 9, you may wish to skip this section of the Reference. Otherwise, Metro can derive its MIDI Setup and Output configuration directly from the Current Studio Setup document. This feature can save a considerable amount of time as far as MIDI device setup and initial configuration are concerned—especially when running multiple MIDI-savvy applications. When using a multi-port MIDI interface, such as those available from MOTU, Roland, Midiman and others, the Current Studio Setup allows you to custom-name each of your MIDI devices and ports. Custom device names allow Metro to refer to ports by names. When you choose MIDI Setup from the Setup menu, the MIDI setup dialog box appears, offering the following options:

Record From: You can select up to 8 different MIDI controllers (a MIDI Controller is just another way of saying a MIDI keyboard used for input) across multiple ports. Click and hold the mouse on the Record From pop-up menu and designate which MIDI devices/ports you wish to record from. Devices with a checkmark before their name are selected to record from.

Receive Sync From: Click and hold the mouse on the Receive Sync From pop-up menu to select the device/port from which Metro will receive timing data. The Receive Sync From setting is only relevant when you are in external sync mode. The Receive Sync From pop-up menu only displays devices designated to send MIDI Time Code or MIDI Beat Clock within the Current Studio Setup document. Metro can only receive sync from one device/port at a time.

Send Sync To: Click and hold the mouse on the Send Sync To pop-up menu to select devices/ports to which you want to send MIDI Clock. Devices with a checkmark before their name are selected to receive MIDI Clock from Metro. Send Sync To will function whether Metro is using its internal clock or is synced to external time code/MIDI clock. The Send Sync To pop-up menu only displays devices designated to receive MIDI Time Code or MIDI Beat Clock within the Current Studio Setup document. Metro can send sync to multiple devices simultaneously.

Clocks per quarter note: click the popup menu to tell Metro how many subdivisions you want each beat divided into.

MIDI Setup Without OMS

This section applies only to OS 9 users with serial interface. Metro is an Open Music System (OMS) compatible application. Metro runs with or without OMS, however OMS offers many advantages, especially when working with multi-port interfaces. You can download OMS at no charge from www.opcode.com.

MIDI setup without OMS:

1. Choose MIDI Setup from the Setup menu. The MIDI Setup dialog box appears.
2. Check the Port(s) that represents the Macintosh port(s) you hooked your MIDI interface to. If you have a single-port MIDI interface, you'll need to check either the Modem or Printer port depending on the Macintosh port to which you connected your interface. If you have a dual-port interface check both the Modem and Printer ports.
3. Below each Port you checked:
 - a. Click the Speed pop-up if you want to alter the speed (1 MHz is typical); hold down the mouse and choose from the pop-up menu.
 - b. Check MIDI Time Piece (below the Port check box) only if you have and are using a MOTU MIDI Time Piece on that port.
 - c. Click the Record button under the desired port in the MIDI Setup dialog box.
 - d. Click the Receive Sync button if you're syncing Metro to external timing sources.
 - e. Click the Send Sync button if you're syncing other MIDI devices to MIDI Clocks generated by Metro.
4. Select a timing resolution in Clocks per quarter note (pulses per quarter note) by choosing a setting from the pop-up menu.
5. Click OK.

Setting Up MIDI Time Code

If your MIDI interface can translate SMPTE Time code to MIDI Time Code, Metro can respond to SMPTE times.

1. Choose Time Code from the Setup menu. The MIDI Time Code Setup dialog box appears.
2. Select one of the following MIDI Time Code Types (frame rates):
 - 24 Frames per Second: Film frame rate standard
 - 25 Frames per Second: Black and white European video standard
 - 30/29.97 Frames per Second (drop frame): NTSC color standard
 - 30/29.97 Frames per Second (non drop): Black and white American video standard.
3. Enter a SMPTE offset time in the SMPTE start time fields, if you like. For example, if you want a Section to start 1 hour, 12 minutes, 13 seconds, 12 frames, and 3 bits into a film, you would enter a SMPTE start time of 01:12:13:12:03. Each of the 32 Metro Sections can have its own independent SMPTE Start Time. You'll see the current Section's SMPTE start time displayed in the Transport window. There are 80 bits per SMPTE frame.
4. Click OK.

Selecting Record Criteria

You must select the MIDI data types you want to record. If a data type is not checked, it will not be recorded. Once you select your Record Criteria, be sure to save your settings within any of the Preferences dialog panes. The preference panes can be found in the preferences dialog which is selected from the Metro menu in OS X and from the File menu in OS 9.

1. Choose Record Criteria from the Setup menu. The Record Criteria dialog box appears.
2. Check the data types you want to record.

3. Click OK.

Setting Record and Play Preferences

To set Record and Play preferences:

1. Choose Record/Play from the Setup menu. The Record and Play Setup dialog box appears.
2. Select how you want Metro to begin playing and recording:
 - No Countoff
 - Countoff
 - Wait for first note before recording
3. Choose a Record Loop Setup (you enable looping in the Transport window):
 - Song Building mode-- Song Building mode lets you listen to, and reject, passes as you record them, recording onto one or multiple tracks depending on whether you've chosen Overdub or Replace. The number of passes you can record depends on the number of MIDI record tracks you specify in the Record/Play dialog box (before Loop Recording, you must choose both a Record mode and a Loop Recording mode).
 - Multiple Take mode--Multiple Take mode lets you listen only to the pass you're currently recording so each "take" is not influenced by the last. Multiple take mode records onto one or multiple tracks depending on whether you've chosen Overdub or Replace in the Record Mode section of the dialog box. 1-8
 - "N" Tracks maximum--"N" Tracks maximum when loop recording tells Metro how many extra tracks to use for loop recording in Replace mode.
4. Choose a Record Mode:
 - Choosing Overdub tells Metro to record loop passes onto one track only.
 - Choosing Replace tells Metro to record loop passes onto separate tracks.
 - Choosing Input Quantize opens the Input Quantize dialog box, where you can choose how you want Metro to quantize notes as you record them. See Quantize under the Options menu for more information about quantizing.
5. Click OK.

Now that you have set your Record and Play preferences, put them to use in the Chapter 2 tutorial, "Your First Session with Metro."

2 Your First Session with Metro

This tutorial guides you through MIDI setup and configuration and introduces you to Metro's compositional environment. It is assumed that you are using Metro version 6.0.8 or greater, as some terminology from earlier versions have been changed. For this tutorial you need a Macintosh with 16 bit digital audio capabilities, a MIDI input device (such as keyboard synthesizer or MIDI controller), a multi-timbral sound module supporting the General MIDI standard, a Macintosh-compatible MIDI interface, and either MSS (MIDI System Services which is OS X's CoreMIDI) or Opcode's Open Music System (OMS) installed. Your MIDI devices must be properly configured and connected to your MIDI interface, and your MIDI interface must be properly connected to your Macintosh.

- Opening Metro and Setting Up MIDI (with MSS/OMS)
- Configuring Your Audio Setup
- Creating New Outputs
- Setting Up the Metronome
- Using MIDI Thru
- Customizing Metro's Window Layout
- Saving Preferences
- Creating a New Metro File
- Importing an Audio File
- Looping a Track
- Recording Your First MIDI Track.
- Editing Your First MIDI Track
- Recording a MIDI Bass line
- Recording Another Track

Opening Metro and Setting Up MIDI (with MSS/OMS)

To open Metro and set up MIDI:

1. Double-click the Metro application icon, which you'll find in the Metro folder on the drive where you installed Metro.
2. The MIDI Setup dialog box appears when you launch Metro for the first time, or if Metro does not detect a record source.
3. Click and drag the Record From pop-up menu to select a MIDI device you wish to record from. For the purposes of this tutorial, be sure to select your MIDI controller as a record source. A check mark next to a device in the pop-up designates it is selected for recording. Choose the Record From pop-up again for each additional MIDI device you wish to record from.
4. Choose a setting for Clocks per quarter note using the pop-up menu. Clocks (sometimes called pulses or ticks) per quarter note is a standard timing resolution. This setting determines the timing resolution for a note or other MIDI event. (960 clocks per quarter note is the highest timing resolution Metro can be set to.)
5. Click OK to close the MIDI Setup dialog.

You have configured Metro's MIDI recording options. Don't worry about the Receive Sync From and Send Sync To options in the MIDI Setup dialog, these features are only applicable when working with MIDI Time Code or MIDI Clock, which are not relevant for the purposes of this tutorial.

Configuring Your Audio Setup

Metro supports digital audio on Macintosh computers. For the purposes of this tutorial, connect your Macintosh audio output to an input of your mixing board or some other source set up for monitoring the output signal.

