PALLADIUM USER GUIDE
Version 3.2g, 24ᵗʰ March 2015

This guide provides a brief introduction to Palladium's features. When reading this guide for the first time, it would be helpful to have the program running, and to have loaded one of the demonstration files.

HOW TO ACTIVATE YOUR 30 DAY FREE TRIAL

When unlicensed, Palladium will operate in "demonstration" mode, which disables file saving. This does however limit the ability of a user to properly evaluate the software. That being the case, CH Sound Design would like to offer you a fully functional, 30 day free trial. To activate your trial, you will need to do one of the following:

1. Send us an e-mail, either directly at info@chsounddesign.com or using the "contact us" form on our web-site (www.chsounddesign.com/contact_us). You will need to include the product name (Palladium), and your PC Id. The latter can be found by starting Palladium, and going to the help menu, and then selecting the license manager option.

2. Visit our fully automated trial activation server at www.chsounddesign.com /trial_activation. Full instructions are provided on the server, and this method has the advantage of being much faster than sending e-mails back and forth. However, this method can only be used for new trials; you cannot use the automated server to extend your trial, or start a trial on a PC which has had a previous version of Palladium installed. In these cases, you will need to send us an e-mail (see option 1 above).

FOR YOUR SAFETY

Palladium is designed to control sound systems only. It is not to be used to control life critical devices such as pyrotechnics or stage automation systems.

CONTENTS

1. Main Screen

Palladium's main screen comprises 3 sections:
- The upper section contains a display showing the status of all the equipment Palladium is controlling.
- The middle section contains the cue list.
- The lower section contains a display showing the current cue number, plus 12 combination buttons / indicators.

1.1. Equipment (Upper) Section

This section contains a number of "tabs", each of which corresponds to part of the sound system Palladium is controlling:
- Mixer 1
- Mixer 2
- Mixer 3
- Effects rack
- Playback sources
- GPIs (relay outputs)

Please refer to the later sections of this guide for details on each of the above.

1.2. Cue List (Middle) Section

This section contains a list of all the cues in the show, and provides facilities for editing these cues.

The list contains 9 rows, and the current cue is shown in the third row which has the box around it. Each row contains the following fields:
- "mk' - this is a marker which is similar to a bookmark. Typical uses for these would be marking the cues associated with the start of each scene, or marking cues which require fixing at the conclusion of the rehearsal / performance. Left-clicking on the "Mk" heading will cause the system to jump to the next cue which has a marker set; right-clicking will bring up a pop-up menu containing the following commands: "goto next marker", goto previous marker", "clear all markers" & "auto mark changed cues".
- "Id" - this is a label which can be anything, and when a show is imported from MicPlot, this will be set to the corresponding Movement Id.
- "Title" - again this can be anything, and when a show is imported from MicPlot, this will be set to the corresponding Movement Title.
- "Trigger" - this displays what will trigger the cue. Palladium supports four trigger modes:
  - "Man" (manual) which is triggered by the operator clicking the "next" button.
  - "Dly" (delayed) which is triggered automatically by Palladium after a specified time has elapsed since another cue was triggered.

- "T/C" (time code) which is triggered when Palladium receives a specified MIDI time code (MTC) value.
- "Ext" (external) which is triggered when Palladium receives a specified MIDI message from an external device. This mode is typically used with devices such as "go" buttons on the conductor's music stand.
- "Notes / Data" - the contents of this field is determined by the trigger source:
  - For manual cues, this is a useful note for the sound operator, and can be anything. When a show is imported from MicPlot, this will be set to the corresponding Movement Cue.
  - For delayed cues, this will be the reference cue and the delay time.
  - For time code cues, this will be the time code port and time code value.
  - For external cues, this will be the name of the external cue.
- 'Ref' - an "R" in this field indicates that this cue is used to trigger another cue.
- Devices - there are 6 columns of these; one corresponding to each of the tabs on the upper section of the screen. For each device, a coloured dot will be displayed if the corresponding device has a data change in this cue. These dots can have one of three colours: green is normal; yellow means the data is effected by a variation; and red means the data is effected by an emergency. Clicking on a dot causes the system to enter preview mode, and display the devices' data for the cue concerned.

Editing the data for each cue is achieved by double clicking on the cue, which will cause the "Cue Details" form to be displayed. To make the task of editing cues faster, the form's cursor will be positioned on which ever field was double clicked on the cue list.

Further editing functions are provided by a pop-up menu which is activated by right-clicking on a cue. This menu provides the following functions:
- "Mark" - this toggles the cue's marker on or off.
- "Clear" - this clears all data associated with the cue, but leaves the cue in the cue list.
- "Insert" - this inserts an empty cue before the cue which was right-clicked, and causes all subsequent cues to be moved down the list by one cue. Note that this function will only operate if cue 999 is empty, as otherwise cue 999's data would be lost.
- "Delete" - this deletes the cue which was clicked, and causes all subsequent cues to be moved up the list by one cue. Note that this function will not operate if the target cue is being used as a reference for another cue.
- "Copy" - this copies the target cue's data to the clipboard.
- "Paste" - this copies the clipboard's data to the target cue.
- "Make Space" - this is equivalent to "insert as many cues as possible", and is useful if a large number of cues need to be inserted.
- "Close Gap" - this deletes all empty cues either side of the target cue, and is the reverse of "make space".
- "Tidy" - this removes all redundant cues from the list, firstly by removing any redundant cues from the various devices, and then deleting any cues which are empty.

To the right of the cue list is a scroll bar which is used for navigating around the list. Moving this bar causes the system to enter "preview" mode, and in this mode the equipment status displays will be updated to show what the system will be doing for each cue, but no data is

sent to the external devices. When the user has finished reviewing the list, the system can be returned to normal by either manually moving the cue scroll bar back to the current cue, or clicking the "Return" or "Jump" buttons (see below).

1.3. Control (Lower) Section

This section contains a display showing the current cue number, plus the following 12 buttons / indicators:

- "Next" - clicking this button causes Palladium to go to the next cue, or if a crossfade is in progress (see "crossfade" button below), clicking this button will complete the crossfade.
- "Previous" - clicking this button causes Palladium to go to the previous cue, or if a crossfade is in progress (see crossfade button below), clicking this button will cancel the crossfade.
- "Crossfade" - clicking this button will cause Palladium to start the transition to the next cue, but without leaving the current cue. The effect of this is that if, for example, cue 9 had mics 1 to 5 on, and cue 10 had mics 6 to 10 on, clicking this button while in cue 9 would result in mics 1 to 10 being on until such time as the crossfade is completed by pressing the "next" button. This is particularly useful if the next group of actors enters "too soon", or the existing actors exit "too late", as can happen if they exit singing and keep holding their last note longer than anticipated.
- "E-Stop" - clicking this button causes all "emergency stop" messages to be sent to their respective devices. The actual message to be sent for each device is defined on the device's setup form.
- "Return" - when illuminated, this button indicates that the system is currently in "preview" mode. Clicking this button causes "preview" mode to be canceled, and the system to return to the cue it was on before "preview" mode was selected.
- "Jump" - when illuminated, this button indicates that the system is currently in "preview" mode. Clicking this button causes "preview" mode to be canceled, and the system to jump to the cue currently highlighted on the cue list.
- "Delays" - double clicking this button turns Palladium's delayed cues on and off, and the button will be illuminated when delayed cues are enabled. As a general rule, delayed cues should be off when programming the system, and on during rehearsals and performances.
- "Refresh" - clicking this button causes Palladium to resend all data to all devices, and this button is only available if the system isn't in "preview" mode. Normally, Palladium only sends changes to the various devices, as to resend all data at every cue change would result in excessive traffic on the MIDI bus, which would reduce the responsiveness of the system. However, if a device gets out of sync, as can happen if its power lead is disturbed, then it needs to have all its data resent.
- "Variations" - double clicking this button causes the "variations" form to be displayed (see below).
- "Emergencies" - when illuminated, this indicates that an emergency has been set for one or more mixer channels. If illuminated, the button can be double clicked which will cause the "clear emergencies" form to be displayed. This form contains two buttons - "OK" and "Cancel". Clicking the former causes all emergencies to be cleared; clicking the latter

causes the form to be closed with all emergencies left as they are.

- "Learn" - clicking this button causes learn mode to be activated or deactivated. When activated, Palladium can be programmed by the user operating controls on their sound equipment, rather than having to do everything via the PC keyboard and mouse. Only those individual controls which have learn enabled will be effected (see equipment setup sections), and there must be at least one enabled control for this button to be available.
- "Trim" - clicking this button causes trim mode to be activated or deactivated. When activated, moving a fader causes an offset to be generated which will be then be added to that fader for all cues; the actual cue data will remain unchanged. Only those faders which have trim enabled will be effected (see equipment setup sections), and there must be at least one fader with trim enabled for this button to be available. Right clicking on this button causes the trim menu to be displayed. This provides two options:
    - "Clear All Trims" - clicking this causes all trims to be cleared, and the faders will then revert to their original settings.
    - "Update All Trims" - clicking this causes all cues to be updated using the trims, and then the trims to be cleared (so we don't end up with a double trim).

Note that each of the above buttons can also be activated by pressing the corresponding function key, F1 to F12. "Next", "Previous" & "Crossfade" are also available via MIDI remote control.

1.3.1. Variations Form

This form is used to set changes to the normal running of a show which might be required in the event of an understudy being on, or other similar event. The form contains a row for each character in the show, and each row contains the following fields:

- "Character" - this is the character who is the subject of the row.
- "Played By" - this is the actor who normally plays the character.
- "New Played By" - this is the actor who will be playing the character for today's performance. Setting this has the effect of changing the actor's name which is displayed on the scribble strips, and changing the channel EQ (since this follows the actors).
- "New Channel" - this is the channel which will be used be the character for today's performance. Setting this has the effect of moving the character to a different mixer channel.
- "New Mic" - this is the mic that will be used for today's performance, and this will typically be either the original or new players' mics, but doesn't have to be. Setting this has the effect of changing the target channel's input patching.

