PLAYER MODULE FOR BMD PCIE CARDS
(update 2015/08/10)

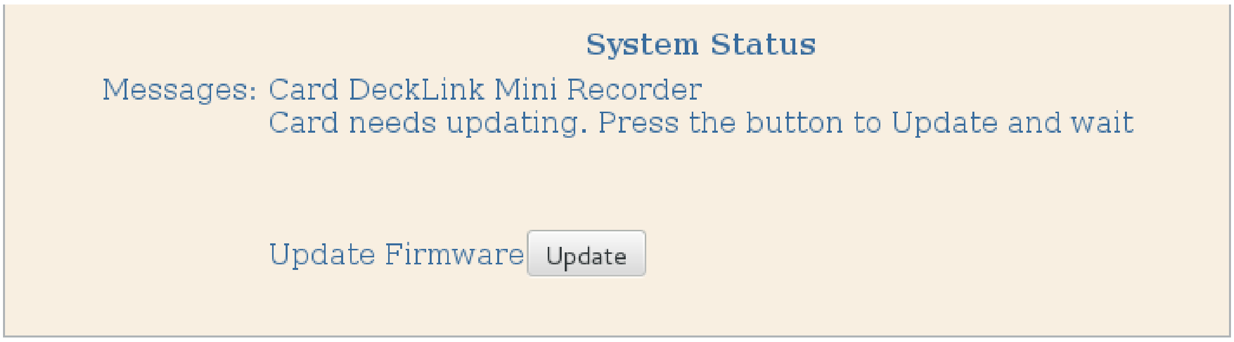
Introduction

Welcome to our new Player Module for Black Magic Designs (***BMD***) PCIe cards. Before reading this manual, you will need to have read the Linux Multimedia Universal Installer (***LIMU***) manual, have installed the Player module on it and have a ***BMD*** PCIe playout card with at least one video output on it. Because version of 2015/08/10 includes the latest version driver 10.4.2, it should allow to work with all the new PCIe cards (all PCIe Decklink series and Intensity Pro 4K).
If new cards are launched in the future, we will just publish an .upd file with the latest drivers to support it, and mabbe new settings in the user panel. So you won't need to delete all of you previous settings to just add new capabilities to your computer.

This new software adds a new codec, the H.265 advancec video codec, that is able to use almost the half of the bandwidth of H.264 at the same quality. However, there is a complete lack of H.265 of players and hardware at the moment, so if you want to play H.265 streams, you will have to use our Player module. Playback of H.264 and H.265 is very seemless, and will use only 2 hyperthreads @ 3.4 GHz even for Full HDTV H.265.

Handling the Player

First of all, we should have a glance at the Status tab, to see if everything is well detected.

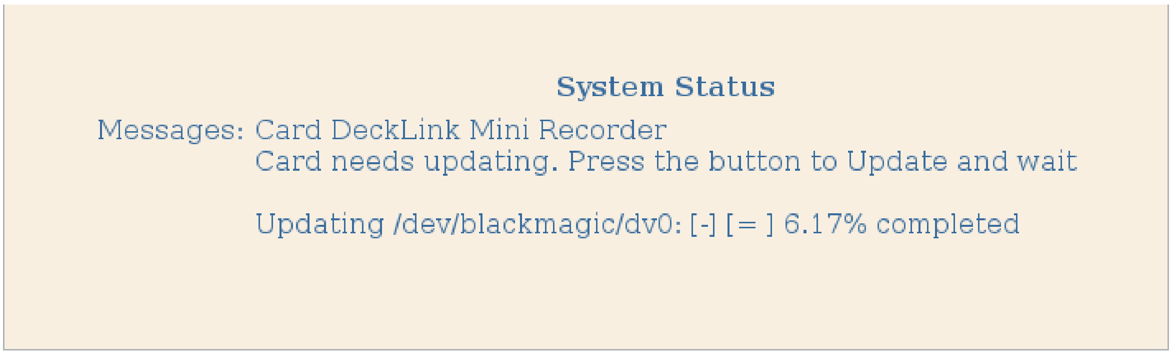


System Status

Messages: Card DeckLink Mini Recorder
Card needs updating. Press the button to Update and wait

Update Firmware

Here we have a very common situation, where the card has been detected or not, and needs a firmware update to work properly. When new BMD drivers are added or brand new cards are plugged in, this is a very common picture. So just connect your computer to the Internet and press Update. In seconds it will start to download the latest Firmware from BMD servers and will burn it on the ROM of the BMD PCIe card to work properly with the latest loaded drivers.



