Instructions for building a Media Library Box

What you need:

You will need a TP-Link TP-MR3040 3G/4G Wi-Fi Hotspot or a TP-Link TP-MR13U 3G/4G Wi-Fi Hotspot
You will need a flash drive formatted as FAT32
    SanDisk Cruzer line from 4GB to 128GB or Leef Surge low profile USB drive. (USB 3.0 performs best)
Mac or PC with a USB port and a Network port
Tool for Telnet/SSH communications (eg: Putty.exe for Windows)

Installation:

1. Download the firmware update that applies to your router.
   Pay special attention to the Version #. Version numbers can be found under the battery once the back is removed next to the model number. Some of these have a V1.x and V2.x where the hardware changes and a different firmware is needed.

   https://github.com/kirkdwilson/OM-Media-Library-Box

   Go to the MediaLibraryBox OM Build directory and download the firmware appropriate for your unit. (eg: openwrt-ar71xx-generic-tl-mr3040-v2-squashfs-factory.bin for a version 2 TP-MR3040)
   Also download the following files/directories:
   - Config_Update
   - Content-Update
   - Install
   - h5ai_installer.zip
   - install_h5ai.sh
   - run-on-boot.sh
   - version.txt

   Generally, we also add the original TP-Link firmware for flashing back to original manufacture code if needed. These are:
   - TL-MR3040-V2-FW0.0.3-stripped.bin
   - TL-MR3040-V1-FW0.0.3-stripped.bin
   - TL-MR13U-V1_stripped.bin

   Of course you only need the one that is appropriate for your device. This is not a requirement but solely for field rework if needed.

2. Copy all of the files downloaded above to your FAT32 formatted USB stick. It should look like:
   Config_Update

Content_Update
Install
TL-MRXXXX-VX-FW0.0.3-stripped.bin
h5ai_installer.zip
install_h5ai.sh
openwrt-ar71xx-generic-tl-XXXXXX-vX-squashfs-factory.bin
run-on-booth.sh
version.txt

where the XXXXX represents the model appropriate code.

3. Plug the FAT 32 formatted USB drive into the router's USB port.

4. Make sure you have a copy of the appropriate MRXXXX firmware on your local computer

   Openwrt-ar71xx-generic-tl-XXXXXX-vX-squashfs-facotry.bin

5. If the router has a selection switch for mode (like the MR3040) ensure that it's set to WISP. This is present only on version 2's of the TP-MR-3040's. We generally recommend that you 'super glue' this switch in this positon as it is easy to confuse this with the power switch. If you try to install software when the switch is not in this position you may get an incomplete or non-working install.

6. Connect the router via Ethernet cable to your computer, connect the router to a power source. If you have WiFi turned on and are connected to the internet, you may have to temporarily disable Wi-Fi to make sure that your computer connects directly to the router over Ethernet.

7. Open a web browser, and type the address below that matches your router type into the address bar. http://192.168.0.1 for MR3040 Version 1 or 2
   (http://192.168.1.1 for MR13U)
8. Enter the default username & password (admin & admin).

Note: if you are having issues at this point. Check the IP address of the Eathernet port on your computer. It must be in the range of the attached router. If you have a 'fixed' address you may have to change this to a DHCP'ed address temporarily to complete this process. If you don't get a DHCP address on your machine in the range of the router then you may have to fix the IP address on your computer to 192.168.X.2 where X represents 1 on a MR13U and 0 on a MR3040.

9. Navigate to System Tools > Firmware Upgrade and select the OpenWRT firmware that you downloaded in step 1 on your local computer.

10. After the upgrade completes, the router will restart. Do not unplug the router or disconnect the ethernet cable during the firmware flash. The entire process of building your LibraryBox will take approximately 10 minutes. Walk away, go have a cup of coffee.