Please note that in the interests of maximum flexibility, this form performs no error checking, as such checks could impose undesirable limitations. Consequently, this form should be used with extreme care.

So as to reduce the likelihood of error, the form contains an "Add / Remove Understudies" button. This is by far the safest way to make the majority of changes, and clicking this button causes the "Add / remove understudies" form to be displayed. This form shows all the

understudies which are defined under the "Players" form (see later), and adding a particular understudy is achieved my selecting the understudy in the list on the left hand side of the form, and then clicking the "Add" button. Similarly, and understudy can be removed by selecting the required understudy in the list, and then clicking the "Remove" button. Any understudies which were imported from MicPlot will have mics available if required.

The other buttons on the "Variations" form are "Clear", "Cancel" and "OK", all of which are self explanatory.

2.   Mixers

Palladium supports 3 mixers, each of which can contain up to 200 channels as follows:
- 96 mono inputs
- 16 stereo inputs
- 16 effects returns
- 16 sub-groups
- 16 auxiliary sends
- 8 masters
- 16 matrix outputs
- 16 VCAs

The actual number and layout of these channels is defined in the "Mixer Setup" form which is discussed later.

Each of the channels can contain any combination of the following controls:
- 1 fader.
- 8 buttons.
- 1 assignment.
- 3 slates, or scribble strips.
- 12 EQ knobs.

All controls (except the EQ knobs, see later) are "sticky", in that they retain their states from one cue to the next, unless they are specifically adjusted by the operator. This is similar to using a manual mixer, and also minimises the effort required to program the system. For example, if a button needs to be "on" from cues 33 to 45 inclusive, all the user needs to do is set the button "on" in cue 33, and "off" in cue 46.

The following paragraphs provide a detailed description of each control, and their associated editing capabilities.

2.1. Faders

Palladium's faders cover the range -100dB to +20dB. Adjusting a fader is as easy as

dragging it to the required setting, and the numerical equivalent of the fader's position is displayed in the "gain" box to facilitate precise setting. The values displayed in the "gain" boxes can have one of two colours:

- Red means that the displayed value is new for this cue, and that the fader data will always be sent when this cue is entered.
- Black means that the display reflects the last value which was set in a previous cue. Fader data will not be sent when this cue is entered, unless the cue is entered as a result of a list "jump". In this situation, every device is checked, and data sent if required.

Right-clicking on a fader causes a pop-up menu to be displayed which provides the following functions:

- "Delete" - this deletes the fader adjustment from the current cue only.
- "Move To Previous Cue"- this moves the fader adjustment to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
- "Move To Next Cue"- this moves the fader adjustment to the next cue, if the next cue exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.
- "Clear" - this deletes all fader adjustments from all cues for this fader.
- "Normalise" - this provides a mechanism for making global adjustments to a fader such as would be required if the mixer channel's input gain was adjusted. When clicked, the "Fader Normalisation" form is displayed. (see below for further details).
- "Tidy" - this removes redundant fader moves. For example, if the fader was moved to -10 in cue 17, but then a previous cue was subsequently modified to move the fader to -10, then the move in cue 17 is no longer needed. This redundant move would be deleted by a "tidy" operation.

2.1.1. Fader Normalisation Form

This form provides the facility for making global fader adjustments.

When displayed, the left side of the form shows the following statistics:
- The "fader top" value.
- The "fader bottom" value.
- The "fader highest" value, which is the highest value used in the show.
- The "fader lowest" value, which is the lowest value used in the show, excluding the bottom value.

The right side of the form provides two options:
- Automatic normalisation, in which the software will adjust the fader settings in all cues so that the highest setting is as close to 0dB as possible.
- Manual normalisation, in which the user can specify how much they would like the fader values adjusted by.

In addition to the fader normalisation form, global changes can also be made to a fader using the trim function. As a general rule, the trim function works best for making live changes

during performances, and the fader normalisation form works best for making precise changes pre-show.

2.2. Buttons

Palladium provides up to 8 buttons per channel, each of which is latching. Changing a button's state is achieved by left-clicking on the button.

Right-clicking on a button causes a pop-up menu to be displayed which provides the following functions:
- "Move To Previous Cue"- this moves the button press to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
- "Move To Next Cue"- this moves the button press to the next cue, if the next cue exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.
- "Clear" - this clears all button presses from all cues for this button.
- "Tidy" - this removes redundant button presses. For example, if a button was pressed "on" in cue 17, but then a previous cue was subsequently modified to press the button "on", then the button press in cue 17 is no longer needed. This redundant press would be deleted by a "tidy" operation.

2.3. Assignment

Palladium provides one assignment, which can be used for any user-defined parameter. Typical uses for this might be VCA assignment, or fader grouping. It is also possible to use this control simply to display useful numeric data. The values displayed in the "assignment" boxes can have one of two colours:
- Red means that the displayed value is new for this cue, and that the assignment data will always be sent when this cue is entered.
- Black means that the display reflects the last value which was set in a previous cue. Assignment data will not be sent when this cue is entered, unless the cue is entered as a result of a list "jump". In this situation, every device is checked, and data sent if required.

Assignments are changed be left-clicking on them which causes the "Assignment" form to be displayed.

Right-clicking on an assignment causes a pop-up menu to be displayed which provides the following functions:
- "Delete" - this deletes the assignment change from the current cue only.
- "Move To Previous Cue"- this moves the assignment change to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
- "Move To Next Cue"- this moves the assignment change to the next cue, if the next cue

exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.

- "Clear" - this clears all changes for this assignment.
- "Tidy" - this removes redundant assignment changes. For example, if an assignment was set to "33" in cue 17, but then a previous cue was subsequently modified to also set the assignment to "33", then the assignment change in cue 17 is no longer needed. This redundant change would be deleted by a "tidy" operation.

2.4. Slates

Palladium provides three slates, or scribble strips; one for character name, one for cast (actor) name, and one for transmitter number. In the case of non-actor related inputs, the first two can be used to display any data, and the transmitter number will be blank. The values displayed in the "slates" boxes can have one of three colours:
- Red means that the displayed value is new for this cue, and the actor concerned currently has a mic.
- Black means that the display reflects the last value which was set in a previous cue, and the actor concerned currently has a mic.
- Grey means that the actor concerned doesn't currently have a mic.

The slates are changed be left-clicking on them which causes the "Character And Cast" form to be displayed. This form contains the following fields:
- "Character" - this allows the user to select the required character from a list. The characters in the list will be displayed in the following order: named characters, then ensemble characters (actors who have their "ensemble" attributes set), and finally others.
- "Cast"- this is filled in automatically by the software, and shows the name of the actor associated with the character.
- "Tx"- this is filled in automatically by the software, and shows the number of the transmitter associated with the actor.
- "Has Mic" - this is used to tell the software if the actor concerned currently has a mic or not.

Right-clicking on a slate causes a pop-up menu to be displayed which provides the following functions:
- "Delete" - this deletes the character change from the current cue only.
- "Move To Previous Cue"- this moves the character change to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
- "Move To Next Cue"- this moves the character change to the next cue, if the next cue exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.
- "Clear" - this clears all changes for this character.
- "Tidy" - this removes redundant character changes. For example, if a character was set to "Javert" in cue 17, but then a previous cue was subsequently modified to also set the character to "Javert", then the character change in cue 17 is no longer needed. This

redundant change would be deleted by a "tidy" operation.

2.5. EQ Knobs

At the top of each channel are up to 12 EQ knobs. The exact function of each knob, along with the legend corresponding to each knob position, is defined on the mixer setup form (see below).

The EQ knobs operate quite differently with respect to the other controls. All the controls previously discussed belong to a particular channel, and can change on a cue by cue basis. However, the EQ knobs belong to a particular actor (or other) and are global for the entire show. This means that as an actor moves between different mics and mixer channels, their EQ will follow them. Also, if an EQ is adjusted, the change will apply everywhere.

Right clicking on any of the EQ knobs or legends causes the EQ pop-up menu to be displayed. This provides the following functions:
- "EQ Flat" - this resets all the EQ knobs for the target channel to their default (flat) positions.
- "EQ Save" - this saves all the EQ knobs for the target channel.
- "EQ Restore" - this restores all the EQ knobs for the target channel to their previously saved values. "Save" & "restore" are intended to be used in situations where, for example, an actor's mic slips from its usual position, which requires an EQ adjustment. Once the actor goes off stage and their mic is put back to its correct position, their EQ can then be restored.
- "EQ Copy" - this copies all the EQ knobs for the target channel to the EQ clipboard.
- "EQ Paste" - this pastes all the EQ knobs for the target channel from the EQ clipboard.
- "EQ All" - This provides global "flat", "save" & "restore" functions which operate on all channels simultaneously. In the case of the global "restore" function, this will only effect those channels which have been previously saved.

Hint 1: If an actor requires multiple EQs, as may be the case if they wear a hat for part of the show, this is accomplished by defining two characters (e.g. "char" and "charHat") who are then played by two actors (e.g. "actor" and "actorHat").

Hint 2: Since the EQ belongs to a particular actor (or other), if no actor (or other) has been assigned to a channel, then the EQ controls cannot be adjusted.

Hint 3: Given the nature of EQ, these knobs are usually best adjusted from the mixer surface with Palladium in "learn" mode.

2.6. Channel Editing Functions

In addition to the various control editing functions outlined above, a number of channel editing functions are also provided.