1. Choose Digital Audio from the Setup menu. The Digital Audio Setup dialog box appears.
2. Under For Metro Digital Audio, do one of the following:
 - Click Direct Support and choose Built-in from the Direct Support popup menu. This configures Metro to use either Core Audio (OS X) or Sound Manager's (OS 9) built-in audio capabilities. Metro requires Sound Manager 3.2 or higher.
 - Click Direct Support and choose your external soundcard from the popup menu.
 - Click ASIO (OS 9 only) and choose your external soundcard from the popup list of ASIO devices, if you have downloaded and installed your soundcard's ASIO driver. We recommend ASIO as a first choice.
3. Set the Sample Rate to 44100 and the Bits to 16 (see your soundcard's documentation for more options for sample rates and bits).
4. Select the Stereo checkbox so that Metro will record stereo interleaved AIFF audio files.
5. Click *Device Options* to open either your sound card's control console (if any) or the Sound Manager Parameters dialog box. This control console looks different for each sound card.
6. Click OK. Back in the Digital Audio Setup dialog box, make sure For connecting to Deck™ II is unchecked.
7. Click OK to close the Digital Audio Setup dialog box. You have set Metro to work with either your Mac's internal soundcard, an external soundcard, or an external soundcard with an ASIO driver.

The next step in your first session is Creating New Outputs.

Creating New Outputs

Now that your Record From devices are configured, the next step is to create some Outputs. In Metro, "Outputs" abstract data in a way that makes it easy to control the output (and sometime input) of data. Ideally, there should be an Output representing every MIDI channel associated with each of your MIDI devices, and one Output for each Audio Track. For example, a 16 channel multi-timbral MIDI device will require 16 Outputs, one for each MIDI channel. Metro's Outputs allow you to easily redirect a track's output to a specific MIDI channel. Outputs also determine whether a track is an audio or MIDI track. An audio track is a track whose Outputs first port is an audio output port. A MIDI track is a track whose first output port is a MIDI output port. MIDI notes and other MIDI events within a track are re-channeled by applying the assigned Output's channel information. Outputs can be named so that they reflect the device and channel of your MIDI devices. Metro's Outputs can also be automatically derived from your Studio Setup Document.

To automatically create new Outputs:

1. Choose Modify Outputs and Busses under the Special menu. The Modify Outputs and Aux Busses dialog box appears.
2. Click the Make Outputs reflect current MIDI setup document button, then click OK.

You have automatically created Outputs. Open the Mixer window and notice there is now a fader representing each MIDI channel of all of your MIDI devices. Assign Metro Outputs to tracks

within the Tracks and Graphic Editor windows.

The Mixer window is where mixing takes place and perhaps should be called the mixer window. It is also where you control mix automation data. Use the Mixer window to mix volume, pan and other track settings.

Setting Up the Metronome

Metro's Metronome helps you record tempo-oriented MIDI and audio parts. You can configure Metronome settings to use built-in sounds or trigger external MIDI devices. For the purposes of this tutorial, let's set up the Metronome to trigger an external MIDI sound module.

To set up the metronome:

1. Open the Transport window (Command-B) and click the Zoom box to expand the window to its full size, if necessary.
2. Click the door on the Metronome button to open the Metronome dialog box.
3. Select the MIDI device you wish to use for your MIDI Metronome under the Port menu. In this case, choose your General MIDI sound module as a MIDI Metronome source.
4. Enter Channel 10 in both the fields of the Bar and Beats Channel settings. Channel 10 represents the drum track on General MIDI modules.
5. Enter your preferred pitch settings in both the fields of the Bar and Beats Pitch settings. MIDI notes D#4 and E4 work well as Bar and Beats settings, respectively. You can also enter a note value when the Bar or Beats field is active by playing it directly from your MIDI controller.
6. Click OK to close the dialog box.

You have set up Metro's Metronome. Use the Metronome as a tempo reference when recording new tracks into Metro.

Using MIDI Thru

Metro's MIDI Thru controls which module you hear when you play your MIDI controller. You can play any of your MIDI sound modules without having to reroute cables or switch channels on your MIDI devices. MIDI data is sent from your MIDI controller through Metro and rerouted out to any of your MIDI devices. When you work with a MIDI controller and one or more sound modules, use MIDI Thru to select which sound you'll hear when you play your controller. We recommend turning off local control on your MIDI controller when using MIDI Thru as the primary means to trigger your sound modules. Click the Local Control Off button in the Mixer window to disable local control. Open the Mixer window by pressing Command-I.

Let's try an example to learn more about the capabilities of MIDI Thru:

1. Open the Transport window (Command-B) and expand it to its full size, if necessary.
2. Click and drag the MIDI Thru popup and set it to Off. This disables MIDI Thru.
3. Open the Mixer window and click the Local Off button located above the Master Fader. Now play your MIDI controller. If your controller has its own internal sounds, you should NOT hear the instrument playing.
4. Within the Transport window, click and drag the MIDI Thru pop-up and select your General MIDI sound module. The popup window closes.
5. Choose channel 10 from the MIDI channel popup directly below (or to the right of) the MIDI Thru device name you selected.

6. Play your MIDI controller and you should hear the drum sounds associated with channel 10 of your General MIDI sound module.
7. Switch the MIDI Thru channel to 2. Now play your MIDI controller and you should hear the sound on channel 2 of your General MIDI device. When you record new MIDI tracks, use MIDI Thru in Metro to route data from your MIDI controller to any channel of any of your MIDI devices. Enable *Automatic MIDI Thru* in the Switches menu to instruct Metro to automatically change the MIDI Thru device to match the Output channel and port setting of the record-enabled track, when you use Outputs. If you have a port directly assigned to track, Metro will set the MIDI Thru to *all*. This setting sends events through the computer without any re-channeling.

The next step in your first session is Customizing Metro's Window Layout.

Customizing Metro's Window Layout

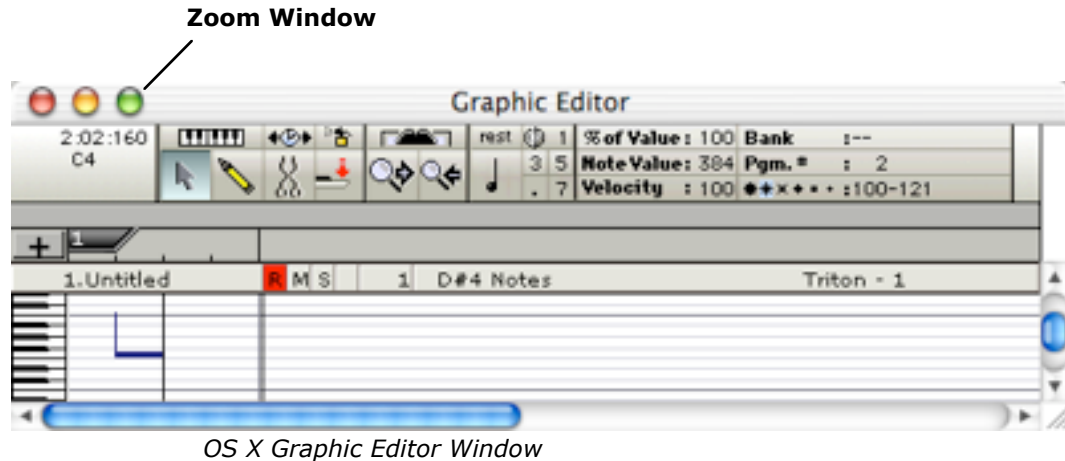
Take this opportunity to resize Metro's windows to better suit your individual monitor display size. As the default window Metro configuration demonstrates, it's good to leave the Tracks, Graphic Editor, Transport and Sections windows exposed.

Let's try an exercise in window management:

1. Open the Mixer window (Command-I) and the Tracks window (Command-K).
2. Drag the Tracks window so that it covers part of the Mixer window but does not cover the faders.
3. Metro allows you to manipulate the faders and buttons in the Mixer window without making the window active.
4. Drag one of the faders up and down without activating the Mixer window. Be sure to drag from the thumb of a fader, otherwise you may activate the Mixer window.
5. Open the Graphic Editor window (Command-J), and click the Zoom Window box to expand the window to full size.



OS 9 Graphic Editor Window



6. Click the Graphic Editor's Zoom Window box again to return the window to its original position. This is a handy technique for optimizing screen real estate.

Try the same procedure with the Tracks window and other Metro windows. Use the Command keys to make the Tracks (Command-K), Sections (Command-Y) or Graphic Editor (Command-J) window active. Look in the Windows menu for a list of window shortcut keys. Of course everyone works in a unique way. This particular layout exemplifies only one approach designed to get you quickly configured and feeling comfortable in a workable environment. Feel free to explore your own configurations to better suit your specific needs. The next step in your first session is Saving Preferences.

Saving Preferences

With everything now in place and properly configured, let's Save Preferences so that your custom environment awaits you each time Metro is launched. Let's also set one more preference in the process.

To save preferences (and set selection color):

1. OS 9 users, choose *Preferences* from the File menu. OS X users, choose *Preferences* from the Metro menu.
2. The Preferences dialog box appears. Click the General tab.
3. While the General Preferences dialog box is open, let us also configure how Metro displays selected notes. Metro displays notes by color according to MIDI channel, 16 channels display as 16 colors. When working with MSS/OMS and Metro Outputs, channel data associated with individual MIDI events becomes irrelevant (since all channel data on a track is reassigned on the fly by Metro Outputs). Let's make better use of color by configuring Metro to display selected note data by color.
4. In the Note Colors field click the Use Color for Selection Info button. This instructs Metro to use a color to denote selected note and drum events, the default selection color is red.
5. Click the Save button to save all of your configuration settings and exit the dialog box.