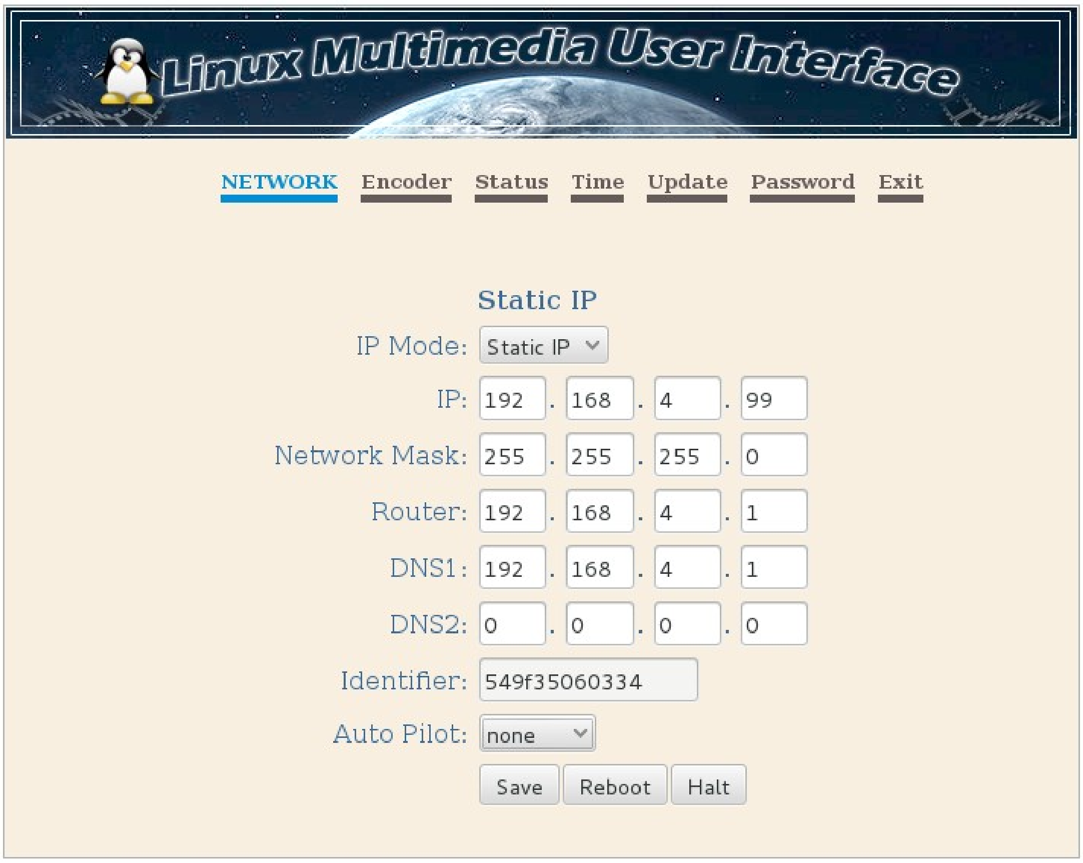
System Status

Messages: Card DeckLink Mini Recorder
Card needs updating. Press the button to Update and wait

Updating /dev/blackmagic/dv0: [-] [=] 6.17% completed

Do not power off your computer until this process ends, it could damage your card. Once you see the 100% completed message, you will be conducted to reboot your machine from the Network Tab. Once rebooted, the new driver will work properly with the new version, and you will see on Status a message with the name of the card detected by the driver, and of course "card successfully updated". Now we can start to work with the encoder.

The user interface also allows to change the configuration of our network card (identical to the encoder one)



Static IP

IP Mode: Static IP

IP: 192 . 168 . 4 . 99

Network Mask: 255 . 255 . 255 . 0

Router: 192 . 168 . 4 . 1

DNS1: 192 . 168 . 4 . 1

DNS2: 0 . 0 . 0 . 0

Identifier: 549f35060334

Auto Pilot: none

The autopilot option will make the computer work as a player automatically when powered up with the settings entered in the Decoder tab, so if power is disrupted, when repowering up the device will start playing a stream without our intervention.

