



Voyage MPD Starter Kit - Getting Started Guide

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1 Introduction

Voyage MPD Starter Kit is a compact Computer-Audio-Source (CAS) system for playing your favourite audio files from a USB flash memory or network drives. It offers high quality audio playback, with low power consumption, silent and at a very low cost.

1.1 Specifications

- Voyage MPD 0.7 pre-loaded on 512MB/1GB/4GB Compact Flash
- PCEngines ALIX.3D2 embedded board
 - 500 MHz AMD Geode LX800
 - 256 MB DDR DRAM
 - 1 Ethernet channel (Via VT6105M 10/100)
 - 2 miniPCI slot with choice of 802.11b, 11g or 11a/b/g combo card
 - 2 USB ports
- Aluminum indoor enclosure

This is a DIY kit and assembly required. This kit does not include PSU. Suggest at least 15W (12V 1.25A or 18V 800mA) AC-to-DC power adapter with 2.1 mm jack, center positive connector.

1.2 Assembly Guide

1. Insert Compact Flash card to ALIX board
2. Remove hex nuts from DB9 connector of ALIX board. Mount back plate to ALIX board, replace hex nuts. Slide the board into the enclosure, fasten the back plate using 4 screws.
3. Fasten the front plate to the enclosure using 4 screws.
4. Connect the USB DAC or audio converter (e.g. Trends Audio UD 10.1 Lite) to the USB port of ALIX board via a USB cable.

1.3 Before you start

It is suggested to connect on-board DB9 connector to the serial console via null modem cable when you first power on the kit. It allows you to review the boot activity and assist troubleshooting if any problem is encountered. The board's default of serial setting is 38400 8N1.

Here is some recommended terminal software to connect to the ALIX board.

