

Introduction

This document describes the API that is used to download currency definitions from a PC, via PayLink, to Money Controls and Innovative Technology peripherals.

Specifically, this document serves to describe the API that is used to download either:

- a set of note definitions to a Lumina bill validator.
- a set of note definitions to an Ardac Elite acceptor.
- a set of coin definitions to a SR5i coin acceptor.
- a combined set of note definitions and firmware upgrade to an NV200 bill validator.

A separate document describes the firmware and note definition download to an Ardac 5.

Additionally there is an option to send any notes left in the NV200 to the cashbox. This facility is only available if the NV200 has version 548 or later.

Normal PayLink operation will stop while downloading coin and note definitions. PayLink is reset at the end of the download.

Supplied Files

The following files are required to build and run a user application.

File Name	Description
DownloadDLL.h	This header file describes the entry points to the 'C' functions within the DLL. Includes the constant definitions used to call and return status.
PayLinkDownload.dll	This file is the DLL itself.
PayLinkDownload.lib	This file describes the interface to the DLL in a way suitable for inclusion in a Microsoft Visual Studio project.
PayLinkDownloadBorland.lib	This files describes the interface to the DLL in a way suitable for inclusion in a Borland project.

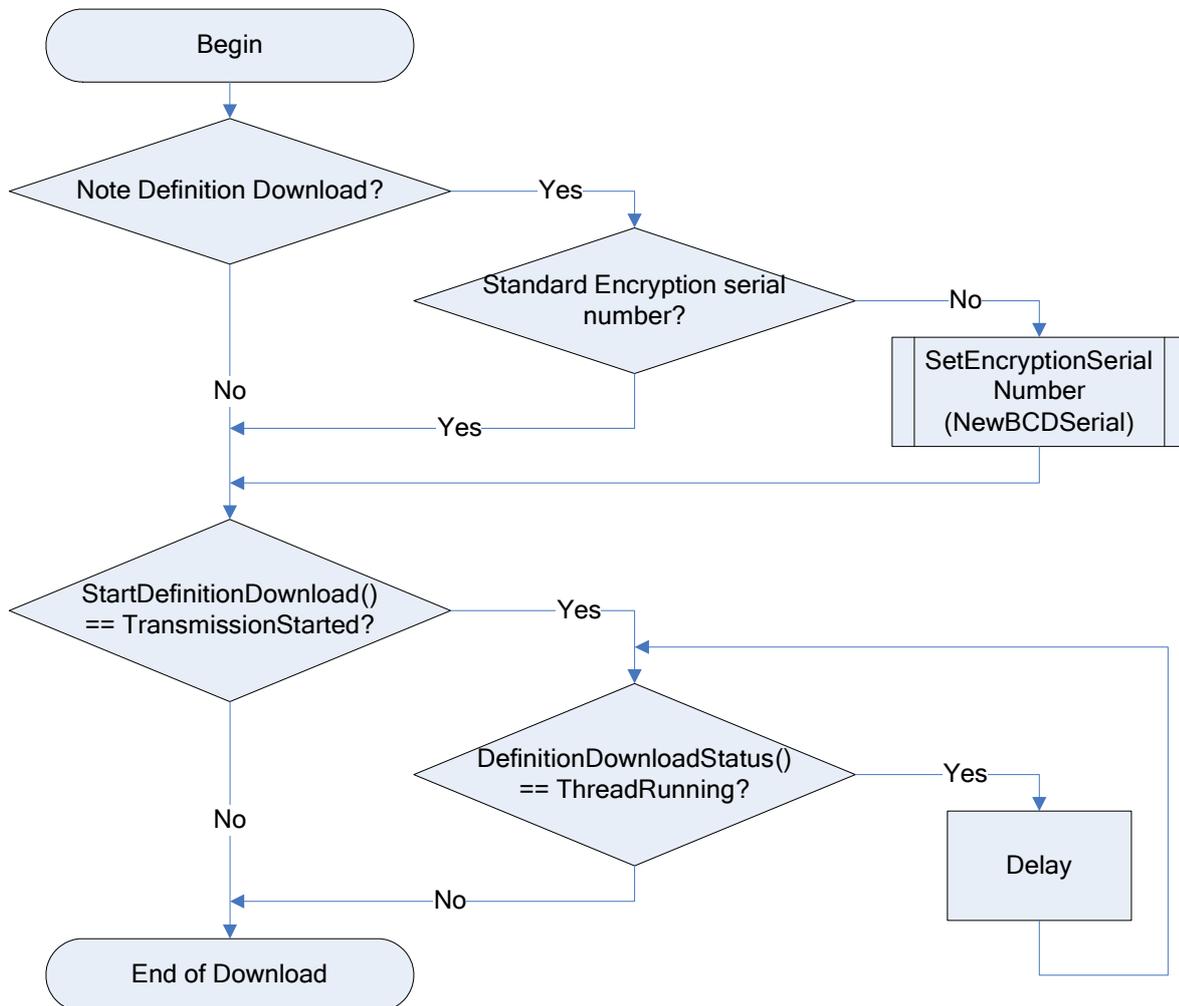
Example

The DLL has been linked into command line application to allow simple calling of the DLL without building your own application.

File Name	Description
PayLinkDownload.exe	An executable command line application.
CommandLine.c	The code for the command line that interfaces to the DLL.

DLL Operation

The DLL is not intended to download individual bill or coin descriptions, but rather complete files of currency information. The following flowchart shows the intended use of the DLL.



DLL Functions

The following functions are provided by the DLL.

