Comparing the Wi-Fi Media Box Options - May 2020
by Martin Lange

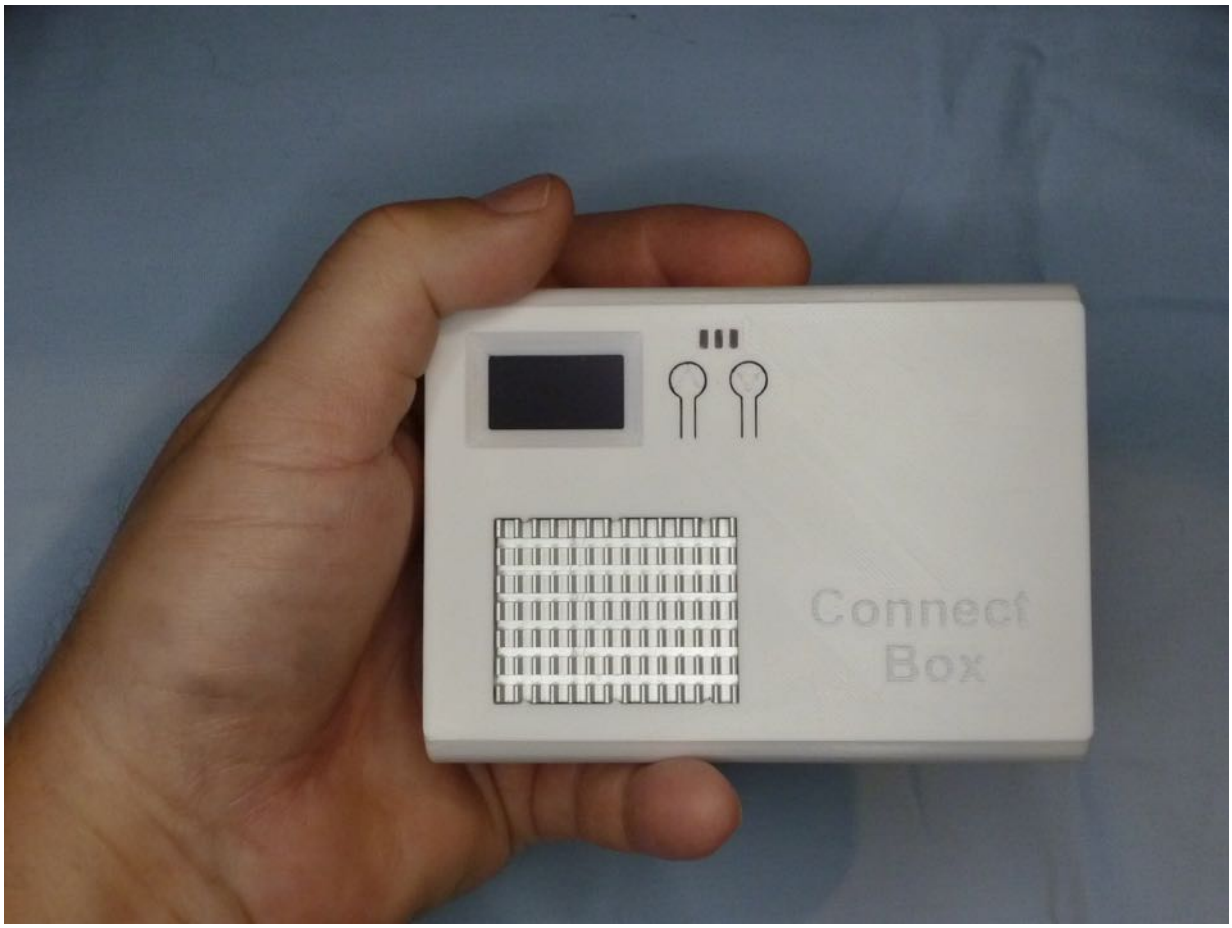
Introduction

How do you get digital resources into the hands of people who aren't connected to the Internet? How do you distribute apps, videos, audio, documents, and images to people who can't afford the data it would take to download those materials? What if those people live in remote areas where they don't have cell coverage?

The key to distributing digital content is a Wi-Fi connection that acts like the Internet—but isn't. These units, generically referred to here as "Wi-Fi media boxes," show up on a user's device as a Wi-Fi network. Yet the content offered is only what the owner of the unit loads into the memory of the Wi-Fi media box. Users are unable to make an Internet connection through them.