The Decoder tab has many options that we will describe in detail:

Video Output.- we can select the physical output connection. Most of the cards plays out thru all the output at the same time, so this setting will be needless.

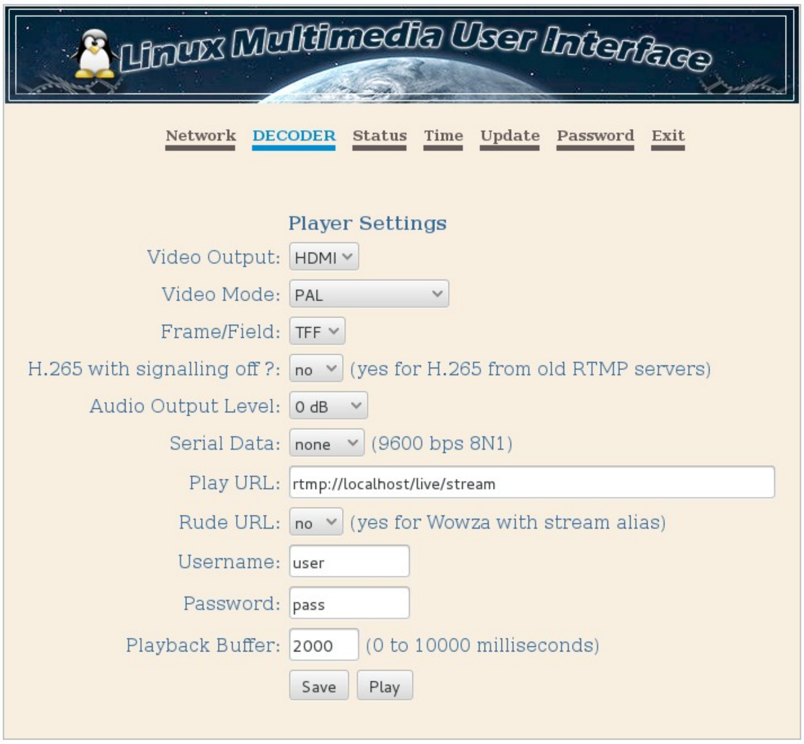
Video Mode.- we can select here the exact video format we want in the output of our card.

Frame/Field.- will select if we want TFF(top field first-by usual for PAL) or BFF (bottom field first usual for NTSC).

H.265 with signalling off?.- Here we will say to the flv-demuxer if the stream we play has the signalling of for H.265 codec. If you are using H.264 choose "no".

Audio Output Level.- It applies a gain to the audio output to increase (positive values) or decrease (negative values) the original audio level of the stream.

Serial Data.- it will recover data from the video frames and will be output to the serial interface (COM or USB port) for remote controlling.



Player Settings

Video Output: HDMI

Video Mode: PAL

Frame/Field: TFF

H.265 with signalling off ?: no (yes for H.265 from old RTMP servers)

Audio Output Level: 0 dB

Serial Data: none (9600 bps 8N1)

Play URL: rtmp://localhost/live/stream

Rude URL: no (yes for Wowza with stream alias)

Username: user

Password: pass

Playback Buffer: 2000 (0 to 10000 milliseconds)

Play URL.- here we can enter the URL of the stream to play. Some examples are:

rtmp://server/app/stream
rtsp://server/app/stream
http://server/app/stream/playlist.m3u8
udp://224.0.0.1:5000 (UDP unicast or multicast)

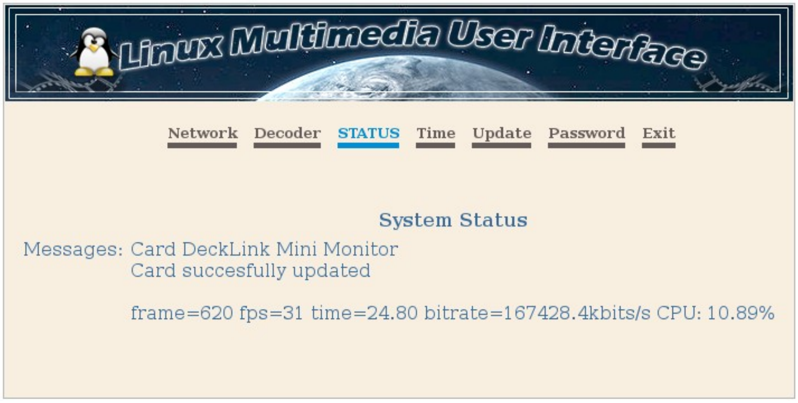
Rude URL.- some servers need it to be "yes" to avoid passing values thru the URL address.