The LED's will give you some clue as to the status of the unit and should follow the following sequence:

a) The Power LED will be on during the firmware flash, then after firmware flashing the unit will reboot, flashing all LED's then turning them all off except the Power/Charging LED.
b) The WiFi LED will blink on/off – this indicates that the LibraryBox code (install directory) is setting up the extended file system on the USB key
c) The WiFi LED will be on constant and the USB access led will blink on/off – this indicates that the LibraryBox code (install directory) is being installed on the USB key generating the LibraryBox directory with all of its files and hooks.
d) The WiFi LED will be on constant and the USB access led will be on constant – indicating that the base LibraryBox code has been installed and is starting up.
e) The WiFi Led, USB LED, Network LED will blink on/off indicating that the run-on-boot script is setting up the h5ai, branding and configuration of the unit. (note this will be a relatively short sequence)
f) The unit will reboot multiple times so be paitent. When the unit is fully finished you will see the Power LED, LAN led flashing sporadically, WiFI led on (maybe flashing sporadically), and the USB access LED on solid (maybe flashing sporadically occasionally)

At this point, you have a working Media Library Box. The problem is that it isn't protected in any way, anyone that knows the IP address (192.168.1.1) can simply telnet in and do what they wish.
In order to secure your LibraryBox, you need to set a password.

1. Reboot your LibraryBox (power-cycle the router) and let it boot up.

2. Connect to the LibraryBox SSID with your computer, and telnet into it:

   telnet 192.168.1.1 (Or use Putty on a Windows Computer)

3. At the command prompt: Run the LibraryBox advance setup script:

   box_init_setup.sh

That will launch a script that will walk you through setting up FTP access.

4. Choose 1 for Setting Password, you will have to enter the password twice and ensure that the end message is password set. Choose a strong password. This will lock down Telnet and will no longer allow it to be used but in the future you will have to SSH into the box.

5. Choose 2 for Setting Time & Date. Note that the date/time is set for UTC time zone and is entered as yyyymmdd and HHSS

6. Hit the enter key to exit the box_init_setup.sh utility

   You've now got a working, secure Media Library Box!

   Now you're finished. You can head over to the Administration and configuration guide for further information.

7. From now on if you need to administrate the Media Library Box, you will have to log into the Media Library Box via SSH like this:

    ssh root@192.168.1.1 (Or use Putty on a Windows Computer)

If you want to customize the branding of the Media Library Box you can use the Advanced branding guide to further modify your configuration. Note that the About page needs some customization or it will simply have sections including:

H1
  T1
H2
  T2
H3
  T3

To add/remove content on your Media Library Box, with the USB key in your computer go to the:

LibryarBox/Shared/audio
LibraryBox/Shared/video
LibraryBox/Shared/text
LibraryBox/Shared/software

Directories to add/remove content. Note that additional folder can be added under LibraryBox/Shared/ directory, however, these will only be available through the All Content menu item, or by navigating to the Audio, Text, Video and App sections then back up one directory.

Note that any directory with an index.html file in it will automatically load that index.html file and display as HTML. All other files in the same directory will have to be linked in by the index.html file.

How do I recover a lost password or a 'bricked' unit?

Using a tool that can reach the reset button through the hole next to the USB port, power the unit on and wait 5 seconds. Press and hold the reset button for 3 seconds.

Telnet into the box at 192.168.1.1 (your host will have to be setup for 192.168.1.2 or equivalent as no DHCP will be running, this means that you will have to fix the IP address of your Ethernet port:

IP address:	192.168.1.2
Netmask:	255.255.255.0
Gateway:	192.168.1.2
DNS:	leave blank)

At the command prompt run the following commands:

/etc/init.d/boot start	(ignore any error messages)
mount /dev/sda1 /mnt	(mounts the USB drive)
cd /mnt	(changes your directory location to the root of the USB drive)
ls	(lists the files there)

You should see a directory listing of the contents of the USB. On the USB memory stick should be the openwrt bin file like:

Openwrt-ar71xx-generic-tl-mr3040-v2-……bin
(If not look in the /auto_flash directory for the last numbered bin file…. Eg: *.bin.# This can be done with the command:

ls /auto_flash)

Or use the original firmware image for the TP-Link
TL-MR3040-V2-FW0.0.3-stripped.bin (the original TP-Link 3040 firmware)

Then write the firmware to the flash memory by typing at the command prompt:

mtd write –r FIRMWARE-FILE-NAME firmware

Replacing FIRMWARE-FILE-NAME with the correct firmware (or /auto_flash/*.bin.#) you want to write.

After the write is complete the unit will reboot and the new firmware will be run. You will have to re-install or re-run the box_init_setup.sh as any previous password will have been lost. Additionally you will have to re-install the LibraryBox code, h5ai and any branding and or configuration.

If after several attempts of resetting the unit you cannot get the command prompt. You may have bricked the unit in such a way that the only possible recovery is to use a special serial port utility and tool to re-flash the unit. It is beyond the scope of this document to explain this process.