Remember that saving Preferences stores the parameters of Metro's current state as the default configuration. Metro Outputs, Metronome settings and other relevant setup information are saved as part of the Metro Preferences file. There is no need to save preferences to save either window positions or the jukebox file list as they are automatically saved upon exiting.

Creating a New Metro File

Metro always creates a new and empty session when launching the application. Metro loads the empty session into RAM and saves it to disk as a Metro file, after you select Save from the File menu. To create a Metro file:

- a. Select Save from the File menu.
- b. Type a name for your Metro file, then click OK to save it to a drive or diskette.

Importing an Audio File

Metro offers a variety of methods of MIDI and digital audio recording, including linear, partial track, punch-in and step-entry modes. Metro's arrangement features facilitate linear or nonlinear section-based arrangements. This section of the tutorial focuses on recording and editing a linear multi-track arrangement. Let's start out by constructing some tracks around an existing drum loop sample that was saved in AIFF format.

To import an audio file:

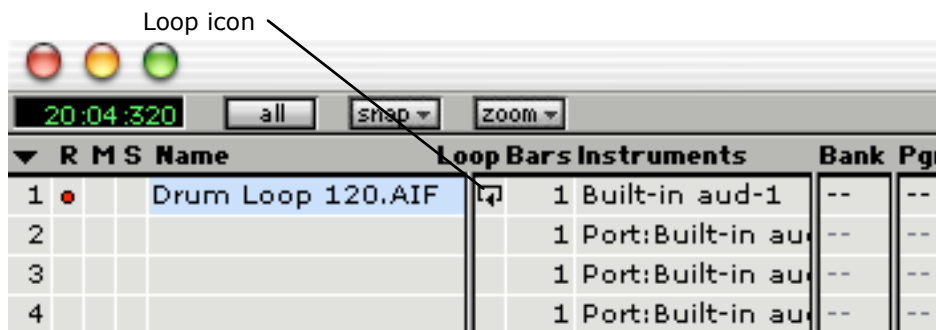
1. Choose Import Audio File from under the File menu.
2. Locate the folder called Drum Sounds folder and open the file named Drum Loop 120.AIF.
3. Click the Convert button to import the file into the active Section.

The next step in your first session is Looping a Track.

Looping a Track

To loop a track:

- c. Within the Tracks window, click the Loop icon next to the track named "Drum Loop 120".



- d. Set the track length (in the Bars column) for "Drum Loop 120" to 2 bars. Looping a track causes it to repeat over and over from the beginning to end. Loop length is determined by the number in the Bars column (next to the Loop column).

Recording Your First MIDI Track.

From within the Tracks window, double-click the track named "Drum Loop 120" to display it within the Graphic Editor window. Notice the audio file display within the Graphic Editor. Now we will record a MIDI track to add a 16th note high-hat figure over the top of the drum loop sample. The file Drum Loop 120 plays back at 120 beats per minute, which is Metro's default

BPM configuration. Remember, MIDI channel 10 is designated as the drum channel for all General MIDI sound modules.

Before we record, let's configure Metro's count off time:

1. Choose Record/Play from the Setup menu. The Record and Play dialog box appears. Use it to configure Metro for record and play operations such as count off, record mode and input quantize.
2. Enter 1 in the Count off "N" bars before recording field. This sets Metro to play a 1 bar count off before recording.
3. Click OK to exit the Record and Play dialog box.
4. Open the Transport window (Command-B) and expand it to its full size, if necessary.
5. Choose *Countoff* from the popup menu in the far right portion of the Transport window.

This instructs Metro to play a count-off before recording. Count-off time is 1 bar, the number you specified in the Record/Play dialog. Now let's record our first MIDI track:

1. Within the Tracks window, click on the "R" column to record-enable track 3.
2. In the track 3 Outputs column, click the popup menu and choose the Output corresponding to Channel 10 of your General MIDI device.
3. Click the Record button in the Transport window to begin recording. Remember, there will be a one measure count-off.
4. After the 1 bar count-off, play a high-hat figure to complement the drum loop. MIDI notes F#1, G#1 and A#1 are assigned to high hat sounds on the drum channel of General MIDI sound modules.
5. Click the Stop button in the Transport or press the spacebar after you've played in at least 2 bars of a high-hat figure.
6. To name your newly recorded track, Option-click on the name of track 3 and type in the name "high-hat 16ths", press Return to enter the name.

Editing Your First MIDI Track

Next we will edit and loop the high-hat track. Remember, the sample Drum Loop 120 is a 2 bar loop. Let's modify the high-hat track so that it plays as a 1 bar loop:

1. Double-click the name of track 3, "high-hat 16ths," to view it within the Graphic Editor window.
2. Choose Select All from the Edit menu to select all of the data within track 3.
3. Press the Shift key and click Bar 1 in the time line of track 3 within the Graphic Editor. This deselects Bar 1 from the active selection.
4. Choose the Delete from the Edit menu, or press the Delete key, to delete the active selection. This shortens the high-hat track to a length of 1 bar.
5. Click the Loop field in the track's title bar to activate track looping. The track length should already be set to 1 bar.

Track 3 is now set to a 1 bar loop. Looping is an effective compositional tool, which, among other things, allows you to set up unique cross rhythms and motifs that cycle in and out over time.

Now let's Quantize your high-hat part so that it plays in perfect sync with the 120 BPM drum loop sample:

1. Within the Tracks window, double-click the track "high-hat 16ths" to view it in the Graphic Editor.

2. Choose Quantize from the Options menu. The Quantize dialog box appears.
3. Enter 120 in the Quantize to field. 120 clocks represents a 16th note value when Metro is set to 480 clocks per quarter note. Quantization shifts individual MIDI notes and events within the selection to the nearest beat boundary that you specify, 16th notes in this case.
4. Click OK to close the Quantize dialog box and process the selected MIDI data.

Click the Play button in the Transport or press the spacebar to audition the quantized high hat part in tandem with the drum loop. Notice how the Quantize operation added machine-like precision to the feel of your high hat part. Quantization has mathematically perfected the rhythm of your high hat part. This is an example of quantization in its most raw and basic sense. Metro features other variants of the Quantize operation, such as Swing Feel, Strength and Groove Quantize.

Recording a MIDI Bass line

OK, as the next step, let's add a 4 bar MIDI bass line over top of the drum loop and high hat tracks:

1. From within the Tracks window, click the R column to record enable track 4 for recording.
2. Click and drag the Output popup on track 4 to assign it to Channel 1 of your General MIDI sound module. The Transport will automatically switch the MIDI thru to correspond to the Output you just selected.
3. Click the Play button in the Transport window or press the spacebar to start playback. As the sequence plays, select a bass sound on your General MIDI sound module and work out a 4 bar bass line to go along with the drums.
4. Click the Stop button in the Transport or press the spacebar once you're figured out your part.
5. Click the Record button in the Transport or press Option-R to begin recording your MIDI bass line to track 4. (Remember, the count off is set to 1 bar.)
6. Click the Stop button in the Transport or press the spacebar after you've played in at least 4 bars worth of material.
7. Within the Tracks window, click the Loop button to loop the bass track and specify 4 bars for the track duration.
8. Choose Save from the File menu. This saves the contents of the active session to the current Metro file.

Recording Another Track

Now lets add an 8 bar melodic or chordal figure on top of the existing drum and bass tracks:

1. From within the Tracks window, click the R column to record enable track 5 for recording.
2. Click and drag the Output popup on track 5 to assign it to Channel 2 of your General MIDI sound module. Remember, each new sound must be assigned to an unused MIDI channel.
3. Click the Play button in the Transport window or press the spacebar to start playback. As the sequence plays, select a melodic lead or chordal sound on your General MIDI sound module and work out an 8 bar passage to go along with the drums and bass. Click the Stop button in the Transport or press the spacebar once you've figured out your part.
4. Click the Record button in the Transport or press Option-R to begin recording your MIDI melodic or chordal line to track 5 (remember, the count off is set to 1 bar)

5. Click the Stop button in the Transport or press the spacebar after you have played in at least 8 bars worth of material.
6. Within the Tracks window, click the Loop button to loop track 5 and specify 8 bars for the track's duration.
7. Choose Save from the File menu. This saves the contents of the active session to the current Metro file.

Congratulations! You've just completed your first piece done with Metro.

Continue on with the next tutorial, "Getting Deeper", to further explore Metro's compositional tools.