Several options are currently available as of May 2020:The ConnectBox, The Lightstream Pocket, The MicroPi and The BibleBox Pi. Each costs less than $100 USD, and has its advantages and disadvantages. This paper is a review of each unit and a detailed comparison of the features each one offers compared to the others. The purpose is to help readers learn more about each unit so they can choose the one that best meets their particular needs.

The ConnectBox



The ConnectBox is a simple but powerful tool. It is designed to be easy to offer content via a Wi-Fi connection, and made for people who don't like to read manuals. A thumb drive loaded with content is all that is needed to get started. Plug it into the ConnectBox, and turn it on. Users can connect and begin accessing the content.

The ConnectBox can be used two ways: to offer content as arranged on a thumb drive in a graphical interface, or to allow the display of custom-designed HTML websites without being connected to the Internet. The latter allows the administrator to develop language-specific, event-specific, or purpose-specific websites for users to engage with.

Connecting to the ConnectBox is simple. Turn it on, connect to the Wi-Fi signal, and a window pops up showing the user how to connect their browser. Once that is done, the user sees the folders and files available for downloading or streaming.

The ConnectBox ships with 64gb of internal memory. Files can be copied to the internal memory and offered to users. It also accepts any thumb drive. The contents of the internal drive will not be displayed when a USB drive is plugged in.
The device itself has a small OLED display and two buttons. The display, at first glance, shows how many users are connected, the firmware version, how much battery remains (percentage), and the temperature of the CPU. The two buttons allow the user to cycle through a series of screens that give specific information about temperature, battery life, CPU usage and other statistics. The buttons can also be used to copy all of the files from the USB to the internal memory, or vice versa. The case is white, which stays cooler when operated in an environment exposed to direct sunlight. If needed, the case can be 3D printed in any color desired by special request. The case itself is available with or without "ConnectBox" branding. It can also be custom branded upon request. The switch for powering it on and off is flush with the case, making it difficult to accidentally turn on or off.

Because of the CPU used, which enables up to 17 people to simultaneously stream video, there is a large heat sink incorporated in the case. It gets warm to the touch, but never hot enough to burn.

The built-in battery will run the ConnectBox for approximately 4 - 6 hours, depending on usage. In a pinch, the ConnectBox can be used to charge a phone or other device! A smaller ConnectBox without a built-in battery is also available. This is ideal for locations where portability is unnecessary and the unit will remain plugged into wall power.

When used in file view mode, folders can be assigned custom icons. For example, a folder named "Videos" can be given a custom icon that looks like a video camera or a strip of film. Customizing icons is explained in the documentation included with the ConnectBox.

The admin panel is very spartan. Once logged in, the administrator has just a few options available to modify. When a change is made, it is immediately implemented without the need to reboot the ConnectBox.

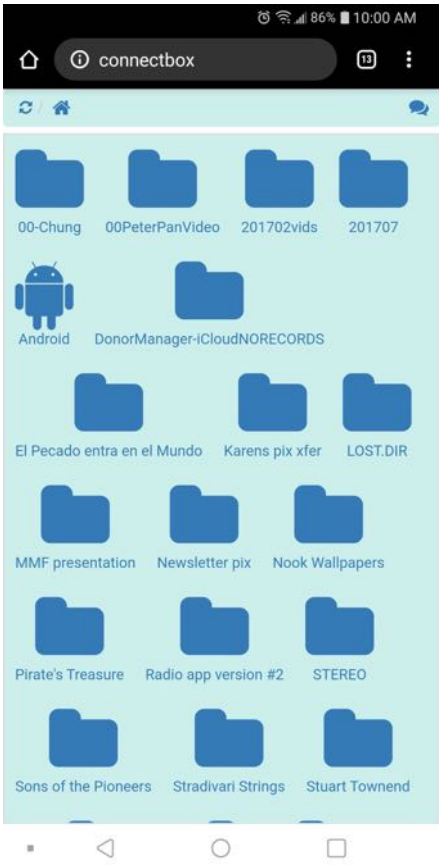
A simple chat feature is available for users to communicate, if desired. The chat feature is unique in that it allows for left-to-right text (like English) as well as right-to-left (like Arabic). The chat is deleted when the unit is powered down or rebooted.

I like the simplicity of the ConnectBox. Load a thumb drive with content, plug it into the ConnectBox, and turn it on. Your content is immediately available to anyone who connects. I also love having the ability to create a beautiful custom interface with HTML and have the ConnectBox display it when a user connects.