Right-clicking on a channel (but not any of its controls) causes a pop-up menu to be displayed which provides the following functions:

- "Clear" - this clears the selected data for the target channel in all cues, but leaves the channel in place. Options include specifying whether to clear the target channel or clipboard, and clearing all data, or only data relating to a specified character or actor.
- "Insert"- inserts an empty channel in place of the target channel, and moves the target and all subsequent channels one position to the right. Note that this function will only operate if the right-most channel is empty in all cues, as otherwise that channel's data would be lost.
- "Delete" - this deletes the target channel, and causes all subsequent channels to be moved one position to the left. An empty channel is created in the right-most position.
- "Copy" - this copies the target channel's data to the clipboard. Options copying all data, or only data relating to a specified character or actor.
- "Paste" - this copies the clipboard's data to the target channel. Options pasteing all data, or only data relating to a specified character or actor.
- "Select" - this pre-selects the target channel for either a "move" or "swap" operation. Once selected, the target channel's background will be displayed in white.
- "Move" - this causes the pre-selected channel to be moved to the target channel, and all in-between channels to be shuffled along.
- "Swap" - this causes the pre-selected channel to be swapped with the target channel. Any in-between channels are unaffected.
- "Emergency" - this is used to change a channel's emergency mode, and causes the following sub-menu to be displayed:
    - "Normal" - returns the target channel to normal mode.
    - "Manual" - stops all data being sent to the target channel, and changes the channel's background colour to red.
    - "Send" - causes the channel's data to be sent to another channel. This is useful in the event of equipment failure during a performance. Selecting this option causes the "Emergency" form to be displayed, and this form allows the user to select the destination channel. Note that data is only sent for those cues in which the target channel is "live".

2.7.   Channel Background Colours

Four different background colours are used for the channels:
- grey - channel is in normal mode.
- yellow - channel is effected by a variation.
- red - channel is effected by an emergency.
- white - channel has been pre-selected for a "move" or "swap" operation.

2.8.   Mixer Setup

In the lower right corner of the mixer tab is the "Setup" button, and clicking this button causes the "Mixer Setup" form to be displayed.

2.8.1. Controls

The left most box on the form ("controls") is used to set various options in relation to the mixer's channel controls. Up to 4 options can be set, although not all of them are applicable to all controls:

- "Label" - this is used to set what will be displayed next to the control as its label on the mixer tab.
- "Col" - this is used to select the required colour for the control; double-clicking on a colour icon causes the "Colour Selection" form to be displayed.
- "Live" (buttons only) - this is used to specify which of the button's states corresponds to the associated channel or function being "live". As an example, a channel is "live" when its "on" button is "on", and its "mute" button is "off". It is most important that this state be set correctly, as many of Palladium's functions use this information including crossfades, variations, emergencies, tallies, import from MicPlot & Export to Moves.
- "Master" (buttons only) - this is used to specify that the state of this button governs the state of the channel. For a channel to be deemed to be "live", all its "master" buttons must be in their "live" states. Again, it is most important that this state be set correctly, as many of Palladium's functions use this information.

To the far right of the "controls" box is a scroll bar which allows the user to move up or down the channel strip.

2.8.2. Channels

The centre box on the form ("channels") is used to specify how many channels the mixer has, and in what order they are displayed on the mixer tab.

Palladium's mixer channels are displayed in blocks, and probably the best way to illustrate this concept is by example; a 40 channel Soundcraft Series Two console contains 4 blocks:

- Block 1 consists of mono input channels 1 to 24.
- Block 2 consists of stereo input channels 1 & 2.
- Block 3 consists of effects returns 1 to 4.
- Block 4 consists of mono input channels 25 to 40.

Palladium allows for a maximum of 32 blocks.

The "channels" box contains 7 groups of fields:

- "Type" - this is used to select the channel type for the target block.
- "Numbers" - this is used to select the channel numbers for the target block.
- "Names" - this allows custom names to be assigned to the channels within the block, rather than Palladium's default names of "Mon XX" or "Aux YY". This is particularly useful for those mixers where, for example, the stereo inputs are called "13/14" and "15/16". The name entered here will be for the left most channel within the block, and Palladium will

auto-increment this name to generate the names for the other channels within the block. If this field is left blank, then Palladium will use it's default names.

- "Visible"s - these are used to show or hide each control within the block.
- "Learn"s - these are used to specify whether or not a control can be updated upon receipt of incoming MIDI data.
- "Trim"s - these are used to specify whether or not a control can be used in trim mode. Currently, the fader is the only control which supports trim mode.
- "Block Select" - this is the scroll bar at the bottom of the box which is used to select the target block.

Right-clicking on the "channels" box causes the channels pop-up menu to be displayed, which provides the following functions:

- "Clear" - this clears all data for the target block.
- "Insert"- inserts an empty block in place of the target block, and moves the target and all subsequent blocks one position to the right. Note that this function will only operate if the right-most block is empty, as otherwise that block's data would be lost.
- "Delete" - this deletes the target block, and causes all subsequent blocks to be moved one position to the left. An empty block is created in the right-most position.
- "Copy" - this copies the target block's data to the block clipboard.
- "Paste" - this copies the block clipboard's data to the target block.
- "Select" - this pre-selects the target block for either a "move" or "swap" operation. Once selected, the target block's background will be displayed in white.
- "Move" - this causes the pre-selected block to be moved to the target block, and all in-between blocks to be shuffled along.
- "Swap" - this causes the pre-selected block to be swapped with the target block. Any in-between blocks are unaffected.
- "Tidy" - this removes redundant blocks.

2.8.3. MIDI

The right most ("MIDI") box is used to specify the MIDI commands which Palladium needs to send to the mixer for each control. This box contains 8 groups of fields:

- "Port" - this determines which MIDI port will be used by the mixer.
- "Device" - this is the mixer's MIDI device number.
- EQ messages - double clicking on any of the messages for a particular EQ knob will cause the "MIDI EQ Messages" form to be displayed (see below).
- Button messages - double clicking on any of the messages for a particular button will cause the "MIDI Button Messages" form to be displayed (see below).
- Assignment messages - double clicking on any of the messages for the assignment will cause the "MIDI Assignment Messages" form to be displayed (see below).
- Fader messages - double clicking on any of the messages for the fader will cause the "MIDI Fader Messages" form to be displayed (see below).
- Input patch messages - double clicking on any of the messages for the Tx will cause the "MIDI Input Patch Messages" form to be displayed (see below).
- Slates messages - double clicking on any of the messages for the Character or Cast will

cause the "MIDI Slates Messages" form to be displayed (see below).

2.8.3.1.MIDI EQ Messages

This form is used to specify the messages which need to be sent in response to an EQ change, and also the legends for each position of the corresponding EQ knob.

The top part of the form contains the "Messages" box, and this contains the following fields:
- "Device Increment" - this is a number which will be added to the mixer's device number to generate the final device number for these messages. Note that device numbers will wrap around from 128 back to 1, so, for example, 126 + 5 = 3.
- "Change Message" - this is the hex codes for the left-most channel in the block's EQ change message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
    - "n" - MIDI small device number as used in short commands.
    - "nn" - MIDI large device number as used in sysex commands.
    - "XX" - this is the required MIDI data value. Currently, only 7-bit values are supported.
    - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Channel Increment" - this is used to specify a message which is "added to" the left-most channel's message to create the message for the other channels. For example, the "channel 4" message will be generated by the software as per the following formula:
    "channel 4 message" = "channel 1 message" + (3 x "channel increment").

Below the "Messages" box is the "Data Values / Legends" box. This contains a table with 1 cell for each of the possible 128 MIDI data values. Each cell contains the legend which needs to be displayed under the EQ knob for the corresponding data value. Blank cells will automatically cause the corresponding data value to be skipped. Two colours are used for displaying a cell's contents:
- Black is used for all cells other than the cell corresponding to the knob's default position.
- Red is used for the cell corresponding to the knob's default position.

Right clicking on the "Data Values / Legends" table causes a pop-up menu to be displayed which provides the following functions:
- "0..127" - this causes all the legends to be set to the numbers 0 thru 127.
- "Make Default" - this causes the current cell to be made the default position for the knob.
- "Delete All Legends" - this deletes all legends.
- "Copy Legends" - this copies all legends to the clipboard.
- "Paste Legends" - this pastes all legends from the clipboard.
- "Import Legends" - this allows all the legends to be imported from a text file.
- "Export Legends" - this allows all the legends to be exported to a text file.

Please note that the data in the "Messages" box is specific to the current block, whereas the data in the "Data Values / Legends" box is common to all blocks.

2.8.3.2.MIDI Button Messages

This form is used to specify the messages which need to be sent in response to a button press, and the form contains the following four fields:

- "Device Increment" - this is a number which will be added to the mixer's device number to generate the final device number for these messages. Note that device numbers will wrap around from 128 back to 1, so, for example, 126 + 5 = 3.
- "On message"- this is used to specify the hex codes for the left-most channel in the block's button on message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Off message"- this is used to specify the hex codes for the left-most channel in the block's button off message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Channel Increment" - this is used to specify a message which is "added to" the left-most channel's message to create the message for the other channels. For example, the "channel 4" message will be generated by the software as per the following formula:
  "channel 4 message" = "channel 1 message" + (3 x "channel increment").

2.8.3.3.MIDI Assignment Messages

This form is used to specify the messages which need to be sent in response to an assignment change, and the form contains the following three fields:

- "Device Increment" - this is a number which will be added to the mixer's device number to generate the final device number for these messages. Note that device numbers will wrap around from 128 back to 1, so, for example, 126 + 5 = 3.
- "Change message"- this is used to specify the hex codes for the left-most channel in the block's assignment change message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "XX" - assignment number - this will cause the software to insert the assignment number into the message.
  - "?" - this causes Palladium to transmit a '0', and accept anything.

- "Channel Increment" - this is used to specify a message which is "added to" the left-most channel's message to create the message for the other channels. For example, the "channel 4" message will be generated by the software as per the following formula:

"channel 4 message" = "channel 1 message" + (3 x "channel increment").