3 Getting Deeper

This tutorial builds upon your work in the tutorial “Your First Session with Metro”. In this tutorial we’ll cover the following topics:

- Customizing Program Names
- Drum Machine-style Recording
- Creating a Section
- Drum Grid Recording
- Drum Grid Editing
- Adding Tracks within the Graphic Editor Window
- Plugging In and Testing a Microphone
- Setting Up Audio Outputs
- Latency and the Sound Manager
- Changing Audio Volume
- Adding Effects in Real-time
- Adding Offline Effects
- Arranging with Subsections

Customizing Program Names

Metro allows you to create custom Program Names to track program change messages sent to your MIDI devices. It’s helpful to work in a MIDI environment where names are substituted for numbers; Metro can even alphabetize Program Names when displayed in a pop-up menu. General MIDI devices incorporate a universal patch naming scheme. Let’s configure Metro to display the General MIDI patch names contained within your GM-compatible sound module:

1. Choose Program Names from the Setup menu. The Program Names dialog box appears.
2. From the Channels for port: menu, select the port corresponding to your General MIDI-compatible device.
3. Click the Open button and locate the Metro Instruments File named “General MIDI”, which is found in the Program Names folder within the folder containing the Metro application. The “General MIDI” file contains the names of all programs within a General MIDI compatible sound module.
4. Click the All button in order to assign all 16 MIDI channels of the designated port to the General MIDI Patches Program Names file.

Click OK to close the Program Names dialog box. Metro is now configured to display the Program Names of your General MIDI-compatible instrument. Metro substitutes Program Names, instead of numbers within its Program Name fields. Choose Preferences and select Save in order to save Program Names within your custom Metro environment.

Drum Machine Style Recording

Drum Grid editing coupled with drum machine-style recording comprise an excellent tool set for recording and editing rhythmic loops in Metro. Real-time MIDI editing keeps the creative juices flowing, allowing you to edit without having to stop the recording process. The Record and Play Setup dialog box configures Metro for a variety of record loop modes including Song Building mode, which is a great way to emulate drum machine-style recording. Loop Recording of audio

tracks is also supported provided that you do not use overdub mode. In the previous tutorial you used this same dialog box for setting up a count-off time. Now let's configure Metro's record mode:

1. Choose Record/Play from the Setup menu. The Record and Play Setup dialog box appears.
2. Click the Song building mode button to select your record mode setup.
3. Enter 1 in the field for "N" Tracks maximum when loop recording. This sets Metro to record each of its loop passes onto a single track.
4. Click the Overdub button to select your Record mode setup. Selecting Overdub as the record mode instructs Metro to layer each record pass on top of one another.
5. Click OK to enter your new settings and close the dialog box.
6. Open the Transport window (Command-B) and expand its window to full size, if necessary.
7. Click to select the Rec checkbox within the Looping display. This enables record looping. You've now configured loop recording in Song Building Mode, which overdubs successive record passes onto a single track. This is exactly the formula needed to emulate drum machine-style recording.

Creating a Section

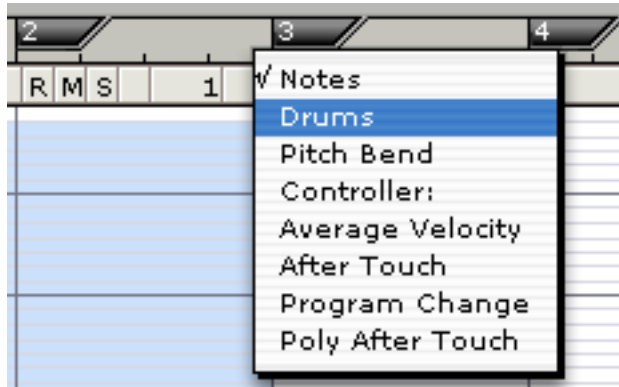
Let's continue with the Metro file that we created in "Your First Session with Metro." First, let's create a new Section to work with. Remember, each Metro Section is a chunk of musical time containing up to 99 tracks. Sections are independent of each other, but they can be linked together and superimposed, which we'll explore later in this tutorial in Arranging with Subsections. To create a Section:

1. Choose *Sections* from the Windows menu, or press Command-Y. The Sections window appears, displaying the name of your Metro 3-4 document at the top of the window and your Sections in the numbered list.
2. Click Section 2, which is currently labeled "Empty". This instructs Metro to make Section 2 the active Section for recording and playback; this also changes the Section name to "untitled".
3. Double-click the name of Section 2 in order to name it. Type in the name "Vamp" in the name field and press the Return key.
4. Now that you have created a new Section to record in, let us move to the next step in this tutorial, Drum Grid Recording.

Drum Grid Recording

Drum Grid recording within the Graphic Editor window is much like having multiple tracks displayed within a single track. However, these tracks are optimized for the display of drum data. Within the Drum Grid display, Drum Names represent individual drum sounds; you can Mute and Solo Drum Names just like you can Mute and Solo individual tracks within a Section. Click a Drum Name to select its contents across a track. A Drum Grid is to a track what a track is to a Section. Now let's record and loop a drum track:

1. Within the Tracks window, click and drag the Output pop-up on track 1 and assign it to channel 10 of your General MIDI compatible sound module. Channel 10 denotes the drum channel on GM-compatible sound modules.
2. Double-click the empty name field of track 1 to open it within the Graphic Editor window.
3. Within the Graphic Editor, choose Drums from the data-type display popup in the track's title bar, or press the d key. This changes the track display from Notes to Drums.



4. Option-click the Track name in the track title bar of the Graphic Editor window in order to name it. Type the name "MIDI Drums" and press the Return key.
5. Choose Set Selection from the Edit menu.
6. In the Set Selection dialog box, enter a Start time of 1 Bar, 1 Beat and 0 Clocks, and an End Time of Bar 3, Beat 1 and Clock 0, then click OK. This sets a 2 bar selection across measures 1 and 2 (SE user's can, from the Graphic Editor, simply click in the black part of bar 1 and drag to bar 2).
7. Press Option-R to begin recording. The Record Loop dialog box appears.
8. After a 4 beat count-off, Metro begins to loop record for a length of 2 bars. Play drum patterns and begin to build a rhythmic loop. You may wish to begin with a kick drum pattern, then add snare, high-hat and then further embellishments.
9. Click the Pause Recording button in the Record Loop dialog box in order to experiment with parts over the existing loop without recording them to a track. Press the Record button in the dialog box in order to drop back into recording.
10. Notice how the Drum Names stack up across the Drum Grid display after each record loop pass. You can even edit the drum sounds without having to stop recording.
11. Press the spacebar once you're happy with the content of your loop.
12. In track 2's title bar of the Graphic Editor window, just to the right of the S button, click to select the Loop icon, and type 2 bars as the track length in the field just to the right of the Loop icon. You have loop-recorded a short drum track and set it to loop on play-back.

Drum Grid Editing

The Drum Grid displays note events as Drum Strikes corresponding to Drum Names (or MIDI note numbers) displayed across their own row. Drum Strikes denote ranges of note velocity, the larger the Strike, the louder it will sound. Try these convenient editing operations:

- Click a Drum Name to select it across the entire duration of the Drum Grid. All Drum Strikes associated with the Drum Name become selected. Clicking a Drum Name also plays the corresponding drum sound out the current Output's port.
- Shift-click to select multiple noncontiguous Drum Names.
- Click to the left of a Drum Name to Mute and Solo individual drum sounds within the Drum Grid. Click the Drum Set name to unmute and unsolo all Drum Names.
- Click the M button within the Drum Grid's title bar to Mute the entire track. Track Mute and Solo affect the entire contents of the Drum Grid display.
- Drag a Drum Name up or down to reposition it within the Drum Grid display.

For more information, please refer to Working with Drum sets.

Adding Tracks within the Graphic Editor Window

Let's record a MIDI bass part to go along with the drum track. We'll stay within the Graphic Editor window to perform the bulk of the new track operations. First, let's add a track within the Graphic Editor window:

1. Choose Graphic Editor from the Windows menu, or press Command-J.
2. Click the Add Track icon (the "+" symbol in the upper left corner of the Graphic Editor window) to add a new track into the Graphic Editor display. This displays track 2 (in Notes display mode) below track 1's Drum Grid display.
3. Disable record loop mode and reconfigure Metro's Record/Play dialog to turn off Overdub mode:
 - a) Choose Record/Play from the Setup menu.
 - b) Click the Replace button to change your Record mode setup back to Metro's default setting. Overdub mode was only required for the loop based recording from the previous example.
 - c) Open the Transport window (Command-B) and deselect the rec button



in the Looping section. This disables record looping.

4. In the Graphic Editor window, click the R button in track 2's title bar to enable the track for MIDI recording.
5. In the middle of track 2's title bar, click and drag the Output popup to select channel 2 of your General MIDI sound module. Be sure the Automatic MIDI Thru is enabled under the Switches menu.
6. Click the Program popup in the upper right part of the Graphic Editor window to select a bass program for channel 2 of your General MIDI sound module. Remember, you can select programs by name.
7. Press Option-R to begin recording.
8. Play a 4 bar bass line after the 4 beat count-off.
9. Press the spacebar once you've finished recording.
10. In the title bar of track 2, just to the right of the S button, click to select the Loop icon, and type in 4 bars as the track length in the field just to the right of the Loop icon.

Now you have a drum and bass vamp that you can use in your final arrangement. Choose Save from the File menu to save the new tracks in the current session. Notice that the Graphic Editor window displays your bass line underneath the Drum Grid (you may need to use the vertical scroll bars to locate the bass notes). The Graphic Editor window allows up to 16 tracks from the current Section to be viewed simultaneously.