Username and Password.- Only for server that uses GET variables in the URL for authentication.

Playback Buffer.- Amount of buffer in milliseconds (0 to 10 seconds) to smooth network jittering.

Low-latency.- If on and playback buffer set to 0, you will have the lowest latency for RTMP streams. This is only recommended for News and short events with good internet connection to avoid blank screen periods.

Once you have all options set, you can press the Play button to start the playout of the stream. A red label below will notify it. You may also follow it at the Status tab.

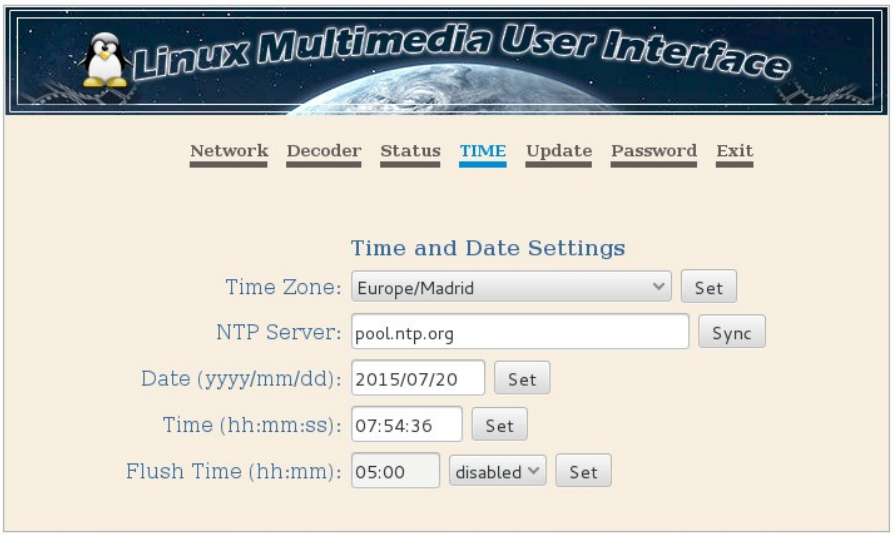


System Status

Messages: Card DeckLink Mini Monitor
Card succesfully updated

frame=620 fps=31 time=24.80 bitrate=167428.4kbits/s CPU: 10.89%

In the Time tab you will find obvious settings to have your internal clock on time. You can also program a Flush Time when the player will be restarted. This will make the stream to disrupt and reinitialize in 1 second. This is preferred for some people to avoid an increasing of the delay difference between the encoder and the player in the long run (working during days) due to network issues.