```

SetEncryptionSerialNumber
StartDefinitionDownload
DefinitionDownloadStatus
  
```

SetEncryptionSerialNumber

```
void DLL SetEncryptionSerialNumber(  
    int NewBCDSerial);
```

This function is used to set the encryption serial number of the NV200, Lumina or Ardac Elite note acceptor with which the DLL is to try to communicate.

The DLL needs to know the encryption serial number of the note acceptor in order to encode messages to it and decode messages from it correctly.

Parameters:

NewBCDSerial

The new 6-digit serial number in Binary Coded Decimal.

Returns: None

StartDefinitionDownload

```
unsigned short DLL StartDefinitionDownload(  
    char * FullFileName,  
    unsigned short ComPortNumber,  
    unsigned short ccTalkAddress,  
    unsigned short Device);
```

This function serves to start a worker thread to download the provided data block to the SR5i, Ardac Elite or Lumina unit. Once the download has completed successfully the PayLink unit is reset.

Parameters:

FullFileName

The path and file name of the note or coin definition file.

ComPortNumber

Not used. Set to 0.

CcTalkAddress

Specify at which address the target device is located. Coin acceptors default to address 2, note acceptors default to address 40.

Device

Define the type of device that is being programmed. The options are:

DEVICE_SR5	0
DEVICE_ELITE	1
DEVICE_LUMINA	2
DEVICE_NV200	5
DEVICE_NV200_EMPTY	0x85

Returns: One of the following codes.

START_DOWNLOAD_TRANSMISSION_STARTED	0
START_DOWNLOAD_CANNOT_START_THREAD	1
START_DOWNLOAD_CANNOT_START_UNKNOWN_DEVICE	2
START_DOWNLOAD_THREAD_ALREADY_RUNNING	3

The function is non-blocking and sets up a thread in the background to handle the definition file download.

DefinitionDownloadStatus

```
unsigned short DLL DefinitionDownloadStatus(
    unsigned short * DownloadStatus,
    unsigned short * TerminationStatus,
    unsigned short * Progress,
    unsigned short * ProgressLimit);
```

This function provides a mechanism for the calling application to be able to monitor the progress of the worker thread.