Plugging In and Testing a Microphone

Let's flesh out our song by recording some audio into it. For this exercise, the audio can be of anything you like; you could record snapping your fingers, counting along into a microphone, playing some notes on a guitar or bass, or even trying out your singing voice. All you need is some kind of audio signal to be plugged into your Mac's audio input (usually marked with a microphone symbol) or your dedicated sound card. We will start out by plugging a microphone into your Mac sound card. If you have a sound card from a separate company, follow the directions that came with that sound card.

To plug in and test a microphone:

1. Locate the microphone input on the back of your computer. It has a microphone icon above it or next to it. Look at the connection jack on the end of your microphone: if it came with your computer, it should have a one-eighth inch jack that will plug right into the microphone input.
2. If you have a larger, one-quarter inch jack or guitar cord, plug the one-quarter inch microphone jack or guitar cord into a one-eighth inch adapter.
3. Plug in the microphone, if you haven't done so.
4. OS 9 users:
 - a. From the Apple menu, choose Simple Sound > File > New. The Simple Sound recording dialog box appears.
 - b. Click the Record button and speak into the microphone or play your guitar.
 - c. Click Stop and click Play.
5. OS X users:
 - a. Select System Preferences from the Apple menu.
 - b. Click on the Sound icon.
 - c. Select the input tab and verify that the input level is showing an audio signal.

You should hear your recording coming from the Mac's speakers (make sure they are on and turned up). If you don't hear anything, check your connections and repeat steps 3-5. You may need to adjust Volumes, Sound Out, or Sound In, in the system Control Panel.

Note: OS 9 users should open the Sound window by choosing Apple menu > Control Panels > Sound (not Monitors and Sound). Also, make sure no Mute buttons are checked in the Sound window.

Setting Up Audio Outputs

Let's set up an Output to record on the Audio Port:

1. In the Special menu, choose the Modify Outputs and Busses command. The Modify Outputs and Aux Busses dialog box appears.
2. Click Add, and check the checkbox below it.
3. We want to add one Output, so type a one in the field to the right of the checkbox.
4. In the Port popup menu (to the right of the words "Output on"), choose your Audio device.
5. In the Named field, name it "recording test" or something similar. Leave the Channel selection at the default, 1, and click OK to add the Output.
6. Notice that in the Outputs popup in the Tracks window, there is now an Output called recording test-1. Assign this Output to a track by selecting it from the popup.
7. Make sure that the track you selected is record-enabled (with a dot in the "R" column).

Your First Audio Recording

Before we start recording, we should make sure that there is a good audio signal coming in. You might find it helpful to expand the Levels section of the Tracks window to get a more precise level reading. To do this, move the mouse pointer over the vertical bar that marks the right side of the Levels column until it turns into left and right arrows indicating that the divider can be moved. Click and drag it to the right to expand the meters as much as you like. To check

Metro's audio recording level:

- Plug in your microphone or other device. You should see the meters responding to your input.

If you can see the input, but cannot hear anything, perform the following steps to check your audio configuration:

1. From the Setup menu choose Digital Audio. The Digital Audio Setup dialog box appears.
2. OS 9 Users:
 - a. Click Device Options. The sound manager Parameters dialog box appears.
 - b. Click Play Through. If your signal distorts, you can adjust the gain of the incoming signal here as well. See Digital Audio Setup for more about the audio setup dialog. For our purposes here, we can move forward by clicking OK in both dialog boxes.
3. OS X Users:
 - a. Verify that your device is selected in the direct popup and the sample rate and size is set correctly.
 - b. Verify that you get a signal in the input section of the sound panel of system preferences.
 - c. Click Device Options. The Core Audio dialog appears. Verify that Output Only Mode is not checked.

Now let's make a recording:

1. Make sure that the track you selected is record-enabled (with a dot in the "R" column).
2. Press Option-R and record some audio.
3. Press the spacebar to stop recording.
4. Press the spacebar again to play your recording.

Notice in the Tracks window that Metro builds an Audio Display for the recorded audio information. Remember that you can always Undo the recording if you make a mistake (Command-Z). Metro rebuilds the audio display for you periodically while you work with audio to reflect your edits, tempo changes and new audio recordings. If you notice a slight time gap before your audio starts playing see the topic Latency. If not, go on to Changing Audio Volume.

Latency

When you record audio you may find that your audio is slightly offset from where you thought it should be. This is called latency. It is a limitation of some audio devices. If you notice some offset audio, you'll need to make subtle adjustments to the start times of new audio tracks. These minor adjustments are easily done with the Delete Time (Shift-Command-D) and Insert Time (shift- Command-I) selections in the Edit menu. Here's some more detail about what to do if you notice any timing problems with your new audio track and the previous tracks:

1. In the Tracks window, double-click the name of your audio track. The Graphic Editor window appears, displaying your new audio track.
2. Use the scroll bar at the bottom of the window to scroll to a region of blank space that comes before the audio waveform.
3. Use the Select tool (the pointer) in the Graphic Editor to click and drag a small amount of blank space.
4. From the Edit menu, choose Delete Time or Insert Time to reconcile the start times. Experiment until the timing sounds acceptable. There will be many occasions like the

one above when it will be helpful to Zoom all the way in to the sample level on a waveform in the Graphic Editor in order to make precise edits.

Let's do it now to get a feel for it:

1. Select a small section of your recorded audio with the Select tool.
2. Click the Magnifying Glass Icon with the plus sign or press Command- + to Zoom in on the waveform. You will notice the wave getting more and more detailed as you do.
3. To Zoom back out again, click the Magnifying Glass with the minus sign or press Command- - to Zoom back out to your desired level.

If you select data in a MIDI track instead of an audio track, Metro will always let you zoom in and out, but won't burrow all the way down to the audio sample level; this actually saves some time, since Metro doesn't have to calculate the wave's image each time you zoom in to look at MIDI.

There is a better solution for permanently adjusting any discrepancies in latency in Metro. Audio track alignment can be adjusted to the sample from the advanced sub-dialog of the Digital Audio dialog.

Calibrating Your Audio System

In order to ensure sample accurate recording you may need to calibrate your audio system. Note that if you change input types (from analog to SPDIF for example) you may need to re-calibrate. The following are the steps needed to do this calibration (If your MIDI output is connected to your mixer this also demonstrates a way to convert MIDI to audio).

1. Make sure that your audio output is sending a signal to your audio input. For example, send your Core Audio output to a mixer and send the mixers output to your Core Audio input.
2. Choose new from the file menu and Import an audio file to track one. Any audio file is sufficient although a more percussive file such as "Drum Loop 120" will work better.
3. Make sure the track with the imported audio has an Output assigned that outputs to the audio port you want tested and that the input is connected properly.
4. Record enable track two and assign an audio Output to it. Press return and play and verify that you have both an output signal on track one and an input signal on track two by observing the track level meters.
5. Press return and record. After a few seconds press stop. Arrange your graphic editor so that track one is on top and track two is on the bottom.
6. Make sure that Zero Crossings is off in the switches menu. Zoom in as far as possible and make a selection so that a particular peak of track one aligns with the corresponding peak of track two.
7. Calculate the difference between to the peaks.

Metro SE Users:

- Note the sample time displayed in the top left corner of the Graphic Editor when selecting the peaks and then subtract track one's sample time from track two's.

Metro Users:

- Select set selection from the edit menu. Click on capture current selection and copy the number of samples from the duration field.

8. Paste this number into the Audio Track to Track alignment field of the Advanced Dialog accessed from the digital audio setup dialog of the setup menu.

Successive recordings will yield sample accurate audio tracks.

Changing Audio Volume

Volume levels for audio tracks in Metro can be changed several ways. You can change the volume in real time (maintaining the original audio data) using the faders in the Mixer window. To make a permanent change to the audio data (known as an offline edit), you can use commands in the Edit menu's Audio submenu: Scale Amplitude, Fade, and for non SE users Normalize, and Group Normalize.