Windows:	HyperTerminal Private Edition 6.3
Linux:	minicom

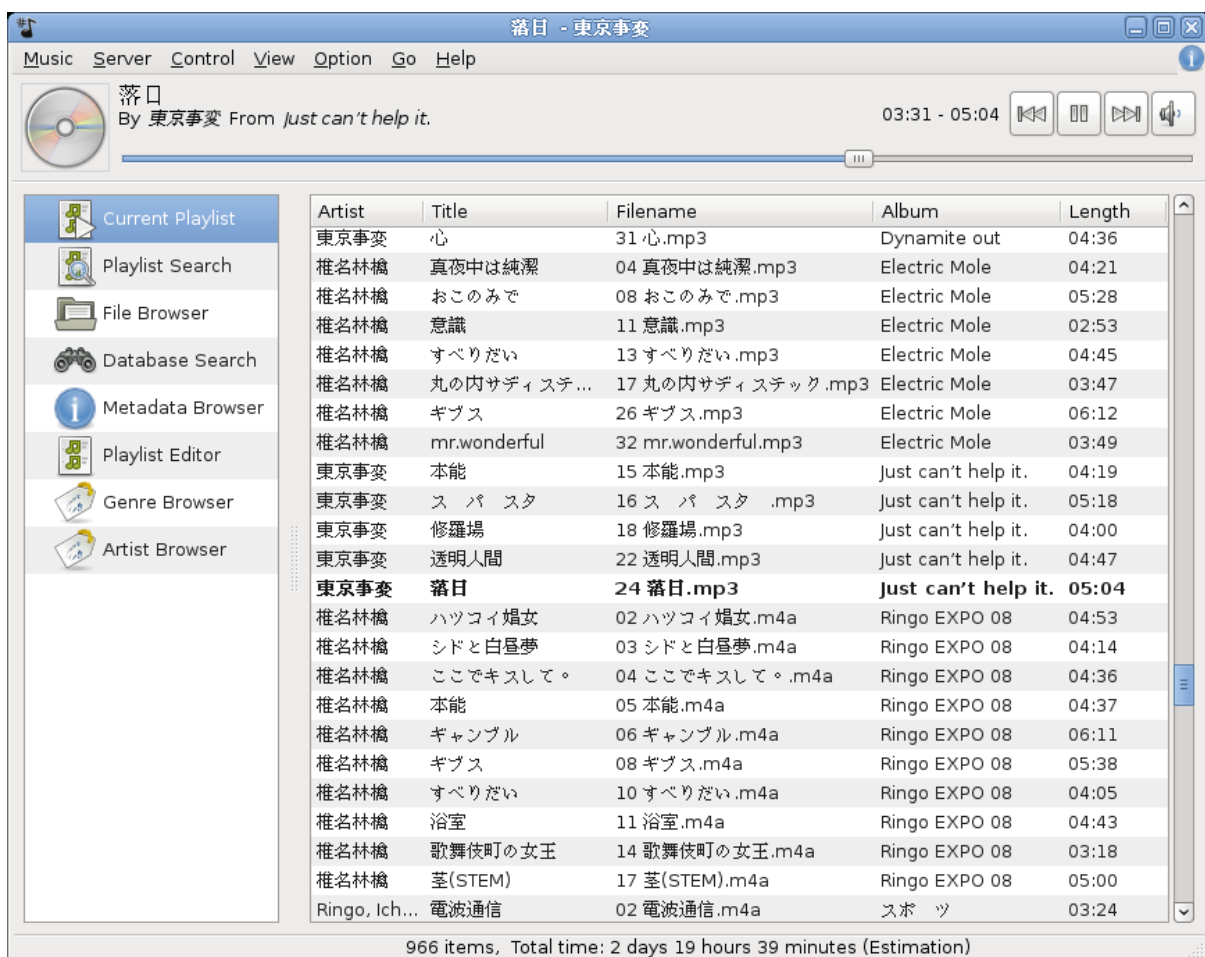
2 Starting up Voyage MPD Starter Kit

1. Assuming you want to access Voyage MPD system using a serial console. Connect serial port to a PC through null modem cable (RXD / TXD crossed over). Set serial terminal to 38400 8N1, flow control = none or xon-xoff.
2. Connect Ethernet cable to RJ45 socket (LAN1) on the board if needed; connect the other end of the cable to your network/wireless router.
3. Connect DC power output of the AC adaptor to the DC jack of the board. To avoid arcing, please plug in the DC jack to the board first, then plug the adapter into mains.
4. The board should now power on. All three LEDs will light during BIOS POST, then the system turn off two of the LEDs after POST. You should see tinyBIOS startup messages, memory size, CF disk geometry on the serial console. You may press "S" during memory test to enter tinyBIOS setup.
5. During the boot process, Voyage MPD tries to request DHCP lease from your network. Once the boot completes, a login prompt would appears in the serial console. The default login user is "**root**" and password is "**voyage**". The left most LED (green) would blink if the boot process completes successfully. If you don't have a serial console, you can connect to Voyage MPD using ssh protocol. PuTTY (for Windows) and ssh command (for Linux or Mac OS X) are recommended for accessing Voyage MPD remotely.
6. By default, Voyage MPD mounts the disk as read-only. You can issue "remount rw" command to mount disk as read-write for installing additional package from Debian. Once you have installed the package, you may want to mount the disk as read-only by "remount ro". To remove all docs and manpages, you can run "remove.docs".

3 Getting Started to Playback Music

- 1 Connect USB DAC/audio converter to ALIX using USB cable
- 2 Connect USB flash memory or external USB HDD to ALIX. The disk will be automatically mounted (as /media/usb0) and the music files will be automatically seen by MPD.
- 3 Fire up gmpc¹ or Music Player Minion² application in another computer on the network and connects to Voyage MPD, or you can use ssh connect to the box and run "mpc" commands. (If the kit connects to a wireless router, you can run MPoD³ app on your iPhone and connect to it.) Add your music to the playlist and play. MPD connection parameter is:
 - a. IP: <Voyage MPD IP address in eth0>
 - b. Port: 6600

You can find out the IP address using "ifconfig eth0" command from the serial console or ssh terminal.