2.8.3.4. MIDI Fader Messages

This form is used to specify the messages which need to be sent in response to a fader move, and the form contains the following fields:
- "Device Increment" - this is a number which will be added to the mixer's device number to generate the final device number for these messages. Note that device numbers will wrap around from 128 back to 1, so, for example, 126 + 5 = 3.
- "Change Message" - this is the hex codes for the left-most channel in the block's fader change message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "WW" - this is the 7 most significant bits of the calculated data value, and is valid for all data sizes.
  - "XX" - this is the next 7 most significant bits of the calculated data value, and is valid for data sizes of 14 to 28 bits.
  - "YY" - this is the next 7 most significant bits of the calculated data value, and is valid for data sizes of 21 or 28 bits.
  - "ZZ" - this is the 7 least significant bits of the calculated data value, and is valid for a data size of 28 bits only.
  - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Channel Increment" - this is used to specify a message which is "added to" the left-most channel's message to create the message for the other channels. For example, the "channel 4" message will be generated by the software as per the following formula:
    "channel 4 message" = "channel 1 message" + (3 x "channel increment").
- "Data Size (bits)"- this is used to specify the size of the data which is sent to the mixer.
- "Top Position" - this is used to specify the top limit for the mixer's faders. Palladium will clip it's own fader values at this limit prior to calculating and transmitting the required data value.
- "Top Data Value" - this is the data value which needs to be sent to the mixer corresponding to the top limit of the mixer's faders.
- "Bottom Position" - this is used to specify the bottom limit for the mixer's faders. Palladium will clip it's own fader values at this limit prior to calculating and transmitting the required data value.
- "Bottom Data Value" - this is the data value which needs to be sent to the mixer corresponding to the bottom limit of the mixer's faders.
- "Mid Positions" - 14 of these are provided, and they are used to specify particular mid-points on a fader's travel.

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- "Mid Data Values" - 14 of these are provided, and they are used to specify the data values which should be sent to the mixer corresponding to the each mid-point.

Hint: The easiest way to set the fader mid-points is to use the MIDI data monitor to capture your mixer's MIDI output, and move a channel fader to each of its critical positions, and examine the data value which the mixer has sent for each position.

2.8.3.5. MIDI Input Patch Messages

This form is used to specify the messages which need to be sent in response to a transmitter change, and also the names for the mixer's physical inputs.

The top part of the form contains the "Messages" box, and this contains the following fields:
- "Device Increment" - this is a number which will be added to the mixer's device number to generate the final device number for these messages. Note that device numbers will wrap around from 128 back to 1, so, for example, 126 + 5 = 3.
- "Change Message" - this is the hex codes for the left-most channel in the block's input patch message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
    - "n" - MIDI small device number as used in short commands.
    - "nn" - MIDI large device number as used in sysex commands.
    - "WW", "XX", "YY" & "ZZ" - these are the values in the corresponding columns of the "Patch Details" table (see below).
    - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Channel Increment" - this is used to specify a message which is "added to" the left-most channel's message to create the message for the other channels. For example, the "channel 4" message will be generated by the software as per the following formula:
    "channel 4 message" = "channel 1 message" + (3 x "channel increment").

Below the "Messages" box is the "Patch Details" box. This contains a table with 1 row for each of the mixer's physical inputs, and the following columns:
- "Patch Name" - this is the input's name, and whatever is entered here will appear on the "Tx Patching" form.
- "WW", "XX", "YY" & "ZZ" - these are 4 data values which can be inserted into the patch change MIDI message.

Right clicking on the "Patch Details" table causes a pop-up menu to be displayed which provides the following functions:
- "Delete All Patches" - this deletes all data for all patches.
- "Copy Patches" - this copies all data for all patches to the clipboard.
- "Paste Patches" - this pastes all data for all patches from the clipboard.
- "Import Patch Names" - this allows the names of all the patches to be imported from a text file.
- "Export Patch Names" - this allows the names of all the patches to be exported to a text

file.

Please note that the data in the "Messages" box is specific to the current block, whereas the data in the "Patch Details" box is common to all blocks.

2.8.3.6. MIDI Slates Messages

This form is used to specify the messages which need to be sent in response to a character or cast change, and the form contains the following fields:
*   "Device Increment" - this is a number which will be added to the mixer's device number to generate the final device number for these messages. Note that device numbers will wrap around from 128 back to 1, so, for example, 126 + 5 = 3.
*   "Data Format" - this determines what data will be sent, and has four options:
    *   "Character" - the data will consist of the character slate only.
    *   "Cast" - the data will consist of the cast slate only.
    *   "Character:Cast" - the data will consist of the character slate, then a colon (":"), then the cast slate.
    *   "Cast:Character" - the data will consist of the cast slate, then a colon (":"), then the character slate.
*   "Characters Per Slate" - this determines how many characters are sent in total.
*   "Characters Per Message" - this determines how many characters are sent in each message, and consequently, how many messages are needed to send all characters.
*   "Character Set" - this determines whether 7-bit or 8-bit characters are transmitted. In the case of 8-bit characters, these are encoded into 7-bit MIDI data bytes as per the following example:
        Characters: AAAAAAAA.BBBBBBBB.CCCCCCCC.DDDDDDDD
        MIDI data bytes: 0000AAAA.0AAAABBB.0BBBBBCC.0CCCCCCD.0DDDDDDD
*   "Change message"- this is used to specify the hex codes for the left-most channel in the block's 1st slate change message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
    *   "n" - MIDI small device number as used in short commands.
    *   "nn" - MIDI large device number as used in sysex commands.
    *   "S1", "S2", … , "SF" - slate characters - this will cause the software to insert the corresponding slate character into the message.
    *   "?" - this causes Palladium to transmit a '0', and accept anything.
*   "Characters Increment" - this is used to specify a message which is "added to" a channel's first message to make the subsequent messages. For example, the 3rd message will be generated by the software as per the following formula:
        "3rd message" = "1st message" + (2 x "characters increment").
*   "Channel Increment" - this is used to specify a message which is "added to" the left-most channel's messages to create the messages for the other channels. For example, the "channel 4" message will be generated by the software as per the following formula:
        "channel 4 message" = "channel 1 message" + (3 x "channel increment").

Right-clicking on the form causes a pop-up menu to be displayed, which provides copy and paste functions.

2.8.4. Mixer

The bottom ("Mixer") box on the "Mixer Setup" form is used to enter descriptive information about the mixer, and contains 3 fields: "manufacturer", "model" and "size".

2.8.5. Menu

The "Mixer Setup" form also contains it's own file menu which provides the following functions:
- "New" - this clears all the mixer's setup data.
- "Simple" - this clears all the mixer's setup data, and generates a simple generic setup which is the same as the default setup shown when the program starts.
- "Open" - this replaces the mixer's setup with that contained in a specified file. Note that this file is not the same as a show file which contains its own mixer setup data.
- "Save" - this saves the mixer's setup to a specified file. Note that this file is not the same as a show file which contains its own mixer setup data.
- "Save As" - this saves a copy of the mixer's setup to a specified file. Note that this file is not the same as a show file which contains its own mixer setup data.

Upon closing the mixer setup form, the "Auto Reverse" message box will be displayed for any buttons whose "live" state has changed. This allows the user to easily reverse the state of all buttons, and is typically used when a user changes from a mixer using "mute" logic to one which uses "on" logic, or vice versa.

3.   Effects Processors

Palladium supports a "rack" of up to 8 effects processors.

Each effects processor provides the following controls:
- "Program" - this causes a "program change" message to be sent to the processor, and the processor will remain in this state until another program is selected in a subsequent cue. The data displayed in this box can have one of two colours:
  - Red means that the displayed program is new for this cue, and that a program change command will always be sent when this cue is entered.
  - Black means that the display reflects the last program which was set in a previous cue. A program change command will not be sent when this cue is entered, unless the cue is entered as a result of a list "jump". In this situation, every device is checked, and commands are sent if required.

- "Modifier" - this causes a "control change" message to be sent to the processor, and the processor will remain in this state until another modifier is selected in a subsequent cue. The data displayed in this box can have one of two colours:
  - Red means that the displayed modifier is new for this cue, and that a control change command will always be sent when this cue is entered.
  - Black means that the display reflects the last modifier which was set in a previous cue. A control change command will not be sent when this cue is entered, unless the cue is entered as a result of a list "jump". In this situation, every device is checked, and commands are sent if required.
- "Other" - this allows additional data to be sent to the processor, and the processor will remain in this state until another other is selected in a subsequent cue. The data displayed in this box can have one of two colours:
  - Red means that the displayed other is new for this cue, and that the other data will always be sent when this cue is entered.
  - Black means that the display reflects the last other which was set in a previous cue. An other change will not be sent when this cue is entered, unless the cue is entered as a result of a list "jump". In this situation, every device is checked, and commands are sent if required.
- "Setup" - this causes the "Effects Processor Setup" form to be displayed (see below).

Right-clicking on either the "program", "modifier" or "other" box causes a pop-up menu to be displayed which provides the following functions:
- "Delete" - this deletes the program / modifier / other change from the current cue only.
- "Move To Previous Cue"- this moves the program / modifier / other change to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
- "Move To Next Cue"- this moves the program / modifier / other change to the next cue, if the next cue exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.
- "Clear" - this deletes all changes of this program / modifier / other from all cues.
- "Tidy" - this removes redundant program / modifier / other changes. For example, if a program was set to 10 in cue 17, but then a previous cue was subsequently modified to also set the program to 10, then the program change in cue 17 is no longer needed. This redundant change would be deleted by a "tidy" operation.

3.1. Effects Processor Setup

The "Effects Processor Setup" form contains 4 main boxes: "Processor", "Programs", "Modifier" and "Others".

3.1.1. Processor

The "Processor" box provides basic data about the effects processor, and contains the

following fields:
- "Name" - this is the name of the processor as it will be displayed on the effects rack.
- "Port" - this determines which MIDI port will be used by the processor.
- "Visible" - this determines whether or not the processor is visible in the effects rack.