Time and Date Settings

Time Zone: Europe/Madrid Set

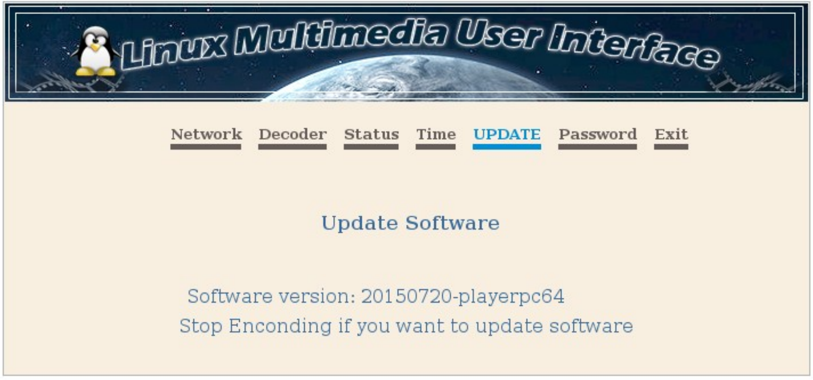
NTP Server: pool.ntp.org Sync

Date (yyyy/mm/dd): 2015/07/20 Set

Time (hh:mm:ss): 07:54:36 Set

Flush Time (hh:mm): 05:00 disabled Set

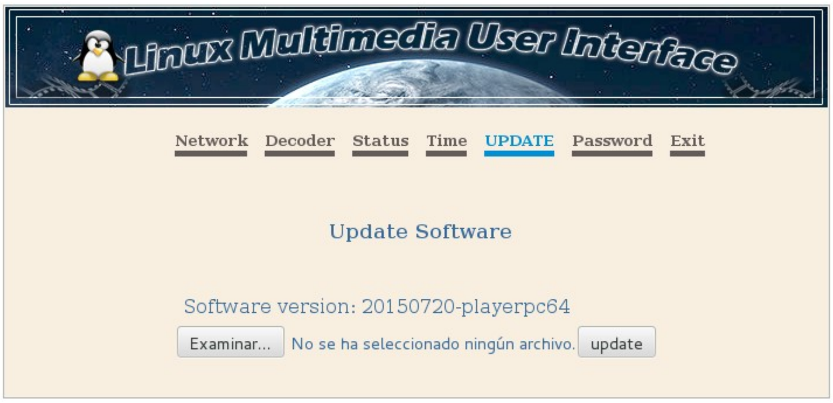
You can Update your encoder module loading our .upd files when published. If the player is working, a message will tell you to stop it before updating.



Update Software

Software version: 20150720-playerpc64

Stop Enconding if you want to update software



Update Software

Software version: 20150720-playerpc64

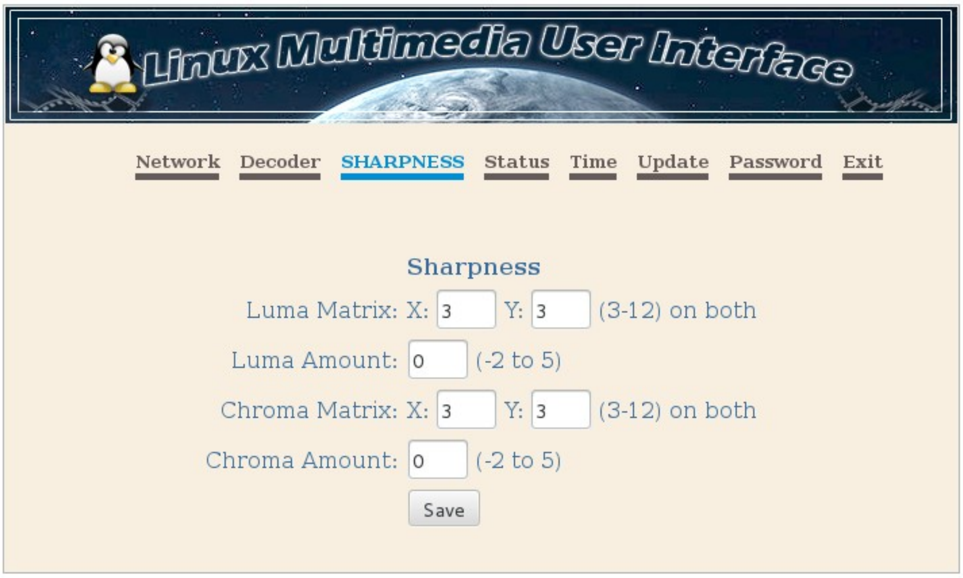
Examinar... No se ha seleccionado ningún archivo. update

There is also a Password tb to change those settings for security reasons. By default the username/password is **admin/admin,** but it is not related to the one in the admin's panel.

If you want to change the panel design with your own logo, text and/or CSS design, you can download the panel zipped from your own encoder. Use the URL of you user panel adding

/panel.zip at the end (i.e http://192.168.1.10/panel.zip). Change whatever you want inside that panel and to upload it, you need permission from the admin's panel, unlocking the Brand option in the Network tab. Once unlocked, you have to be logged in the user panel to change it and add to you user's panel URL /branding?id=identnumber to access the upload menu.
(i.e: http://192.168.1.10/branding?id=549f350603000)