Parameters:

DownloadStatus

DownloadStatus returns the current status of the download. Valid if the DownloadStatus return value is DOWNLOAD_THREAD_RUNNING. Options are:

DOWNLOAD_STATUS_PROCESS_IDLE	0
DOWNLOAD_STATUS_CHECKING_FILE	1
DOWNLOAD_STATUS_OPENING_INTERFACE	2
DOWNLOAD_STATUS_ENABLING_INTERFACE	3
DOWNLOAD_STATUS_SEARCHING	4
DOWNLOAD_STATUS_REQUESTING_BUS	5
DOWNLOAD_STATUS_POLLING	6
DOWNLOAD_STATUS_ERASING_COINS	7
DOWNLOAD_STATUS_STARTING_UPGRADE	8
DOWNLOAD_STATUS_TURNING_OFF_ENCRYPTION	9
DOWNLOAD_STATUS_TRANSFER_IN_PROGRESS	10
DOWNLOAD_STATUS_TRANSFER_COMPLETE	11
DOWNLOAD_STATUS_WAITING	12
DOWNLOAD_STATUS_RESETTING	13
DOWNLOAD_STATUS_RELEASE_BUS	14
DOWNLOAD_STATUS_FINAL_WAIT	15
DOWNLOAD_STATUS_RESET_PAYLINK	16
DOWNLOAD_STATUS_COMPLETE	17

TerminationStatus

TerminationStatus is the reason the download stopped. Valid if the DownloadStatus return value is DOWNLOAD_THREAD_STOPPED. Options are:

TERMINATION_STATUS_TRANSMISSION_SUCCESS	0
TERMINATION_STATUS_FILE_OPEN_FAILED	1
TERMINATION_STATUS_FILE INTERNALLY_INCONSISTENT	2
TERMINATION_STATUS_OPEN_INTERFACE_FAILED	3
TERMINATION_STATUS_DEVICE_SEARCH_FAILED	4
TERMINATION_STATUS_NOT_RESPONDING	5
TERMINATION_STATUS_DIALOGUE_ERROR	6
TERMINATION_STATUS_FILE_READ_FAILED	7
TERMINATION_STATUS_UNKNOWN_DEVICE	8
TERMINATION_STATUS_DOWNLOAD_NOT_FINISHED	9
TERMINATION_STATUS_DEVICE_NOT_COMPATIBLE	10
TERMINATION_STATUS_EMPTY_PERFORMED	11

Progress

Indicates the number of blocks transferred.

ProgressLimit

The total number of blocks to transfer.

Returns the status of the download thread. One of the following codes:

DOWNLOAD_THREAD_STOPPED	0
DOWNLOAD_THREAD_RUNNING	1

DOS Command Line Application

The DOS command line interacts with the AESWDriver program. AESDriver should be running and communicating with PayLink before running the dos command.

Note: The same dos application is used to download firmware to Ardac5. See the Ardac5 Download API document for more information.

For SR5i, Ardac Elite and Lumina downloads run the command line with the following parameters:

```
PayLinkDownload /f### /d# /a##
```

Where:

- /f### Name and path of definition file
- /de Device is Ardac Elite (the default address of an Ardac Elite is 40)
- /ds Device is SR5i (the default address of an SR5i is 2)
- /dl Device is Lumina (the default address of a Lumina is 40)
- /dn Device is NV200 (the default address of an NV200 is 40)
- /a## ccTalk Address (decimal)
- /e Empty the NV200

For example the following command line downloads the note definitions to an Ardac Elite:

```
PayLinkDownload /f'c:\temp\EUGB-001 issue 0041.tab' /de /a40
```

To empty the NV200:

```
PayLinkDownload /e /a40
```

While the download is in progress the DOS program reports DownloadStatus and progress. The options for DownloadStatus are defined in the DefinitionDownloadStatus() section above.

If an error occurs during download then the TerminationStatus is also reported. TerminationStatus options are defined in the DefinitionDownloadStatus() section above.

NB: The download status options are different for Ardac5 downloads. See the Ardac5 document for more information.