3.1.2. Programs

The "Programs" box allows a name to be assigned to each program, and contains the following fields:
- "Device" - this sets the MIDI device number to be used for the program change commands.
- "Learn" - this is used to specify that the program can be updated upon receipt of incoming MIDI data.
- "Uses" - this is used to select the range of program numbers displayed to the user. The relationship between these numbers and the actual MIDI program numbers is as per the following table:

	Displayed Program Numbers		
	Uses = 0..127	Uses = 1..128	Uses = Custom
MIDI program number 0	0	1	see below
MIDI program number 127	127	128	see below

- "Custom Nos." - clicking this button causes the "Custom Program Numbers" form to be displayed (see below).
- "Programs list" - this contains a list of all the programs, and left-clicking a program allows its name to be edited in the "Name" box.
- "Name" - this is used to edit a program's name.
- "Msg" - this is used to specify the hex codes for the program change messages. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "PP" - this will cause the software to insert the 7 least significant bits (bits 6..0) of the program number into the message.
  - "QQ" - this will cause the software to insert the 7 most significant bits (bits 13..7) of the program number into the message.
  - "KK" - this will cause the software to insert the 7 least significant bits (bits 6..0) of the bank number into the message.
  - "LL" - this will cause the software to insert the 7 most significant bits (bits 13..7) of the bank number into the message.
  - "?" - this causes Palladium to transmit a '0', and accept anything.

3.1.2.1.Custom Program Numbers

This form is used in situations where either the effects processor has more than 128 programs, or it programs utilise an unusual numbering system. The form contains the following fields:

- "First Program" - this is the first number which will be displayed to the user, and it can have any value in the range 0 to 2046.
- "Last Program" - this is the last number which will be displayed to the user, and it can have any value in the range 1 to 2047.
- "MIDI Map" - this is used to specify the actual MIDI program, bank & device increment numbers corresponding to each program. Sixteen blocks of program / bank / device increment numbers are provided, and there is one row in the table for each block. Each row contains the following columns:
  - "Block" - this is the block (table row) number, and will have a range of 1 to 16.
  - "Start" - this is the number corresponding to the first program in the block.
  - "Length" - this is the number of programs in the block.
  - "Bank" - this is the MIDI bank number corresponding to the block. Note that this number will be constant within each block.
  - "Program" - this is the MIDI program number corresponding to the first program in the block. Note that this number will be incremented for each program within a block, and thus the last program in the block will have a MIDI program number equal to the block's base MIDI program number plus the length of the block - 1.
  - "Dev Inc" - this is a number which is added to the effects processor's base MIDI device number for each block.

3.1.3.Modifier

The "Modifier" box contains the following fields:
- "Device" - this sets the MIDI device number to be used for the modifier commands.
- "Learn" - this is used to specify that the modifier can be updated upon receipt of incoming MIDI data.
- "Msg" - this is used to specify the hex codes for the modifier's MIDI message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "MM" - modifier number - this will cause the software to insert the modifier number into the message.
  - "?" - this causes Palladium to transmit a '0', and accept anything.

3.1.4.Others

The "Others" box allows a name and MIDI message to be assigned to each other, and

contains the following fields:
- "Device" - this sets the MIDI device number to be used for the other messages.
- "Learn" - this is used to specify that the other can be updated upon receipt of incoming MIDI data.
- "Others list" - this contains a list of all the others, and left-clicking an other allows its details to be edited.
- "Name" - this is used to edit an other's name.
- "Msg" - this is used to specify the hex codes for the other's MIDI message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "OO" (letter Os) - other number - this will cause the software to insert the other number into the message.
  - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Common Message (01)" - selecting this option causes other 1's message to be sent for all others. This is only useful if other 1's message contains the "OO" parameter.

3.1.5. Menu

The "Effects Processor Setup" form also contains it's own file menu which provides the following functions:
- "New" - this clears all the effects processor's setup data.
- "Simple" - this clears all the effects processor's setup data, and generates a simple generic setup which is the same as the default setup shown when the program starts.
- "Open" - this replaces the effects processor's setup with that contained in a specified file. Note that this file is not the same as a show file which contains its own effects processor setup data.
- "Save" - this saves the effects processor's setup to a specified file. Note that this file is not the same as a show file which contains its own effects processor setup data.
- "Save As" - this saves a copy of the effects processor's setup to a specified file. Note that this file is not the same as a show file which contains its own effects processor setup data.
- "Import Program Names" - this allows the list of program names to be imported from a text file, with the first program name being set to the file's first line, the second program name being set to the file's second line, and so on. This is particularly useful when creating a new device which has it's manual available in electronic form. If you can copy and paste all the program names from the manual to the text file, then all the names can be entered into Palladium with just a few mouse clicks.
- "Export Program Names" - this creates a text file containing one line for each program name. Using this command in conjunction with the Import command (above) and your favorite text editor, it is easy to make large scale changes to the program names.

4.   Playback Devices

Palladium supports a "rack" of up to 8 playback devices.

Depending upon each device's configuration (see setup section below), any or all of the following controls are available:
* "Stop" button - clicking this will result in a "stop" command being sent to the device. If this button has tracks enabled, then the required track can be selected in the "Track" field.
* "Pause" button - clicking this will result in a "pause" command being sent to the device. If this button has tracks enabled, then the required track can be selected in the "Track" field.
* "Cue" button - clicking this will result in a "cue" command being sent to the device. If this button has tracks enabled, then the required track can be selected in the "Track" field.
* "Play" button - clicking this will result in a "play" command being sent to the device. If this button has tracks enabled, then the required track can be selected in the "Track" field.
* "Track" - this is used to select the required track data to be sent to the device, and will only be displayed if the corresponding button has tracks enabled.
* "Setup" - this causes the "Playback Setup" form to be displayed (see below).

Right-clicking on any of the main buttons causes a pop-up menu to be displayed which provides the following functions:
* "Move To Previous Cue"- this moves the button press to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
* "Move To Next Cue"- this moves the button press to the next cue, if the next cue exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.
* "Clear" - this clears all presses of this button in all cues.

4.1. Playback Setup

The "Playback Setup" form contains 3 main boxes: "Source", "Controls" and "Tracks".

4.1.1. Source

The "Source" box provides basic data about the playback source, and contains the following fields:
* "Name" - this is the name of the source as it will be displayed on the playback rack.
* "Port" - this determines which MIDI port will be used by this source.
* "Device" - this is the source's MIDI device number.
* "Learn" - this determines whether or not the source can be updated upon receipt of incoming MIDI messages.
* "Visible" - this determines whether or not the source is visible in the playback rack.

4.1.2. Controls

The "Controls" box determines which controls are available to the user, whether or not each control has an associated track, and the MIDI messages corresponding to each control. The box contains one row for each button, plus an additional row for the E-Stop message. Each row contains one or more of the following fields:

- "Enable" - this determines whether or not the control will be available to the user.
- "Track" - this determines whether or not the control has an associated track.
- "MIDI message"- this is use to specify the hex codes for the control's MIDI message. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "TT" - track number - this will cause the software to insert the track number into the message, and is only available if the "uses" option (see above) isn't "Locations".
  - "HH" - hours - this will cause the software to insert the hours value into the message, and is only available if the "uses" option (see above) is "Locations".
  - "MM" - minutes - this will cause the software to insert the minutes value into the message, and is only available if the "uses" option (see above) is "Locations".
  - "SS" - seconds - this will cause the software to insert the seconds value into the message, and is only available if the "uses" option (see above) is "Locations".
  - "RR" - frames - this will cause the software to insert the frames value into the message, and is only available if the "uses" option (see above) is "Locations".
  - "?" - this causes Palladium to transmit a '0', and accept anything.

4.1.3. Tracks

The "Tracks" box allows a name to be associated with each track; these names will appear in the track select boxes on the playback rack.

The first field in the tracks box is "Uses"; this determines how tracks are selected for the source, and can have one of the following options:

- "Tracks (0..127)" - this results in tracks being selected by track number, with these numbers having a range of 0..127.
- "Tracks (1..128)" - this results in tracks being selected by track number, with these numbers having a range of 1..128.
- "Locations" - this results in tracks being selected by their location, or time code value. This option is intended primarily for use with hard disk recorders, or other devices which support MMC (MIDI Machine Control) and MTC (MIDI Time Code).
- "Notes (C0..G10)" - this results in tracks being selected by MIDI note name, with these names having a range C0..G10. This option is intended primarily for use with samplers.
- "Notes (C-1..G9)" - this results in tracks being selected by MIDI note name, with these names having a range C-1..G9. This option is intended primarily for use with samplers.
- "Notes (C-2..G8)" - this results in tracks being selected by MIDI note name, with these

names having a range C-2..G8. This option is intended primarily for use with samplers.

The following table shows the relationship between MIDI numbers and track numbers / locations / note names for the various "uses" options:

	"Uses" Option					
	Tracks (0..127)	Tracks (1..128)	Locations	Notes (C0..G10)	Notes (C-1..G9)	Notes (C-2..G8)
MIDI number = 0	0	1	N/A	C0	C-1	C-2
MIDI number = 127	127	128	N/A	G10	G9	G8

Below the "Uses" field is the "Tracks List" which contains a list of all the playback source's tracks. Left-clicking on a track in the list allows the track's name to be edited in the "Title" box, and in the case where the "uses" option (see above) is "Locations", the track location may be edited in the "Location" box.