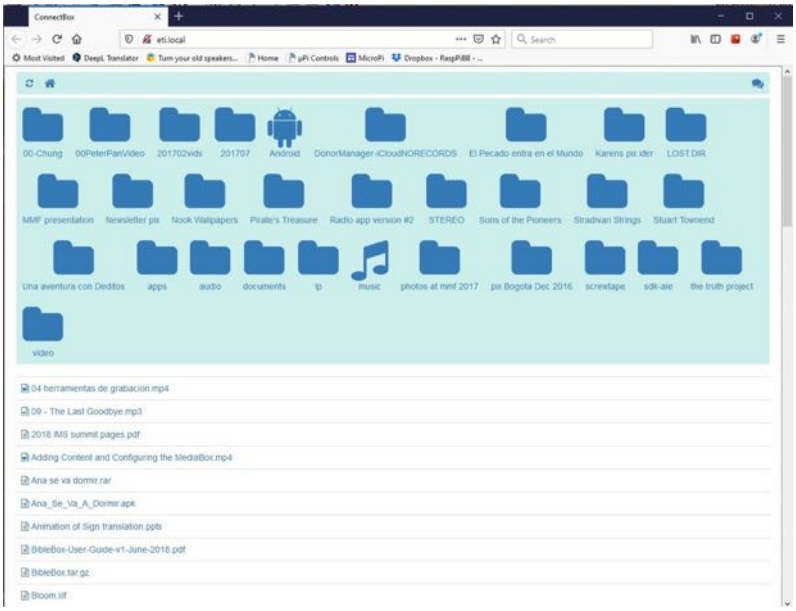
This unit is best designed for someone who:

- Has content on a thumb drive and wants to plug it in and make it available
- Wants to buy something off the shelf that is ready to turn on and use without reading a manual
- Wants to design their own branding and custom HTML interface

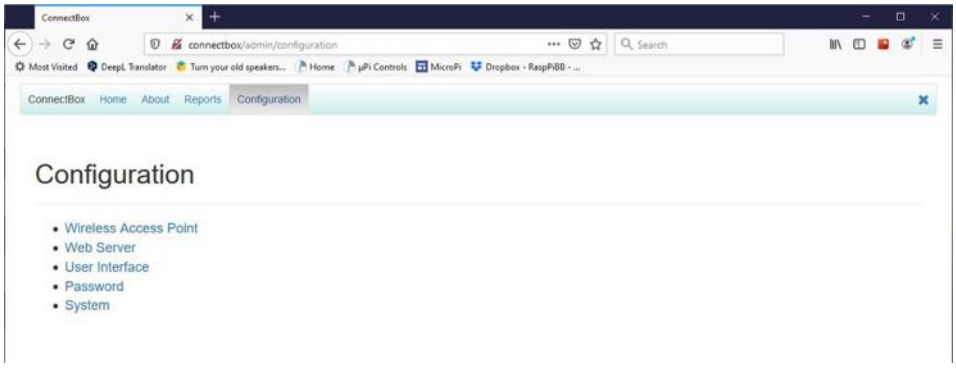
Price: $70.00 USD for the ConnectBox P (with internal battery)
$60.00 USD for the ConnectBox S (without internal battery)



ConnectBox interface on a phone



ConnectBox interface on a computer



ConnectBox admin interface on a computer

ConnectBox S - without internal battery

The Lightstream Pocket

The Lightstream Pocket by Renew Outreach Ministries is the Swiss army knife of the Wi-Fi media box category. It looks like an external battery with a few buttons and lights on it. In fact, it can be used as an external battery. But don't be fooled by appearances! Renew Outreach's engineers have designed the Lightstream to make it easy for people to connect and engage with the content loaded on it.

When users connect to the Lightstream's Wi-Fi signal, a pop-up window guides them through the process of connecting to the interface. Once connected, they are greeted with a Netflix-type homepage which displays the available content. While connected, they can download or stream the available content, and chat with the administrator and other users.

For the administrator of the Lightstream, a myriad of options are available for managing and presenting content. The Lightstream offers six languages for the admin panel interface: Spanish, French, Russian, Chinese, Arabic, and English. Once logged in to the admin panel, a web interface shows the statistics for files downloaded and streamed. It also shows all of the recent connections to the Lightstream. The interface is easy to understand and navigate.