gmpc connects to Voyage MPD

¹ gmpc, Gnome Music Player Client - <http://gmpclient.org/>

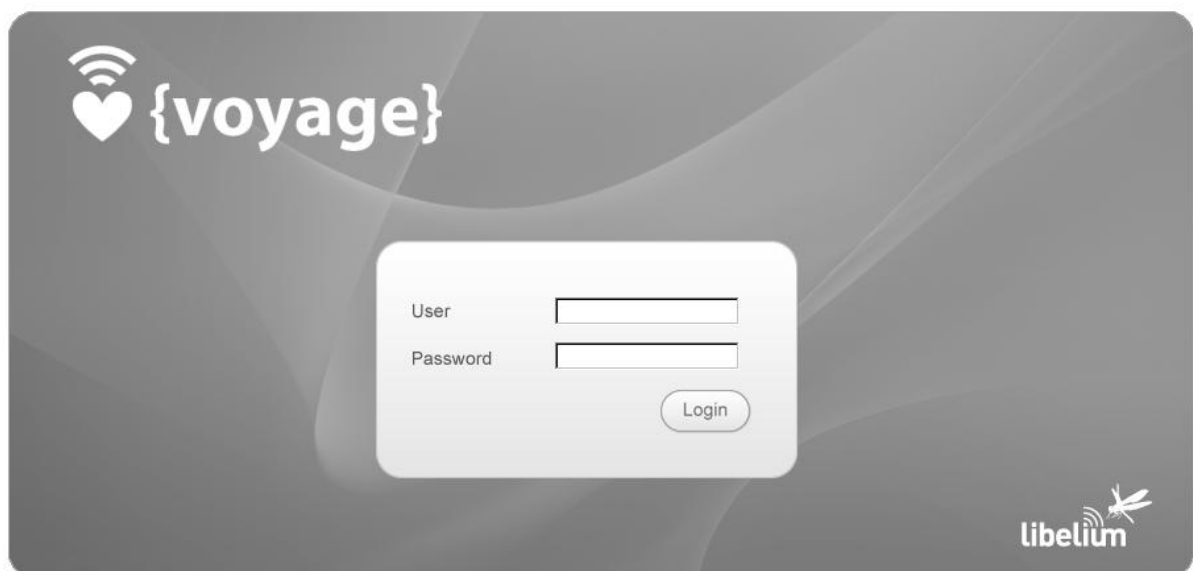
² Music Player Minion, a Firefox addons - <https://addons.mozilla.org/en-us/firefox/addon/music-player-minion/>

³ MPoD - <http://www.katoemba.net/makesnosenseatall/mpod/>

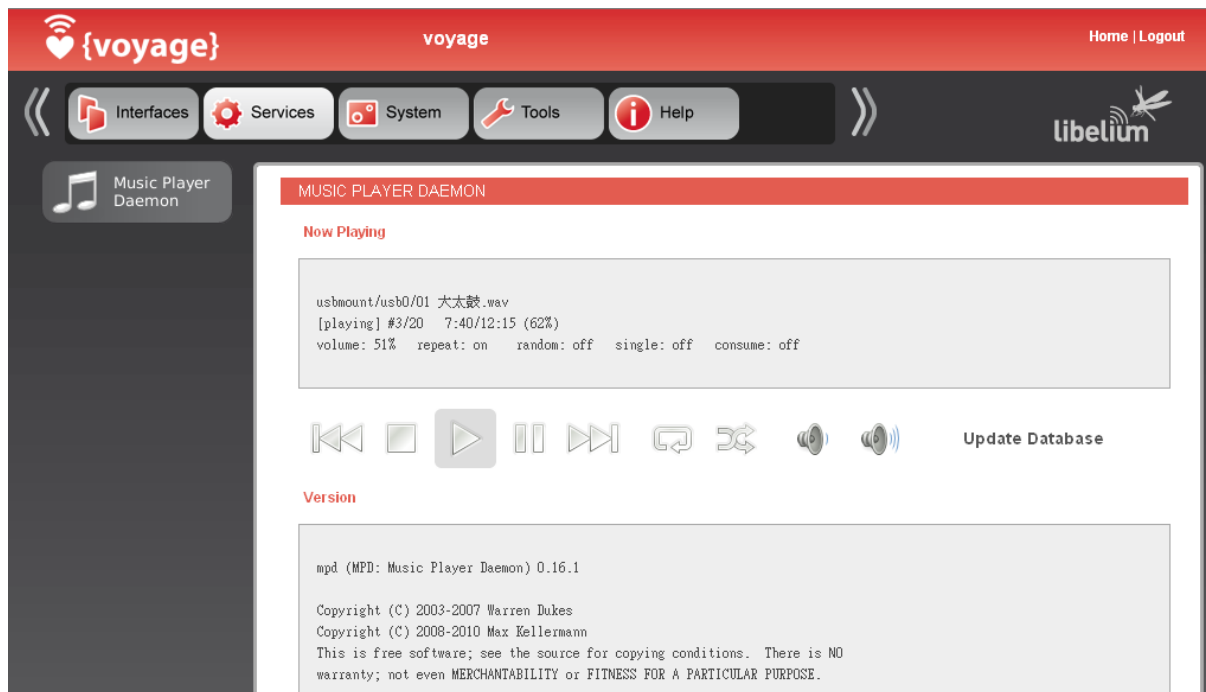


MPod connects to Voyage MPD

- 4 There is also a web GUI in the kit with minimalistic functions to control the playback. It is enabled by default. URL is <http://<Voyage MPD IP address in eth0>>. At login screen, User is “**root**” and password is “**voyage**”.