4.1.4. Menu

The "Playback Setup" form also contains it's own file menu which provides the following functions:
- "New" - this clears all the playback device's setup data.
- "Simple" - this clears all the playback device's setup data, and generates a simple generic setup which is the same as the default setup shown when the program starts.
- "Open" - this replaces the playback device's setup with that contained in a specified file. Note that this file is not the same as a show file which contains its own playback setup data.
- "Save" - this saves the playback device's setup to a specified file. Note that this file is not the same as a show file which contains its own playback setup data.
- "Save As" - this saves a copy of the playback device's setup to a specified file. Note that this file is not the same as a show file which contains its own playback setup data.
- "Import Track Titles" - this allows the list of track titles to be imported from a text file, with the first track title being set to the file's first line, the second track title being set to the file's second line, and so on. This is particularly useful when a CD's track listing is available in electronic form. If you can copy and paste all the track titles from the track listing to the text file, then all the titles can be entered into Palladium with just a few mouse clicks.
- "Export Track Titles" - this creates a text file containing one line for each track title. Using this command in conjunction with the Import command (above) and your favorite text editor, it is easy to make large scale changes to the track titles.

5.   GPIs

Palladium supports up to 16 GPIs (General Purpose Impulses, or relay outputs), each of which has three possible operating modes:
- "Pulse" - in this mode, the relay will close momentarily at the start of a cue. The duration

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of this closure is dependent on the external relay box.

- "Toggle" - in this mode, the relay will close at the start of one cue, and open at the start of another cue.
- "Tally" - in this mode, the relay will be closed depending upon the state of a specified mixer channel. This mode could, for example, be used with a light next to a backstage mic; the light will be on whenever the mic is "live".

The "GPIs" tab contains a row of 16 buttons, each of which corresponds to one of the GPI outputs. Clicking on a button will do one of the following:

- In the case of a "pulse" mode GPI, a pulse will be added to, or removed from, the current cue.
- In the case of a "toggle" mode GPI, a state change will be added to, or removed from, the current cue.
- In the case of a "tally" mode GPI, clicking the button will have no effect.

Right-clicking on any of the buttons causes a pop-up menu to be displayed which provides the following functions:

- "Move To Previous Cue"- this moves the button press to the previous cue, if the previous cue exists. The user is asked for confirmation if the move will result in data in the previous cue being overwritten.
- "Move To Next Cue"- this moves the button press to the next cue, if the next cue exists. The user is asked for confirmation if the move will result in data in the next cue being overwritten.
- "Clear" - this clears all presses of this button in all cues.
- "Tidy" - this removes redundant button presses. For example, if a button was pressed "on" in cue 17, but then a previous cue was subsequently modified to press the button "on", then the button press in cue 17 is no longer needed. This redundant press would be deleted by a "tidy" operation.

5.1. GPI Setup

In the lower right corner of the GPI tab is a "setup" button, which when clicked causes the "GPI Setup" form to be displayed.

5.1.1. GPIs

The left side of the "GPI Setup" form contains a box showing 4 of the 16 GPIs, and a scroll bar. Each of the 4 GPIs has the following fields:

- "colour" - double-clicking on this field causes the "colour selection" form to be displayed.
- "name" - this is the name which will appear under the GPI's button on the main GPIs tab.
- "pulse" - clicking on this field causes the GPI's mode to be set to "pulse".
- "toggle" - clicking on this field causes the GPI's mode to be set to "toggle".
- "tally" - clicking on this field causes the GPI's mode to be set to "tally", and selecting this

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mode causes three more fields to be displayed:

- "State" - this determines the required state for the GPI when the corresponding mixer channel is live.
- "Mixer" - this is used to select the target mixer.
- "Channel" - this is used to select the target mixer's channel.

5.1.2. Device

The upper right side of the "GPI Setup" form contains the "Device" box, and this contains the following fields:

- "Name" - this is the name of the GPI output device.
- "Learn" - this determines whether or not the GPI programming can be updated upon receipt of incoming MIDI messages.

5.1.3. MIDI

The lower right side of the "GPI Setup" form contains the "MIDI" box, and this contains the following fields:

- "Port" - this determines which MIDI port will be used by the GPIs.
- "Device" - this is used to select the device number which will be automatically inserted into the messages in place of the "n" character.
- "On" , "Off" & "Pulse" messages - these are used to enter the hex codes corresponding to each message for GPI 1. Right-clicking on any message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the messages may contain the following special characters:
    - "n" - MIDI small device number as used in short commands.
    - "nn" - MIDI large device number as used in sysex commands.
    - "?" - this causes Palladium to transmit a '0', and accept anything.
- "Increment" message - this is used to specify a message which is "added to" the GPI 1 messages to create the messages for the other GPIs. For example, the "pulse GPI 4" message will be generated by the software as per the following formula:

    "GPI 4 pulse message" = "GPI 1 pulse message" + (3 x "increment message").

5.1.4. Menu

The "GPI Setup" form also contains it's own file menu which provides the following functions:

- "New" - this clears all the GPI setup data.
- "Simple" - this clears all the GPI setup data, and generates a simple generic setup which is the same as the default setup shown when the program starts.
- "Open" - this replaces the GPI setup with that contained in a specified file. Note that this file is not the same as a show file which contains its own GPI setup data.
- "Save" - this saves the GPI setup to a specified file. Note that this file is not the same as a show file which contains its own GPI setup data.

- "Save As" - this saves a copy of the GPI setup to a specified file. Note that this file is not the same as a show file which contains its own GPI setup data.

6.   Main Menu

6.1. File Menu

The file menu provides the following functions:

1. New - clears all data ready to start a new show.
2. Open - opens an already existing file.
3. Save - saves a file.
4. Save As - saves a copy to a new file.
5. Import from MicPlot - imports a file from MicPlot. Three options are available here, to import the complete show, just the players (characters, actors & understudies), or just update the Tx numbers. In the case of the former, this will cause the "Import MicPlot" form to be displayed (see below).
6. Export to Moves - exports a file to Moves. There are two options here, to export the show, or just a template. The former exports all relevant data, while the latter deletes production specific data such as actor and understudy details. Either option will cause the "Export To Moves" form to be displayed (see below).
7. Exit - exit the program.

6.1.1. Import From MicPlot

Importing a show from MicPlot into Palladium results in the following actions:
- All player information such as characters, actors & understudies is copied from the MicPlot file to Palladium.
- A cue is added to Palladium's cue list for every movement in the MicPlot file.
- Every character entrance in the MicPlot file will generate a "mixer channel live" or "fader up" event for the associated mixer channel.
- Every character exit in the MicPlot file will generate a "mixer channel off" or "fader down" event for the associated mixer channel.

When displayed, the top left corner of the form shows the "statistics" box, which displays the number of characters, cast and mics present in the MicPlot file.

To the right of the "statistics" box is the "mode" box which determines how the import will be done, and there are options here for one mixer channel per character, one mixer channel per actor, or one mixer channel per mic, and whether the import will result in channel on / off events or fader moves.

Below these boxes is the "target" grid, which is used to select which mixer channels will

receive the imported data. Clicking on a cell in the grid will cause that cell to toggle. Multiple cells can be toggled by dragging the mouse over the grid.

Below the target grid are four buttons:
- "Clear". This clears all cells in the grid.
- "Auto". This assigns the first source to the first mixer channel, the second source to the second mixer channel, and so on.
- "Cancel". This aborts the import operation.
- "OK". This finishes the import operation. A warning will be displayed if some sources have not been allocated to mixer channels.

6.1.2. Export To Moves

This does the reverse of the import from MicPlot, and will create a Moves file as per the following:
- When exporting a complete show, all player information such as characters, actors & understudies is copied from Palladium to the Moves file; when exporting a template, only the characters are copied.
- A movement is added to the Moves file for every cue in Palladium's cue list.
- Every "mixer channel live" or "fader up" event in Palladium will result in an entrance for the associated character being added to the Moves file.
- Every "mixer channel off" or "fader down" event in Palladium will result in an exit for the associated character being added to the Moves file.

When displayed, the form contains an option for selecting the source of movement data, and this can either be channel live / off events or fader moves. In the case of the latter, the threshold is -40dB.

Below that is a target grid for selecting which channels are to be used as sources for the required data. Clicking on a cell in the grid will cause that cell to toggle. Multiple cells can be toggled by dragging the mouse over the grid.

Below the target grid are four buttons:
- "Clear". This clears all cells in the grid.
- "All". This selects all cells in the grid.
- "Cancel". This aborts the export operation.
- "OK". This finishes the export operation.

6.2. Mode Menu

This has two options, and is used to set the operating mode of the software:
1. "Rehearsal" mode allows full functionality.
2. "Performance" mode disables certain functions which would most likely be disastrous if

they were invoked during a performance. These functions include exiting the program, minimising the program's window, clearing all data, loading a new file, and so on.

6.3. Channels Menu

This is used to specify the names and patching for all mixer channels, and has the following options:

1. Players
2. Others
3. Tx Patching

6.3.1. Players

Selecting this option causes the "Players" form to be displayed, and this form contains three tabs: characters, cast & understudies.

6.3.1.1. Characters Tab

This tab is used to describe the characters in the show, and the data on this page should remain constant from one production to the next.

The left hand side contains a list of all the characters in the show. Left-clicking on a particular character will allow the character's details to be edited in the details box on the top centre of the tab. New characters are added by either left-clicking on the '*' at the bottom of the list, or clicking the "Add" button. Right-clicking on a character will display a menu of editing functions including clear, insert, delete, copy, paste, sort & tidy. The order of the characters in this list can also be changed by dragging and dropping.

The details box is used to enter all the details for a particular character:
- The "name" field contains the full character name.
- The "abbreviation" field contains a shortened version which will appear on the mixer scribble strips.
- The "played by" field sets the cast member who normally plays this character; understudies are specified later on the "understudies" tab.

6.3.1.2. Cast Tab

This tab is used to describe the actors in your production, and as such this tab will be empty when a show template is imported.

The left hand side contains a list of all the actors in the show. Left-clicking on a particular

actor will allow the actor's details to be edited in the details box on the top centre of the tab. New actors are added by either left-clicking on the '*' at the bottom of the list, or clicking the "Add" button. Right-clicking on an actor will display a menu of editing functions including clear, insert, delete, copy, paste, sort & tidy. The order of the actors in this list can also be changed by dragging and dropping.

