

MMA Technical Standards Board/ AMEI MIDI Committee

Confirmation of Approval for MIDI Standard

Extension 00-01 to File Reference Sysex Message

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Abstract:

This is an extension to the File Reference SysEx message (“CA-018”) using <ext-data> ID 0x00 0x01, providing a means of offsetting the mapping information in a DLS file by a MIDI bank index offset.

Background:

In order to conserve storage space, is desirable to use a DLS object (file or instrument) in flexible manners. For example, you may only want to have one copy of any given DLS present on the system, but then use it with many MIDI sequences.

Also, quite often, it is desirable to author MIDI sequences that use instruments in the GM bank and additional instruments contained within one or more DLS files, and also contain a message for loading the additional DLS instruments. For this reason, the File Reference SysEx message was proposed and ratified.

It is also very convenient to be able to use a single SysEx message to load your DLS patches into MIDI space for use in a given MIDI sequence. For this reason, CA-018 offers a mode for mapping an entire DLS file into MIDI space.

Usually, however, instruments in DLS files are authored such that they are mapped in bank 0. So, a DLS file, as a whole, cannot be mapped into MIDI space without causing collisions with some (if not all) of the GM instruments.

The composer could resolve this conflict by re-authoring DLS files to offset the bank indices in such a way as to not collide with GM instruments. But then they would need to make sure that all MIDI sequences conform to that offset, which reduces flexibility. Also, DLS tools are rare, and they are virtually non-existent in stand-alone MIDI gear right now.

The composer could also resolve this as CA-018 recommends, by individually mapping every instrument they want to use in the DLS file using the Select Contents command fields <dst-bank> and <dst-prog>. However, doing this can be quite tedious in practice.

It is much more desirable to have one instruction map an entire standard-authored DLS file in such a way that it does not collide with GM instruments. This proposal satisfies this, by defining a single SysEx message that can map a DLS file by offsetting all the instruments in the DLS file by a MIDI bank offset, in a manner that is compatible with CA-018.

Details:

This specification describes the desired synthesizer behavior for an extension to CA-018, which is indicated by <ext-data> ID 0x00 0x01.

The purpose of this extension is to extend the Select Contents command in the event that the <count> field is set to 0. The File Reference SysEx message documentation specifies that this means to “use the mapping information in the DLS file.”

In the event that a message of this format is followed by an <ext-data> with ID 0x00 0x01, the purpose of the message changes to “offset the mapping information in the DLS file by the following MIDI bank index.” The meaning of this description follows.

Offsetting the mapping information in the DLS file refers to the notion of loading the entire sound set defined by a single DLS file into a user specified bank in Instrumental MIDI space. In this extension, rather than directly mapping it to the MIDI space values defined in the file, they are mapped to an offset of the MIDI bank values defined in the file.

Instrument indices indicated in the DLS file maintain their values in the loaded state. All bank indices indicated in the DLS file are incremented by the user specified bank number before being loaded.

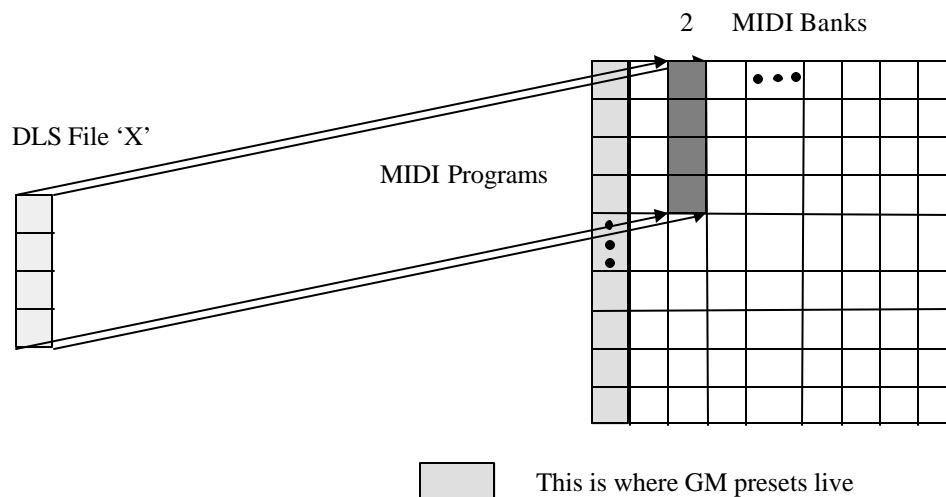


Figure 1: Pictorial representation of API command to load DLS File 'X' into MIDI bank 2.

Note that the DLS File Format is capable of having instruments live anywhere in MIDI space as well, including in different bank indices. Figure below shows this.