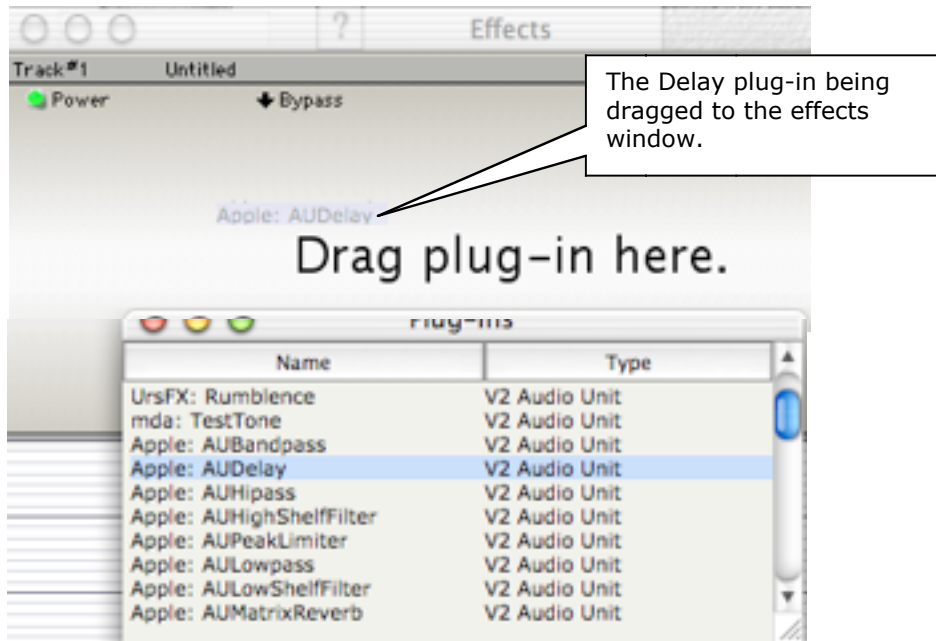
For this tutorial, SE users should skip to the next section because we will investigate only one of the methods mentioned above, namely the Normalize command. This command allows you to maximize the volume in any recorded audio, helpful before you begin mixing a song. It does this by searching through the current audio selection to detect the highest amplitude peak, then scaling the rest of the audio up to match. You can control whether Metro scales it all the way up to its maximum amount with the Normalize dialog box and the Change audio to "N"% of maximum field. The Change audio to "N"% of maximum field accepts values between 1 and 500, a 100% amplitude setting scales the detected amplitude peak to 0 dB (to the maximum volume before distortion, or "clipping," occurs). The overall affect of applying the Normalize command increases perceived loudness across an audio selection. To normalize your audio, use these steps:

1. Select a small portion of audio.
2. Choose Audio and Normalize from the Edit menu and see what it does for your waveform and the playback volume!

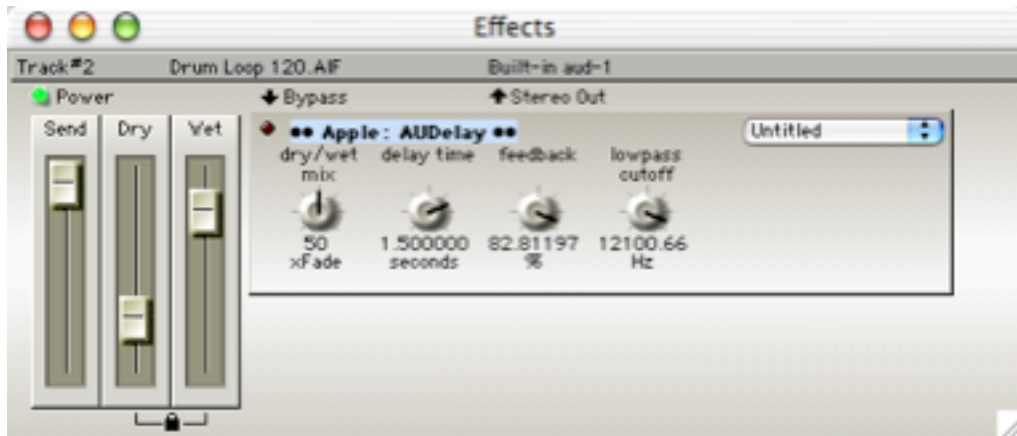
Adding Effects in Real-time

And now for the real fun stuff: effects! Metro supports a wide range of standard audio effects: AudioUnits, VST, and Adobe Premiere Plug-ins. Let's add some from Apple Computer's built in AudioUnits onto one of our audio tracks. First, make sure that an entire audio track is selected by activating it in the Graphic Editor or clicking on its track number in the Tracks window. Once the track has been selected, choose Plug-ins from the Windows menu (or type command- 9) and Effects from the Windows menu(or type command-0). Feel free to move these windows around to suite your screen layout. To add an effect to your track in real-time:

1. Click one of the plug-ins from the plug-in window and drag it to the effects window. For this experiment, click the Apple: AUDelay Plug-in and drag it to the effects window.



Its parameters will appear in the Effects window.



2. Play your track (or you might just want to Cue a section of your track) and adjust the Wet/Dry mix and the other parameters to get a delay sound you like.
3. Try adding another effect and playing around with it, too. Notice that the Bypass button lets you quickly turn the effect off to compare what it is doing to the original sound.
4. When you find an effects setting you like, open the popup window in the top right of the Effect and choose Save Preset As to create your own preset.

Adding Offline Effects

Being able to apply Effects offline is a useful tool, especially if you want to save processor power during playback. To demonstrate how this works, let's apply the Preset you just created to an audio track:

1. Select the track (or the region of a track) to which you would like to add the effect and choose Audio Plug-Ins from the Edit menu.
2. Click the Delay Plug-in from the list. When the Plug-in's window appears, you will notice

- that it looks a little different from the way it looks when used in real time.
3. Choose your preset from the Presets popup window. You can click OK to go ahead and apply it or click Preview to test it out first.

There are a number of edits you can apply to your audio tracks other than adding Effects: you can change pan and volume as you would on a mixer (and automate those changes in real time) from the Mixer window, and you will find other editing options in the Edit Menu under Audio. Try selecting a section of your audio track and reversing it. Try a fade out or fade in.

Arranging with Subsections

Now we will create several variations of the music you have recorded in this tutorial. Thus far, you have recorded material into two separate Sections: a Theme and a Vamp. Now you will create several quick variations of the main Theme. Each variation will require a dedicated Section. To copy and paste a Section:

1. Within the Sections window (Command-Y), click the name of Section 1 to select it.
2. Choose Copy from the Edit menu, or press Command-C to copy Section 1 to the Clipboard.
3. Click the name of Section 3 to select it for editing.
4. Select Paste from the Edit menu, or press Command-V to paste the contents of the Clipboard into Section 3.

Section 3 now contains the same data as Section 1. Let's create a quick variation of Section 1 by muting several tracks within the copied version:

6. Within the Tracks window, click the Mute button next to the melodic or chordal track you recorded. This creates a version of the Theme that plays only the drums, percussion and bass.
7. Double-click the name of Section 3 and type in the name "Theme - sparse", then press the Return key to enter the name.
8. Now let's create a sparse variation of the main Theme, this time only with drums and percussion:
9. Click the name of Section 4 to select it for editing.
10. Select Paste from the Edit menu, or press Command-V to paste the contents of the Clipboard into Section 4.
11. Double-click the name of Section 4 and type the name "Theme - drums only", then press the Return key to enter the name.
12. Within the Tracks window, click the Solo button next to the Tracks titled "Drum Loop 120" and "16th high hats". This creates a version of the Theme that plays only the soloed tracks. You've now created three variations of the main Theme. These, together with the end Vamp, will be enough to put together your first Metro arrangement.

We'll create final arrangement using Metro's powerful SubSection techniques. Metro allows you to make arrangements of different SubSections by dragging them to playback within a track. Let's try working with SubSections within the following example:

1. Within the Sections window, double-click the name of Section 5. Type the name "Arrangement", then and press the Return key. This names Section 5 and selects it as the active Section.



Section 5's selector triangle

2. Carefully drag the Selector Triangle next to the name of Section 4 into the track displayed within the Graphic Editor window. This drags the Section into a track. Drop the Section as close as you can to Bar 1. The Section will auto-quantize to the nearest Bar boundary. Notice how the 4 bar Section is drawn within the Notes display of the Graphic Editor window.
3. Within the Graphic Editor, click three times on the right Magnifying Tool to zoom out several levels. This Zooms Out and allows you to see more time across the current track.
4. Within the Sections window, carefully drag Selector Triangle next to the name of Section 3 into Bar 5 within the Graphic Editor window.
5. Within the Sections window, carefully drag the Selector Triangle next to the name of Section 1 into Bar 9 of the track displayed within the Graphic Editor window.
6. Within the Graphic Editor, click the area representing Section 1 to open the SubSection Event Edit dialog box. Enter a duration of 8 Bars and click OK. The duration of the main Theme has been extended to 8 bars so that it repeats twice. Now let's add the Vamp as the last part to play after the main theme.
7. Within the Section window, carefully drag the Selector Triangle next to the name of Section 2 into Bar 17 of the Graphic Editor window.

Press the spacebar to listen to your final arrangement. Notice how the audio file (Drum Loop 120) plays throughout most of the piece even though its original length is only 2 bars. Metro's SubSection techniques allow for flexible manipulation of Sections to create complex arrangements. You can even play multiple SubSections simultaneously, which accommodates yet another style of composition and arrangement. Save your file and continue on experimenting with Metro. You may want to explore the next tutorial on MIDI recording.

4 MIDI Recording Tutorial

In this tutorial, you'll be playing back from the same MIDI device that you're recording from, so you'll be using Ports on all tracks. Ports allow a track to play the device and the device channels originally recorded on that track. At start-up, Metro initially assigns Ports to all tracks in the Tracks window. Each track assigned directly to a port can record up to 16 independent MIDI channels and playback events on the same track to different MIDI channels. There are two options for track output:

1. Outputs: whereby events are re-channeled and sent out to the device/port. The definition of the Output determines where events are sent.
2. Ports: whereby the channel contained in the original MIDI event is maintained and sent directly to the device/port.