The details box is used to enter all the details for a particular actor:
- The "name" field contains the actor's full name.
- The "abbreviation" field contains a shortened version which will appear on the mixer scribble strips.
- The "ensemble" box is checked if the cast member is also a member of the ensemble. The effect of checking this box is that an extra character name in the form of "ENS - actor name" will appear on the understudies and movements tabs, and also on the mixers' "Character and Cast" forms.
- The "Tx number" is used by Palladium for input patching, and will also appear in the mixer channels' "Tx" boxes.

Below the details box are two other boxes which show information about the actor including the characters they play, and the characters they understudy.

6.3.1.3. Understudies Tab

This tab is used to describe the understudies in your production, and as such this tab will be empty when a show template is imported.

The left hand side contains a list of all the understudies in the show. Left-clicking on a particular understudy will allow the understudy's details to be edited in the details box on the top centre of the tab. New understudies are added by either left-clicking on the '*' at the bottom of the list, or clicking the "Add" button. Right-clicking on an understudy will display a menu of editing functions including clear, insert, delete, copy, paste, sort & tidy. The order of the understudies in this list can also be changed by dragging and dropping.

The details box is used to enter all the details for the principal change:
- The "name" field contains the understudy name e.g. "Fred as John".
- The "character" field selects the character to be understudied.
- The "original player" field displays the name of the actor who normally plays the character.
- The "new player" field is used to select who will now play the character.
- The "new mic" field selects whose mic will be used, and this will typically be either the original or new player's mic, but doesn't have to be.

The lower half of the tab contains the details for the consequential changes. The number of lines displayed in this box will change as the data is entered, and every time a change is made that results in a different number of actors being effected, the box will be redrawn. Each row in the box contains "character", "original player", "new player" and "new mic" fields which have similar meanings to those in the principal change box.

6.3.2. Others

This is used for any channels which aren't actors such as the orchestra, floor mics, playback sources, sub groups, auxes, masters, and so on.

The left side of the "Others" form contains a list of all the others in the show. Left-clicking on a particular other will allow the other's details to be edited in the details box on the right side of the form. New others are added by either left-clicking on the '*' at the bottom of the list, or clicking the "Add" button. Right-clicking on an other will display a menu of editing functions including clear, insert, delete, copy, paste, sort & tidy. The order of the others in this list can also be changed by dragging and dropping.

The details box is used to enter all the details for a particular other:
- The "Line 1" field contains information which will be displayed on the mixers' "character" scribble strips.
- The "Line 2" field contains information which will be displayed on the mixers' "cast" scribble strips.

6.3.3. Tx Patching

This is used to specify which physical input on each mixer is connected to each transmitter.

The form contains a number of rows, with each row containing all the data for a particular transmitter. Each row contains the following columns:
- "Tx" - this contains the transmitter number associated with the row.
- "Mixer 1 Input" - this is used to select the physical input on mixer 1 which is connected to the transmitter. The names which appear in this box are defined on Mixer 1's setup form.
- "Mixer 2 Input" & "Mixer 3 Input" - as above for mixers 2 & 3.

Right-clicking on a table entry results in a pop-up menu being displayed which provides the following options:
- "Fill Same" - clicking this causes the previous entry to be copied to the current entry, plus all subsequent entries.
- "Fill Next" - clicking this causes the input after the one in the previous entry to be copied to the current entry; all subsequent entries will have their inputs set to the one after their respective predecessors.

6.4. MIDI Menu

This has a number of options, and is used to set Palladium's global MIDI parameters. This MIDI menu provides the following functions:

1. Ports
2. Remote Controls
3. MIDI Show Control (MSC)
4. MIDI Time Code (MTC)
5. External Triggers
6. Program Change
7. Data Monitor
8. File Transfer

6.4.1. Ports

Selecting this option causes the "MIDI ports" form to be displayed. This form is used to select which of the PC's MIDI ports are to be used for input, and which are to be used for output. A total of eight "logical" ports are available for both input and output, and these are designated "A" to "H".

The main body of this form contains a grid of 8 rows by 5 columns. Each of the rows corresponds to one of the logical ports ("A" to "H"), and the columns have the following functions:

- "Port" - this denotes the logical port's Id, and will be in the range "A" to "H".
- "Input" - this is used to select the physical input port which is associated with the logical port.
- "Status" - this indicates the state of the physical input port, and each status indicator can have two colours: red indicates that errors have been encountered on the port, and green indicates that no errors have been encountered. Errors are latching, which means that once an error has occurred, it will remain displayed until cleared.
- "Output" - this is used to select the physical output port which is associated with the logical port.
- "Status" - this indicates the state of the physical output port, and each status indicator can have two colours: red indicates that errors have been encountered on the port, and green indicates that no errors have been encountered. Errors are latching, which means that once an error has occurred, it will remain displayed until cleared.

The "Ports" form also contains its own menu, which provides the following functions:
- "Assignments"
    - "Clear All Port Assignments" - this will clear all logical to physical port assignments.
- "Status"
    - "Refresh Ports Status" - this will update the status indicators. These indicators are also automatically updated whenever the form is opened.
    - "Clear Error Indicators" - this will reset all error indicators. After clicking , all status indicators should be green, unless a port has a recurring error.
    - "Reset All Ports" - this will cause all physical ports to be closed and then reopened, and should fix recurring errors. If it doesn't, it means that the MIDI port concerned has encountered a serious error, which may require Palladium to be restarted, or even the PC to be rebooted to fix.

6.4.2. Remote Controls

Selecting this option causes the "Remote Controls" form to be displayed. This form allows MIDI messages to be defined which, upon receipt by the software, will be the treated as if the user had clicked the corresponding button. This form contains the following fields:
- "Name" - this is the name of the remote control device.
- "Port" - this determines which MIDI port will be used by the remote control.
- "Device" - this is used to select the device number which will be automatically inserted into the messages in place of the "n" character.
- "Next", "Previous", "Crossfade" & "E-Stop" messages - these are used to enter the hex codes corresponding to each button. Right-clicking on any message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the messages may contain the following special characters:
    - "n" - MIDI small device number as used in short commands.
    - "?" - any character will be accepted in this position.

The "Remote Controls" form also contains it's own file menu, which provides the following functions:
- "New" - this clears all the remote control data.
- "Open" - this replaces the current remote control setup with that contained in a specified file. Note that this file is not the same as a show file which contains its own remote control setup data.
- "Save" - this saves the remote control setup to a specified file. Note that this file is not the same as a show file which contains its own remote control setup data.
- "Save As" - this saves a copy of the remote control setup to a specified file. Note that this file is not the same as a show file which contains its own remote control setup data.

6.4.3. MIDI Show Control (MSC)

Selecting this option causes the "MIDI Show Control (MSC)" form to be displayed. This form allows MSC messages to be defined, which will be automatically transmitted by Palladium whenever to goes to a new cue.

This form contains one box ("Transmit") which has the following fields:
- "Enable" - when checked, the enables the transmission of the MSC messages.
- "Port" - this determines which MIDI port will be used for the messages.
- "Device" - this is used to select the device number which will be automatically inserted into the messages in place of the "nn" character.
- "Numeric Data Only" - when checked, this suppresses the transmission of non-numeric characters in the cue number, cue list, or cue path fields. This forces Palladium to comply with the original MSC specification, even though many applications, including Palladium, will accept any character in these fields.
- "Cue Number" - when checked, this allows the transmission of the cue number. If this is unchecked, then Palladium will only transmit a generic "go" command which doesn't include any cue specific data. To the right of the check box is the cue number source,

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which can have one of the following values:
- Cue - this option causes Palladium to use its cue number as the source of the MSC cue number.
- Id - this option causes Palladium to use the cue Id as the source of the MSC cue number.
- Auto - this option causes Palladium to use the cue Id as the source of the MSC cue number, or if there isn't an Id for the cue concerned, then its cue number is used instead.

- "Cue List" - when checked, this allows the transmission of the cue list. If this is unchecked, then Palladium will transmit a "go" command containing a cue number only. To the right of the check box is the cue list data, which is common to all cues.
- "Cue Path" - when checked, this allows the transmission of the cue path. If this is unchecked, then Palladium will transmit a "go" command containing a cue number and list only. To the right of the check box is the cue path data, which is common to all cues.
- "Test" button - when clicked, Palladium will transmit an MSC test message for the current cue.

6.4.4. MIDI Time Code (MTC)

Selecting this option causes the "MIDI Time Code (MTC)" form to be displayed; this form is used to setup Palladium's MIDI time code readers.

The main body of this form contains a grid of 8 rows by 5 columns. Each of the rows corresponds to one of the logical ports ("A" to "H"), and the columns have the following functions:
- "Port" - this denotes the port's Id, and will be in the range "A" to "H".
- "Enable"- when checked, this enables the port's time code reader.
- "Frame Rate" - this is used to specify the port's time code frame rate, and has the following options:
    - "24" - used for 24 frames per second time code.
    - "25" - used for 25 frames per second time code.
    - "30 drop frame" - used for 30 frames per second, drop frame time code.
    - "30" - used for 30 frames per second, non drop frame time code.
- "Time Code Reader" - this is used to display the last time code value read from the port concerned. In addition to the actual time code value, this will display either "Full" or "Quarter", to denote whether the last received time code value was from a full frame, or quarter frame message.
- "Status" - this indicates whether the received time code uses the expected frame rate. The indictor will be green if the frame rates match, or red if they don't match.

The "MIDI Time Code (MTC)" form also contains its own menu, which provides the following functions:
- "Enables"
    - "Enable All" - this causes all time code readers to be enabled.
    - "Disable All" - this causes all time code readers to be disabled.

- "Auto Enable Used" - this causes Palladium to search the entire cue list, and only enable those time code readers which are actually used to trigger cues.
- "Status"
  - Clear All Statuses" - this causes all time code readers and status indicators to be cleared.