- 5 After login, click “**Services**” button then “**Music Player Daemon**” plug-in to control the playback of MPD.



- 6 If you have console or ssh login, you can run the following Linux commands to control the playback. You can query the all music files that could be read by MPD using the following commands:

```
# mpc update
# mpc listall
```

To add all music files to play list, run

```
# mpc listall | mpc add
```

The start play the music by:

```
# mpc play
```

There are some other useful commands in mpc. To see also available commands, run

```
# mpc help
```

Here are some frequently used mpc commands:

MPC COMMANDS	DESCRIPTION
mpc next	Play next song
mpc prev	Play previous song
mpc volume 50	set volume to 50%
mpc stop	stop playing
mpc random	toggle shuffling of songs on or off
mpc repeat	toggle repeating of the playlist
mpc clear	clear the playlist

4 Advanced Setup

Additional setup information could be found in /README in the root disk. This section provides some hands-on setup of Voyage MPD Starter kit.

4.1 Mount to NFS shared drive

Let say the music library is stored on another Linux server (IP: 192.168.1.101) where the music files are accessible via NFS mount (/home/public). So edit /etc/fstab and add NFS mount entry:

```
# remountrw
# vi /etc/fstab
192.168.1.101:/home/public /mnt/public nfs rw,noatime 0 0
```

Then create a /mnt/public directory on Voyage MPD and mount to NFS server:

```
# mkdir /mnt/public
# mount -a
```

Since MPD set /var/lib/mpd/music as default music library path, we now create a symlink that points from default library path to our NFS mount point.

```
# ln -s /mnt/public/ /var/lib/mpd/music/public
```

At last, make sure the NFS shared directories and files are readable by MPD:

```
# chmod -R ugo+r /mnt/public/
```

4.2 Mount to SAMBA shared drive

Like NFS share, if you have music files on Windows or Samba server, you can mount a directory to the samba shared directory. Edit /etc/fstab as below:

```
# remountrw
# vi /etc/fstab
192.168.1.101:/public /mnt/public cifs
username=<username>,password=<password>,file_mode=0644,dir_mode=0755,iocharset=utf8 0 0
```

This assumes you have 192.168.1.101 server with a Windows/Samba shared directory named "public". You need to provide the username and password.

Like NFS mount, create a /mnt/public directory on Voyage MPD and mount to Windows/SAMBA server. Then create a symlink so that MPD is able to search the music files under the SAMBA shared directory.

```
# mkdir /mnt/public
# mount -a
# ln -s /mnt/public/ /var/lib/mpd/music/public
# chmod -R ugo+r /mnt/public/
```

4.3 Setting up Wireless Access Point (WPA2) under NAT network

Assume you have nl80211 compatible wireless card (e.g. NMP-8601 / NMP-8602 / RM2) and want to setup a wireless access points where wireless client are in a NAT network. Add the following lines in /etc/network/interfaces:

```
auto wlan0
iface wlan0 inet static
    address 10.1.10.1
    netmask 255.255.255.0
    broadcast 10.1.10.255
```

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```
hostapd /etc/hostapd/hostapd.wlan0.conf  
up nat.sh wlan0 eth0 "10.1.10.0/24"
```

This assumes your wireless device is wlan0 and the above will setup wlan0 interface with IP address 10.1.10.1 assigned and all traffics are NAT'd to eth0. All wireless clients connected to this access point will be assigned with IP range 10.1.10.0/24.

To setup WPA, you need to configure hostapd, /etc/default/hostapd and set:

```
DAEMON_CONF="/etc/hostapd/hostapd.wlan0.conf"
```

Then create a file /etc/hostapd/hostapd.wlan0.conf:

```
interface=wlan0  
driver=nl80211  
logger_syslog=-1  
logger_syslog_level=2  
logger_stdout=-1  
logger_stdout_level=2  
debug=4  
#dump_file=/tmp/hostapd.dump  
#ctrl_interface=/var/run/hostapd  
#ctrl_interface_group=0  
channel=6  
macaddr_acl=0  
auth_algs=3  
eapol_key_index_workaround=0  
eap_server=0  
wpa=3  
ssid=voyage-wpa  
wpa_passphrase=voyage-wpa  
wpa_key_mgmt=WPA-PSK  
wpa_pairwise=TKIP  
eapol_version=1
```

The above configuration will setup both WPA and WPA2. To setup WPA2 only, set "**wpa=2**". The wireless AP service name (ESSID) will be "**voyage-wpa**" with passphrase "**voyage-wpa**". Change **ssid**, **wpa_passphrase** and **channel** value if desirable.

Then run:

```
# ifup wlan0
```

to activate the wireless access point now. The above settings also automatically enables wireless access point after reboot.

5 Troubleshooting

5.1 MPD cannot read my music files on USB disk, NFS or Windows/Samba file shares when running “mpc listall”

If you use USB disk, first check if the USB device is mounted successfully, run:

```
# root@voyage:~# df
Filesystem            1K-blocks      Used Available Use% Mounted on
...
/dev/sda1              1941504    1368856    474024   75% /media/usb0
...
```

You should see the entry like above.

First check you use NFS mount or Windows/Samba shares, you should see the following entry (below show NFS mount):

```
Filesystem            1K-blocks      Used Available Use% Mounted on
...
192.168.1.101:/home/public 103343616 80710144 17383936 83% /mnt/public
...
```

If you see the corresponding entries, problem the music files does not have proper permission set correctly, run:

```
# cd /media/usb0
# chmod -R 777 /media/usb0
```

or,

```
# cd /mnt/public
# chmod -R 777 /mnt/public
```

The above commands will set the permission of all files (and under all sub-directories) to be publicly readable. Then run “mpc update; mpc listall” should see all music file scanned by MPD daemon.

5.2 MPD client software complains “problems opening audio device”

If so see message from MPD client software such as mpc, gmpc or Minion complains “problems opening audio device” and no sound is output from your USB audio device, this means MPD is unable to detect audio device. You can check the USB cable to see if they are connected probably or you can re-plug the USB cable to see if it works again.

If problem still exists you need to check if the audio output is disabled:

```
root@voyage:~# mpc play
usbmount/usb0/05.wav
[paused] #7/20 0:00/5:20 (0%)
volume: n/a repeat: on random: off single: off consume: off
ERROR: problems opening audio device
```

Then, you can use “mpc outputs” commands to see if the audio output is enabled or not

```
root@voyage:~# mpc outputs
Output 1 (My ALSA Device) is disabled
```

You can enable the audio output by:

```
root@voyage:~# mpc enable 1
Output 1 (My ALSA Device) is enabled
```

Now, you should be able to play the music files again:

```
root@voyage:~# mpc play
usbmount/usb0/05.wav
[playing] #7/20    0:00/5:20 (0%)
volume: 49%   repeat: on    random: off   single: off   consume: off
```

5.3 After restarting Voyage MPD Starter Kit, all my previous changes to MPD are lost

This is a known issue in Voyage MPD software if you restart the box by unplug and then re-plug the power. The most proper way is to issue a “halt” command via ssh or serial console to shutdown, or use “reboot” command to restart the box gracefully.

However, you implement periodic saving data to disk so that it could recover from sudden power lost. In webgui (e.g. <http://<voyage mpd IP>/>), go to **System → Cron** and add the following entries:

```
# m h dom mon dow command
*/5 * * * * ( /etc/init.d/voyage-sync sync )
```

Then, edit (use nano or vi), /etc/default/voyage-util and appends the following lines to the file:

```
VOYAGE_SYNC_RECOVER="YES"
VOYAGE_SYNC_RECOVER_DIRS="/var/lib/mpd"
```

Or simply append the above lines using command line in ssh or serial console:

```
echo "VOYAGE_SYNC_RECOVER=\"YES\"" >> /etc/default/voyage-util
echo "VOYAGE_SYNC_RECOVER_DIRS=\"/var/lib/mpd\"" >> /etc/default/voyage-util
```

5.4 MPD client software cannot show Japanese characters correctly

If you have USB disk device holding music filename in Japanese characters which cannot be displayed correctly under MPD client software such as gmpc, you properly need to enable UTF8 encoding when the USB disk device is mounted.

Run the following command to append a UTF8 mount option to /etc/usbmount/usbmount.conf

```
# echo "FS_MOUNTOPTIONS=\"-fstype=vfat,utf8 -fstype=fat,utf8\"" >> /etc/usbmount/usbmount.conf
```

This will mount your USB disk device using UTF8 codeset. Then reboot MPD kit, do "Update Database" in MPD client software. You should be able to see Japanese characters correctly.