When running OS 10.2 or greater or when OMS is installed, Metro can also automatically extract Outputs from your Current Studio Setup document.

This tutorial covers the following topics:

- Assign a Port to the Record Track
- Enabling the Metronome Click
- Setting the Record Mode: Replace or Overdub
- Beginning Recording
- Naming Your Track
- Viewing Note Data
- Playing Back the Track
- Playing From a Selection or Bar Number
- Adjusting Note Velocity
- Saving Your Recording as a Metro File
- Enlarging the Transport Window
- Playing and Setting Cues
- Looping Playback of Your Track
- Adjusting Current Playback Tempo
- Auditioning Programs 4-2
- Looping Playback of an Area Within Your Track
- Looping Cues
- Recording Another Track
- Displaying Multiple Tracks in the Graphic Editor Window
- Selecting Tracks in the Graphic Editor Window
- Naming the Current Section
- On-The-Fly Recording

Assign a Port to the Record Track

Let's start our tutorial by creating a new Metro file:

- From the File menu, choose New. A new Metro document appears.

Metro automatically record-enables Track 1 in a new document. Now let's assign a port to the record track:

1. Make sure a port is directly assigned to the record-enabled track and that port is set up as the Record From device in the Setup menu's MIDI Setup dialog box.
2. If an Output is assigned, click in the Outputs column, hold down the mouse to display a popup menu, and choose a Port on the appropriate device. If the Port is not set to the correct device, select Edit Port from the popup menu. The Edit Track Output Port dialog box appears.
3. Choose the correct device from the dialog box and click OK. For the purposes of this tutorial, do not select an audio device.
4. Adjust your MIDI device to send whatever Program Change (sound) that you want to record (be sure that Program Changes are enabled in the Record Criteria dialog under the Setup menu).

Enabling the Metronome Click

If you would like to hear a Metronome click as you record:

- Click the Metronome icon in the lower right corner of the enlarged Transport window. The Metronome icon becomes highlighted to indicate it is enabled.

If you want to adjust the Metronome beat:

- Click the door in the Tempo icon to open the Tempo dialog box, then adjust the tempo to suit your needs.

Now let's move on to Setting the Record Mode: Replace or Overdub.

Setting the Record Mode: Replace or Overdub

To indicate Replace or Overdub Record modes for all types of recording operations:

1. Select the Record/Play under the Setup menu. The Record and Play setup dialog box appears.
2. In the Record Mode field, choose Replace or Overdub and click OK.

Replace replaces previously recorded data on a track with newly recorded data; Overdub records on top of existing data, merging old and new data on the same track. In the future, you may want to experiment recording in Overdub mode (which is good for drum machine-style recording). You can also specify Replace or Overdub Record modes by clicking the door on the Punch setting icon within the Transport window. Now let's move to the next step in our tutorial, Beginning Recording.

Beginning Recording

To begin recording:

1. Click the Record button in the Transport window, or press Option-R. If you followed the previous steps in the tutorial, Your First Session with Metro, you set a Countoff of 1 bar (Record/Play under the Setup menu). You'll see the Counter move forward through 1 bar, which gives you time to ready yourself to record.

2. Play your controller keyboard or MIDI device.
3. Stop recording by clicking the Stop button in the Transport or pressing the Spacebar. Metro records what you just played. The Tracks window Overview changes to show that your new track contains data. Proceed on to Naming Your Track.

Naming Your Track

You'll notice the Tracks window displays the number of bars you recorded and the new track is now called "Untitled". You can now name that track whatever you like.

To name your track:

1. Option-click the "Untitled" Track Name and type a name for the track.
2. Press Return.

Now let's take a look at the data we recorded by Viewing Note Data.

Viewing Note Data

Open the Graphic Editor window by double-clicking the new track name you just entered. Notice the Graphic Editor window for Track 1 now displays the note data you recorded.

Notice some of the other attributes of the Graphic editor window:

- MIDI Notes are displayed graphically as blue bars and their duration is shown by the length of the bar.
- When the Graphic Editor window is in Notes display, the Audible Keyboard to the left of the piano roll lets you quickly see the note's pitch. When you click a key on the Audible Keyboard, Metro plays that note on the track's currently assigned Output.
- If you position the cursor over the Audible Keyboard or over a particular note, you'll see that, in the upper left of the window, the Current Cursor Position display shows the selected note's pitch as well as the Bar/Beat/ Clock location of the cursor.

Now let's try Playing Back the Track.

Playing Back the Track

To play back the track:

1. In the Transport window, click the Return button, or press the Return key, to move the Counter back to Bar 1
2. Click the Play button, or press the Spacebar to initiate playback.
3. If you want to stop playback before the end of the track, either click Stop, or press the Spacebar.

You won't always want to play the track from the beginning, so let's try Playing From a Selection or Bar Number.

Playing From a Selection or Bar Number

You can begin playback at any particular section of your file by either selecting an insertion point in the Graphic Editor window, or by changing the Bar number field of the Counter in the Transport window. To play back from a selection or bar number:

Do one of the following:


- Click the Arrow Tool in the Graphic Editor window then click in the Graphic Editor's piano roll (when in Notes display) at the point where you want playback to begin. This creates an insertion point.
- Click the Bar field in the Transport window and change it to the location where you want playback to begin.

Click Play or press the Spacebar to continue playback from the selected location.

Adjusting Note Velocity

Within the Graphic Editor's Notes display (piano roll), you can view graphic representations of individual note velocities by checking Velocity Stems in the Switches menu. MIDI notes within the Notes display show a "velocity stem" rising from them; the length of the "stem" rising from each note indicates the velocity level of that note.

To edit velocity using velocity stems:

1. Click the Velocity Tool icon  in the top portion of the Graphic Editor window (it's just to the right of the Forceps Tool icon). The cursor becomes a tweezers.
2. Click and drag Note Velocity Stems up or down to raise or lower individual note velocity. You can also scale the velocities across a selected range of notes—using the Velocity Tool on a single note will in turn scale the velocities of all other notes within the selection.

To turn off Velocity Stems in the Graphic Editor window, select Velocity Stems in the Switches menu so that the checkmark is removed.

You can also use the Average Velocity display of the Graphic Editor window to view the velocity of notes in a track. Click and hold the mouse on the track's Data Type pop-up menu and select Average Velocity, or press the V key within the Graphic Editor, and the current track will switch to show note velocities. The track view displays on an x/y graph for the average velocity of each note in the selected track. If there is only one note at a given time, the "y" direction represents the exact velocity. In this display, you can "draw in" velocity curves, crescendos, decrescendos, and so on with relative ease (you can even do this in real time during playback for instant feedback). When in the Graphic Editor's Average Velocity display, use the Curve Tools to the left of the Magnifying Tools to create ultra-smooth velocity transitions.

Saving Your Recording as a Metro File

Before continuing, save your recording as a Metro document file. Later in this tutorial, you'll record more tracks to form a Section, and then record more Sections to save within your Metro document file. It's always a good idea to save your work as often as possible; unforeseen problems can cause file loss or damage. It is a good idea to save your work to a backup disk (or write them to a CD) at least once a day so that you have a backup of your work.

To save your recording as a Metro file:

1. Choose Save or Save As from the Edit menu.
2. Type a name for your Metro file, then click OK to save it to a backup disk.

3. Metro saves your file under the name you designate.

Important Note: If your Metro file contains any audio it is a good idea to save it as a bundle file (from the file menu) as this saves the audio in a format that makes the file portable from computer to computer with the least amount of hassles.

Let's explore another playback option by Playing Cues.

Playing and Setting Cues

The “current cue” is a specific range of music that plays when you click the Cue button in the Transport window or press the C key. You determine the current cue by your most recent action—whatever range of music you most recently played or selected becomes the current cue. Selecting or playing a new range erases the old cue and creates a new, current cue. You can save a cue into four different locations, which you set up and are not dependent on the most recent action. These cues remain as you set them unless you overwrite them by setting a new cue. You can set 4 different cues.

To select and play the current cue:

1. Click the Arrow Tool icon in the Graphic Editor window to turn the cursor into the Arrow Selection Tool.
2. Drag in the Graphic Editor window's Notes display (or within other Data Type display modes) across the desired range.
3. Play the cue by clicking the Cue button in the Transport window or by pressing the C key.
4. If you play back or select a different range, that range becomes the current cue.

To set a cue:

1. Select a region by dragging across a range in the Graphic Editor window's Notes display (or within other Data Type display modes of the Graphic Editor).
2. Click the Set button in the Transport window.
3. Click one of the four numbered Cue buttons.

Metro saves the current cue in the location (1 through 4) that you choose.

To playback stored cues:

- Click the numbered button (under the Set button in the Transport window) associated with the desired range, then click the Cue button.

The next step in our tutorial is Looping Playback of Your Track.