6.4.5. External Triggers

Selecting this option causes the "External Triggers" form to be displayed; this form is used to setup Palladium's external triggers.

The main body of this form contains a grid of 16 rows by 4 columns. Each of the rows corresponds to one of the external triggers, and the columns have the following functions:
- "Name" - this is the name which is used to refer to the trigger on other forms, and can be up to 30 characters long. An example name might be "Conductor's foot switch".
- "Port" - this determines which MIDI port will be used for the external trigger.
- "Device" - this is used to select the device number which will be automatically inserted into the messages in place of the "n" or "nn" characters.
- "Message" - this is used to specify the hex codes corresponding to the message. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
  - "n" - MIDI small device number as used in short commands.
  - "nn" - MIDI large device number as used in sysex commands.
  - "?" - any character will be accepted in this position.

The "External Triggers" form also contains it's own file menu, which provides the following functions:
- "New" - this clears all the external triggers data.
- "Open" - this replaces the current external triggers setup with that contained in a specified file. Note that this file is not the same as a show file which contains its own external triggers setup data.
- "Save" - this saves the external triggers setup to a specified file. Note that this file is not the same as a show file which contains its own external triggers setup data.
- "Save As" - this saves a copy of the external triggers setup to a specified file. Note that this file is not the same as a show file which contains its own external triggers setup data.

6.4.6. Program Changes

Selecting this option causes the "Program Changes" form to be displayed. This form allows program change messages to be defined, which can be automatically transmitted by Palladium whenever it goes to a new cue. Palladium can also be set to respond to incoming program change messages.

To the left of the box is the "MIDI Map" box which is used to define the required program numbering scheme. This is required as Palladium supports 1,000 cues, but standard MIDI

program change messages are restricted to 128 programs. This box contains two fields:

- "Source" - this is used to specify the required source of the program number, and can have one of the following values:
    - Cue - this option causes Palladium to use its cue number as the source of the program change cue number.
    - Id - this option causes Palladium to use the cue Id as the source of the program, change cue number.
    - Auto - this option causes Palladium to use the cue Id as the source of the program change cue number, or if there isn't an Id for the cue concerned, then its cue number is used instead.
- The actual "MIDI Map" - this is used to specify the MIDI program, bank & device increment numbers corresponding to each program. Sixteen blocks of program / bank / device increment numbers are provided, and there is one row in the table for each block. Each row contains the following columns:
    - "Block" - this is the block (table row) number, and will have a range of 1 to 16.
    - "Start" - this is the number corresponding to the first program in the block.
    - "Length" - this is the number of programs in the block.
    - "Bank" - this is the MIDI bank number corresponding to the block. Note that this number will be constant within each block.
    - "Program" - this is the MIDI program number corresponding to the first program in the block. Note that this number will be incremented for each program within a block, and thus the last program in the block will have a MIDI program number equal to the block's base MIDI program number plus the length of the block - 1.
    - "Dev Inc" - this is a number which is added to the base MIDI device number for each block.

The top right side of the "Program Changes" form contains the "Transmit" box. This box contains 3 fields:
- "Enable" - when checked, the enables the transmission of the program change messages.
- "Port" - this determines which MIDI port will be used for the messages.
- "Device" - this is used to select the device number which will be automatically inserted into the messages in place of the "n" or "nn" characters.

Below the "Transmit" box is the "Receive" box. This box contains 3 fields:
- "Enable" - when checked, Palladium will follow incoming program change messages.
- "Port" - this determines which MIDI port will be used for the messages.
- "Device" - this is used to select the device number which will be automatically inserted into the messages in place of the "n" or "nn" characters.

Below the "Receive" box is the "Message" box, which is used to specify the hex codes for the program change messages. Right-clicking on the message will result in a pop-up menu containing a number of message templates being displayed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the message may contain the following special characters:
- "n" - MIDI small device number as used in short commands.
- "nn" - MIDI large device number as used in sysex commands.

- "PP" - this will cause the software to insert the 7 least significant bits (bits 6..0) of the program number into the message.
- "QQ" - this will cause the software to insert the 7 most significant bits (bits 13..7) of the program number into the message.
- "KK" - this will cause the software to insert the 7 least significant bits (bits 6..0) of the bank number into the message.
- "LL" - this will cause the software to insert the 7 most significant bits (bits 13..7) of the bank number into the message.
- "?" - this causes Palladium to transmit a '0'.

To the right of the message is a "Test" button, which when clicked will cause Palladium to transmit a program change message for the current cue.

At the bottom of the form is a "Reset" button, which has the effect of clearing the MIDI map, and setting the MIDI message to it's default. Please note that after a reset, Palladium will only transmit messages for the first 128 cues.

6.4.7. Data Monitor

Selecting this option causes the "Data Monitor" form to be displayed. This provides a simple means of system testing, and also to help discover what MIDI messages are needed to control a piece of gear for which you do not have the manual or MIDI implementation. This form contains the following fields:
- "Input Port" - this is used to select the port to monitor.
- "Filters" - four filters are provided, and these are used to suppress frequent, system timing related messages, which make it harder for you to see what you are actually looking for:
    - "MIDI Time Code (F1)" - checking this box will cause MIDI quarter frame time code messages to be suppressed.
    - "MIDI Clock (F8)" - checking this box will cause MIDI clock messages to be suppressed.
    - "Active Sense (FE)" - checking this box will cause active sense messages to be suppressed.
    - "Custom" - checking this box will cause the specified messages to be suppressed. In addition to the usual hex digits ('0'..'9', 'A'..'F'), the specified message may also contain wildcard characters ("?").
- "Received Data" - this box shows the received data. Right-clicking on the box results in a pop-up menu being displayed which provides two functions:
    - "Clear" - this causes the contents of the box to be discarded.
    - "Copy" - this causes the highlighted text to be copied to the MIDI message clipboard. This can then be pasted into a device's MIDI message.
- "Capture" - this button enables the capturing of incoming MIDI data.

IMPORTANT: On slower PCs, having this form active can adversely effect the maximum rate at which incoming MIDI messages can be received and processed. If you find your PC is losing messages while this form is active, only have this form active when absolutely

necessary.

6.4.8. File Transfer

This form provides a facility for transmitting / receiving MIDI data files to / from external equipment. Its primary purpose is to facilitate the sending and receiving of SysEx dumps, although it could of course also be used for other MIDI data. The form contains the following fields:

- "Port" - this is used to select the target port.
- "Request Message" - this is used to specify a message which Palladium must transmit to the device in order to initiate a dump from the device.
- "Buffer" - this box displays an image of the data which has been received, or is about to be transmitted.

The "File Transfer" form also contains it's own file menu, which provides the following functions:

- "Clear Buffer" - deletes all data currently in the buffer.
- "Open" - this appends the data contained in a specified file to the buffer. If you wish to ensure that the buffer only contains the data from the specified file, please clear the buffer prior to opening the file.
- "Save" - this saves the current buffer contents to a specified file.
- "Save As" - this saves a copy of the current buffer contents to a specified file.
- "Transmit" - this transmits the contents of the buffer via the specified port.
- "Receive" - this allows data received by the specified port to be appended to the buffer. If you wish to ensure that the buffer only contains the most recently received data, please clear the buffer prior to initiating the receive operation. Once initiated, all data received from the port will be added to the buffer until such time as you click "OK".
- "Request" - this is similar to "receive" (above), with the exception that Palladium will transmit the request message prior to entering receive mode.

6.5. Help Menu

The help menu provides the following functions:

1. User Guide - displays this document in an Acrobat reader window.
2. License manager - this opens the license manager form (see below).
3. About - displays information about the version of Palladium you are running, and your Palladium license. The latter can have one of three states:
    - Fully licensed, in which case the message "Security device XXXXX detected" will be displayed.
    - Trial period, in which case the message "Expires XX XXX XXXX" will be displayed.
    - Expired, in which case the message "DEMONSTRATION MODE" will be displayed.

6.5.1. License Manager Form

This form provides a mechanism for updating Palladium's licensing devices. Two such devices are supported: the primary license, and the secondary license.

The primary license consists of a hardware security key or dongle. This approach offers the following advantages:

1. It allows a user to install our software products on as many PCs as they wish, and simply move the dongle between them as needed.
2. In the absence of the dongle, the software will still run, but will be limited to "demonstration mode" which has the "file save" functions disabled. This means that a user will never be prevented from running tonight's show because they have left their dongle at home. It is also perfectly OK to have 2 PCs in the theatre, one as main and the other as backup, both running the same show file, without the need for a second license.

The secondary license takes the form of a key code, and is intended to provide a short term facility to allow potential users to evaluate the software, or to cover users whilst their dongles are in transit, or in the event of dongle loss.

At the top of the license manager form is the primary license (hardware) box. This box contains the following items:

- Dongle - this displays the serial number of the dongle which is currently connected to the PC; if no dongle has been detected, this will display "None".
- Test - when clicked, this button will test the dongle. This is done automatically when the form is displayed, so this button is only needed if you connect or disconnect your dongle after the form has been displayed.
- Programs - this contains a list of programs which are licensed by the dongle.
- Code - this allows the user to enter a code to update their dongle. Full instructions will be provided with any such codes.
- Update - when clicked, the dongle will be updated using the code.
- Result - this displays the results of the test or update operations, and provides a mechanism for remote testing of dongles. Again, full instructions will be provided if such testing is deemed necessary.

Below the primary license (hardware) box is the secondary license (software) box. This box contains the following items:

- PC Id - this displays an identification code which is based upon the user's PC. This code will need to be supplied by the user when they request a change to their software license, and full instructions will be provided in this situation.
- Expires - this displays the date on which the secondary license will expire. If the license has already expired, this will display "EXPIRED"
- Code - this allows the user to enter a code to update their license. Full instructions will be provided with any such codes.
- Update - when clicked, the license will be updated using the code, and the new expiry date will be displayed.

At the bottom of the form is the OK button, which will close the form when clicked.