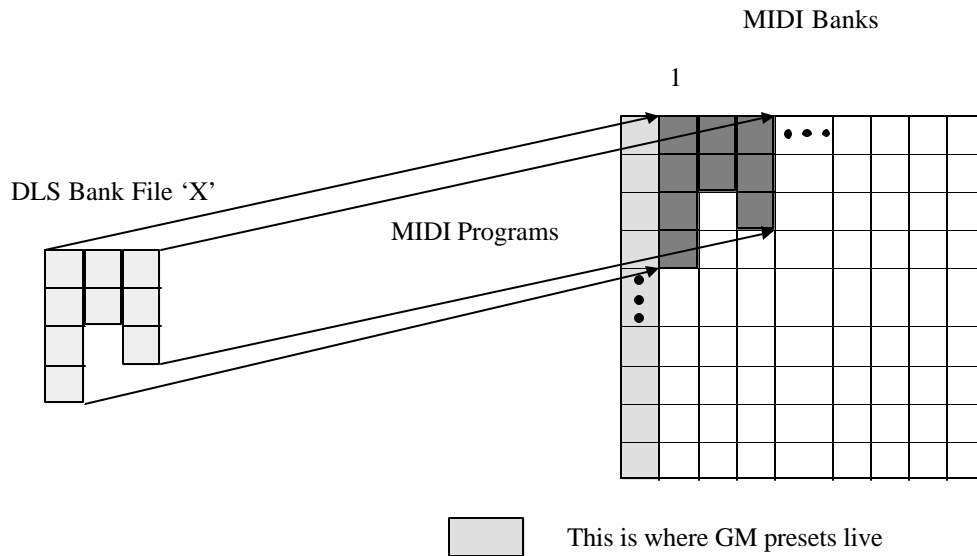


Figure 2: Pictorial representation of API command to load DLS File 'X' into MIDI Bank 1

If the DLS file contains instruments that are mapped in a location such that, offsetting their values causes their final destination to exceed the maximum MIDI bank of 16383, those instruments will not be loaded.

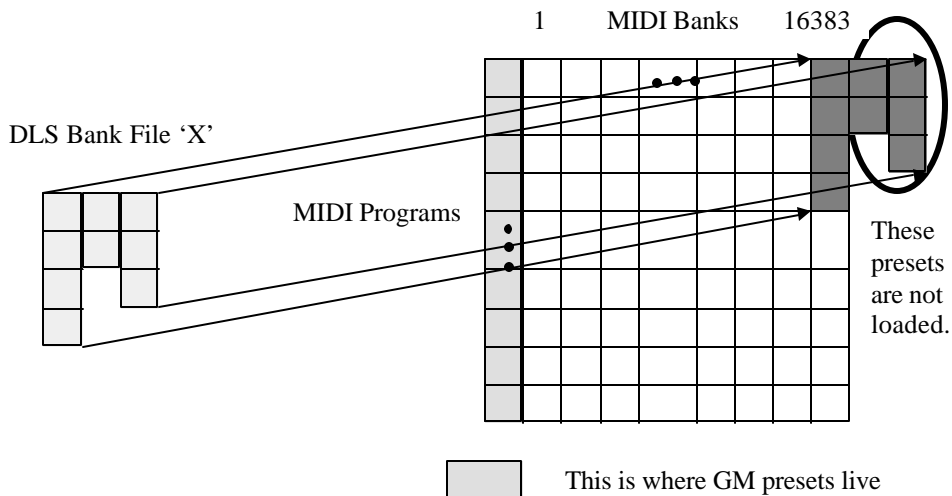


Figure 3: Pictorial representation of API command to load DLS File 'X' into MIDI Bank 16383

EXTENSION DATA

Because this extension format is not specifically documented in the original CA-018 document (it is only provided as a recommendation) it will be specified here.

This message has a variable length. The ext-ID #1 and ext-ID#2 is used to specify the operation

The format of the <ext-data> field is as follows:

```
<ext-ID#1> <ext-ID#2> <len> <extension-data>

<ext-ID#1>      Extension Specifier #1
<ext-ID#2>      Extension Specifier #2
<len>           Two 7-bit bytes: combined byte count of <dst-bank>
                and <flags>, LSB first. The <len>th byte following the
                <len> byte should be either an EOX message, or a data
                byte indicating the ID of another extension.
<data>          Data specific to the message specified by <ext-ID#1>
                and <ext-ID#2>
```

EXTENSION: MAP ENTIRE FILE WITH BANK OFFSET MESSAGE

This message has a variable length. This particular <ext-data> with this ID should ONLY be used in conjunction with the **SELECT DATA** with select count <count> set to 0. The <ext-data> message serves no purpose in any other message or message format and should be ignored.

Note that since the **SELECT DATA** field supports other formats, like Microsoft WAV and SoundFont® formats, this implementation directly applies to those as well. Note that a Microsoft WAV file should be viewed as a collection of 1 instrument, mapped in the file at MIDI bank 0 instrument 0. Note also that the SoundFont® file format supports only CC0 bank indices, so a bank index of 1 should be treated as value 128, etc.

The format of the <data> field when used with <ext-data> with this ID is as follows:

```
<ext-ID#1> <ext-ID#2> <len> <dst-bank> <flags>

<ext-ID#1>      00 -           Spcifies this extension
<ext-ID#2>      01 -           Specifies this extension
<len>           See above. This should indicate a size of at least 3
                bytes. All bytes beyond the third byte and before
                than the <len>th byte following the <len> byte should
                be ignored.
<dst-bank>      Two 7-bit bytes: MIDI bank number, MSB first
                (MIDI CC0 followed by CC32)
<flags>         7-bit byte: Bit field containing the following flags:
                Bit   Flag
                ---   ----
                0     Source Drum flag. This flag indicates the
                target bank is a drum bank.
                1-6   Undefined, should be 0
```

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Related item(s): CA-018 File Reference SysEx Message