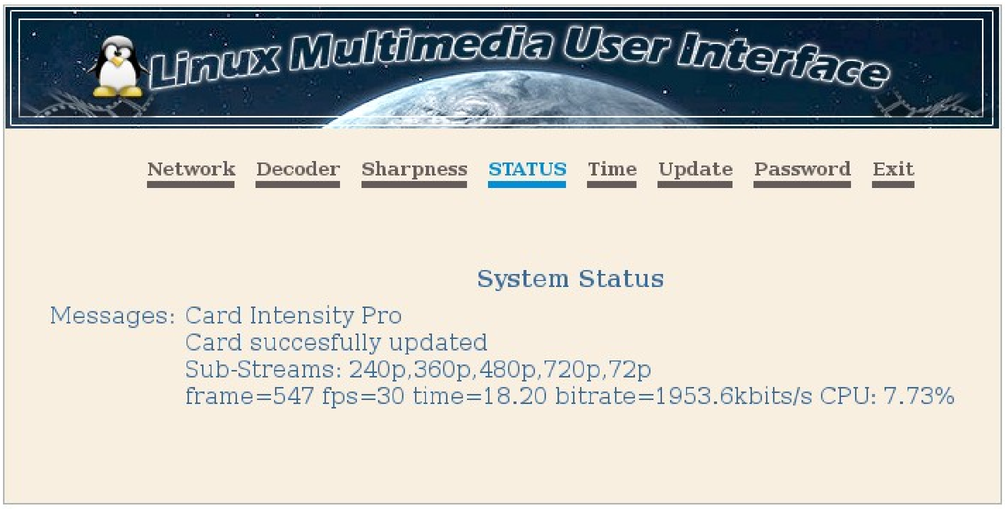
There is a new tab added called Sharpness, form where you will be able to optimize the final rendered video. Everytime you change it, you will have to Stop and Play again, to use the new filters values in the rendered video output.



Sharpness

Luma Matrix: X: 3 Y: 3 (3-12) on both
Luma Amount: 0 (-2 to 5)
Chroma Matrix: X: 3 Y: 3 (3-12) on both
Chroma Amount: 0 (-2 to 5)

A new capability has been added to the version 20150810. You will be able to play non-copyrighted URLs from Youtube, UStream and Livestream. This is very easy to use, just go to a stream in Youtube that we want to play, for example this one https://www.youtube.com/watch?v=nhORZ6Ep_jE from NASA TV Education Live. We can just enter the URL as it is in our Play URL, save it and press Play. In seconds, at Status, we will have a list of sub-streams contained in that stream. In about 10 seconds, the video output will be rendered with the best quality fitted to your internet speed connection. If you want to avoid falling back to lower qualitites, you can directly select the one of your choice, just adding to the end of the Play URL a space and then the name of the sub-stream you want to play. Suppose you want only to play the 720p substream, then you will have to enter the URL: https://www.youtube.com/watch?v=nhORZ6Ep_jE 720p. Pay special attention to the space in between, so the player can translate your command correctly.



System Status

```
Messages: Card Intensity Pro
          Card succesfully updated
          Sub-Streams: 240p,360p,480p,720p,72p
          frame=547 fps=30 time=18.20 bitrate=1953.6kbits/s CPU: 7.73%
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Remote control

Our encoders and player modules for BMD PCIe cards, are able to send and receive serial data from /to the COM port and USB (with a USB to serial converter). Therefore you will be able to control remote devices and playout systems from the encoder stream, to the receiving players. The control data travels attached to the videoframe, so it will not be deleted by servers that only repeat the original video without recompressing it (i.e: Wowza, Evostream and so on). Even if you send an RTMP stream to say a Wowza Server, and you receive the original video from an HLS url, the data will be still there, in sync with the exact frame of video. We based our data format on that one used by Localia in Spain, so as them we decided to use 7 chars on every serial command at 9600 bps 8N1 in a COM port. So every frame could contain 7 chars of there serial commands inside. With this 7 chars in ASCII format you can build almost 2^56 different commands, and only using capital alphanumeric chars the first one only alpha (i.e: H203500) we can build more than 56 billions of commands. I guess this is more than enough for anything you might want to do.

Localia used only these commands:
I010102 = switch to local playout
I010001 = switch to global playout
Hxxyyzz = time synchro xx:yy:zz (hour:minutes:seconds)

With these very few commands, you can build a complete TV network with receiving playouts (call them slave playouts) controlled by another one (we can call it the master playout in the main studios), so every action will be triggered in the right time, no matter the final latency in the players side, because the serial data commands will be always synced to the video frames to be rendered at every moment.

And that's all. Have a nice time with the Player module !!!

On August 2015