Looping Playback of Your Track

Looping playback means that Metro automatically rewinds and plays the entire MIDI track you just recorded. Playback continues infinitely, as long as the longest track (the one with the highest bar count) is looped.

To loop playback:

1. Click the Loop column in the Tracks window on the track you recorded. Notice a Loop icon appears to indicate track looping is enabled.

You can disable track looping at any time by clicking the Loop icon again to remove it.

Now let's try Looping Playback of an Area Within Your Track.

Looping Playback of an Area Within Your Track

In addition to looping an entire MIDI track, you can specify a range anywhere within a MIDI track to loop play as many times as you want, or to virtually play forever (or at least for many hours). Metro's loop playback feature is a powerful compositional tool that allows you to build increasingly complex patterns without actually increasing the amount of data contained in a track. You can specify the range you want to loop by graphically selecting it within any of the Graphic Editor window's display types (Notes, Drums, Controllers, Cue Button Set Cues Button Numbered Cue Buttons After Touch, etc.), or by typing the beginning and ending locations directly into the Looping dialog box (Special menu). If you select the range graphically, Metro automatically enters the beginning and ending locations into the Looping Options dialog box.

To loop playback of an area within your track:

1. Click the Arrow Tool in the Graphic Editor window.
2. Drag across the desired range to select it, then release the mouse.
3. Choose Looping from the Special menu. The Looping Options dialog box appears. Notice that the beginning and ending locations of your selection are entered in the From and To fields in the Looping Options dialog box.
4. If you want the range to loop a specific number of times, click the Loop "N" Times button and enter the desired value.
5. If you want the range to loop virtually infinitely, click the For Many Hours button.
6. Click OK.

Notice that Loop icons now appear within the Graphic Editor window at the specified begin and end locations. In the Graphic Editor window you will see a number next to the Loop End icon, which is the number of times you specified the range to loop. Once playback of the loop begins, you will see a number next to the Loop Begin icon that designates the cycle number of the loop currently playing. If you play looped and unlooped tracks at the same time, when the looped track finishes the looped section, it skips over enough of the following measures to catch up to the unlooped track. In the Tracks window you'll see one of two Loop icons in the Loop column, indicating the track is loop enabled. A Loop icon with a single arrow designates that the entire track is looped (from beginning to end); a Loop icon with two arrows designates that a range within that track is looped. Audio Tracks and MIDI tracks assigned to MIDI plug-in synthesizers (VST or AudioUnit) do not support Loop ranges within tracks.

Looping Cues

Looping Cues is an extremely powerful way to edit data on-the-fly. You play the current Cue by simply clicking the Cue button in the Transport or pressing the C key.

Perhaps the quickest way to loop cues for editing purposes is to:

1. Select a range in your track that you're not satisfied with, causing that range to become the Current Cue.
2. Enable Cue looping by checking the Cue Loop checkbox in the Transport (under the Loop Record checkbox).
3. Press the C key or click the Cue button in the Transport to start playback of the looped Cue.

4. Listen to the Cue loop play and edit the MIDI (or audio) data to your satisfaction.

For example, click directly on individual notes or Drum Strikes within the Graphic Editor's Notes (piano roll) or Drums display and drag them to the left or right to alter the start time; drag them upward to alter the pitch, or Shift-click them and drag them to the right to alter duration. Option-click and then drag a note or Drum Strike, or a entire range of data, to create a copy, or Command-click on events to select them non-contiguously.

Auditioning Programs

You can experiment with different programs and sounds using the Program setting in the Mixer window. Using the Program setting is a temporary way to audition various programs on your MIDI devices—keep in mind that the Program setting is for playback purposes only. In order for a track to always play the same program or sound, a Program Change event must be contained in the track. In this section you'll simply audition Program Changes (not encode them into tracks).

To audition programs:

1. Press the Return key to move the Counter back to Bar 1, then press the Spacebar to play your file.
2. Open the Mixer window (Command-I) and click the Program field (Pgm) of an Output Panel within the Mixer window. The Program setting will be a popup menu if you have a Program Name List assigned to the track's corresponding port and channel (see Program Names).
3. Increase or decrease the Pgm# value to change programs (click on the program number and drag the mouse up or down, or type in a new program number to change its value).
4. Release the mouse to listen to each program that you want to audition. Metro can automatically display programs by name rather than by number. To enable this feature, choose 'open...' under the Program Names dialog in the Setup menu and select a Cakewalk instrument (.ins) file designed for the selected device.

After you try different programs, try different tempos by Adjusting Current Playback Tempo.

Adjusting Current Playback Tempo

You can try playing your Section at different tempos by temporarily adjusting the tempo during playback using Metro's Tempo setting. Metro sets the initial tempo of each Section to 120 BPM. The Tempo display is in the lower left corner of the Transport window.

To adjust tempo during playback, do one of the following:

1. In the Transport window (Command-B), click the Tempo setting's left or right arrows to decrease or increase the tempo by 1/10th of a beat per minute, or hold the mouse button down for larger changes.
2. Also in the Transport window, drag the slider below the Tempo setting either left or right.

In addition to adjusting the current playback tempo, you can set a Section to always play a particular tempo by placing a Tempo event in the Section. Metro automatically places a Tempo event at a default tempo of 120 at the beginning of each new Section. This tempo is displayed in the Transport in the Tempo setting (Tempo = 120).

To change initial default tempo of the current Section and any new Sections you create:

1. Click the door on the Tempo setting to open the Tempo dialog box.
2. Within the Tempo dialog box, enter a new initial tempo display and click OK.

The default initial tempo setting affects the current Section and any new Sections you subsequently create. You can easily view all Tempo, Time Signature, and Key Signature events within a Section in the Section Event Editor window (Windows menu).

Recording Another Track

Let's record another MIDI track to accompany the first track you recorded:

1. Click the Record "R" column of the track you want to record, placing a selector dot in that column.
2. Option-click the track Name field and type a name. When finished typing, press Return in order to exit from Track Name mode.
3. Click Record (Transport window), or press Option-R, and play your MIDI device.
4. The previously recorded track plays back as you record; if you'd rather mute the track and only listen to the one you're recording, click the "M" (Mute) column next to the previously recorded track's name, placing a selector dot there. To unmute a track, click the dot again to remove it.
5. Click Stop or press Spacebar when you're finished recording.
6. Repeat steps 1-4 to record more tracks. You can record up to 99 tracks per Section (32 in Metro SE).

Displaying Multiple Tracks in the Graphic Editor Window

To display a track in the Graphic Editor window, do one of the following:

- In the Tracks window, click a track's Number, Name, or Bar field. Whatever track is selected in the Graphic Editor window changes to display the track you clicked.
- Within the Graphic Editor window, click the track name in the title bar of any displayed track and select new or existing tracks to display from the popup menu.

A track's title bar also displays other relevant controls and menus for that track, including Record, Mute, Solo, and Loop buttons, and the Track Name, Data Type and Output popup menus. New tracks will default to the name "Untitled". Name tracks by Option-clicking on the Track Name popup menu (within the track's title bar), or by Option-clicking the corresponding track's Name field in the Tracks window. The Graphic Editor window can simultaneously display up to 16 tracks in a variety of graphical displays (Notes, Drums, Controllers, After Touch, Pitch Bend, etc.).

To add tracks to the Graphic Editor window:


1. Click the Add Tracks icon (the "+" symbol to the left of the Timeline) in the Graphic Editor window.

Once you add a new track, you can change it to view data in any variety Graphic Editor Track Title bar Data Type Display Menu of graphical displays by clicking the data display popup in the title bar.

To close a track in the Graphic Editor window:

2. Click the close box at the left end of the track's title bar.

To resize a track's display in the Graphic Editor window:

3. Click and drag the track's Resize icon  which appears in the title bar between the Close box and the Track Name popup menu when multiple tracks are displayed.

Now that you can display multiple tracks in the Graphic Editor window, let's try it.

Selecting Tracks in the Graphic Editor Window

To select a track in the Graphic Editor window, click anywhere in its display. To select a track in the Graphic Editor window without changing the selection, click in the title bar of the track to be selected. To select multiple tracks in the Graphic Editor window, click anywhere within the display area and drag up or down to select multiple tracks.

Naming the Current Section

To name the current Section:

1. Choose Sections from the Windows menu. The Sections window appears. The name of your Metro document appears in the window's title bar. The name of the current Section is highlighted.
2. Double-click the name of the section to be changed.
3. Type a Section name in the name field that appears, and press Return.

You'll see the Section name displayed in the Sections window and in the title bar of that Section's Track window. You can edit the Section name in the same way you entered it. To make a Section the current Section, click its name in the Section window.

Before the last step of this tutorial, save all the recent changes you made by pressing Command-S.

Now let's finish this tutorial by trying some On-The-Fly Recording.

On-The-Fly Recording

On-the-fly recording is useful if you are recording someone else and only want to record a small portion of their performance.

To record on-the-fly:

1. In the Transport window, click the Record button while Play is already engaged (pressing Option-R does not work for on-the-fly recording). Metro immediately switches to record mode and begins recording from that point in the track and onwards.
2. Click Stop or press the Spacebar to stop recording.