There are several features not found in the other units, such as automatically downloading content directly to the Lightstream from the JESUS Film Project, and chatting with connected users. It offers the ability to turn off downloading and force users to only stream content.

Uploading content and creating folders is done with just a few mouse clicks. Content can be organized by folder, language, or both. As content is being added, an indicator shows the amount of available space remaining on the device. If the administrator is unsure of how a particular feature works, clicking the help button will take them to information explaining each item on the interface in the language of the interface!

The Lightstream is easily upgraded too! Since new features continue to be added on a regular basis, the developers have included a very easy update process in the admin panel. Documentation on how to upgrade the firmware of the Lightstream can be found on RenewOutreach.org.

The device itself has features that can be accessed by pressing a button or two. The battery level and the number of connected users are indicated with small blue LEDs. It is possible to copy content from the Lightstream directly to a microSD card simply by inserting the memory card into the Lightstream. The content that gets copied is determined in the admin panel. The microSD card can be locked by the Lightstream so no other content can be written to it.

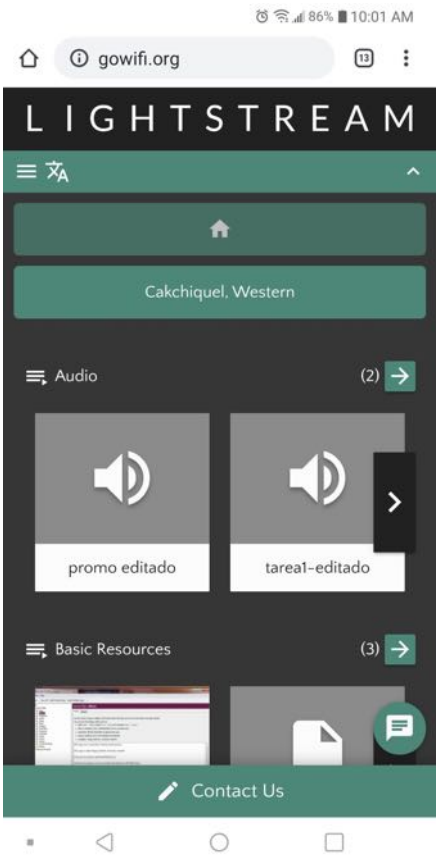
For a small fee, Renew Outreach offers pre-loading of content on the unit, making it an easy option for people who want to make content available without learning how to administer the Lightstream.

The Lightstream Pocket can be purchased either branded (with the Lightstream Pocket logo) or unbranded.

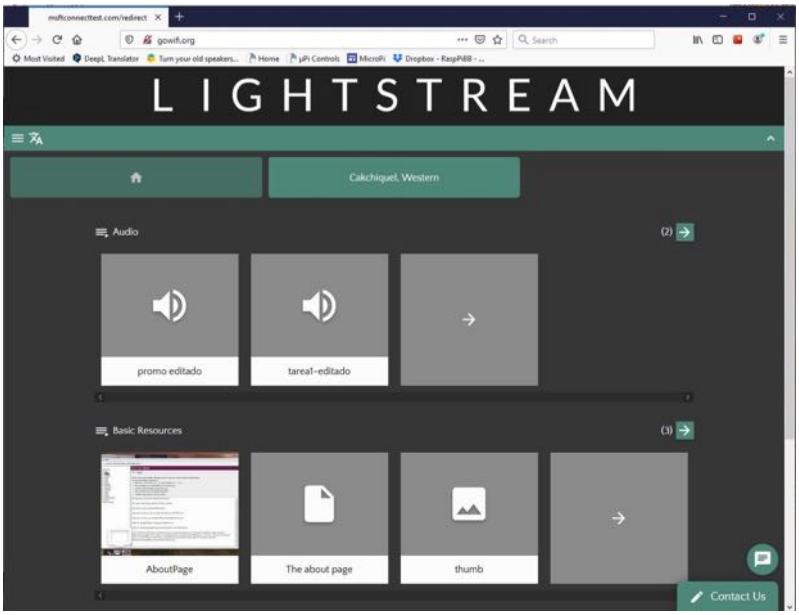
The Lightstream is designed for someone who wants to:

- Buy something off the shelf that is ready to turn on and use
- Engage with users in real-time
- Offer hand-picked content in bite-sized portions
- Have full control over the interface and resources visible to the user
- Offer content in several languages
- Custom-load their own content

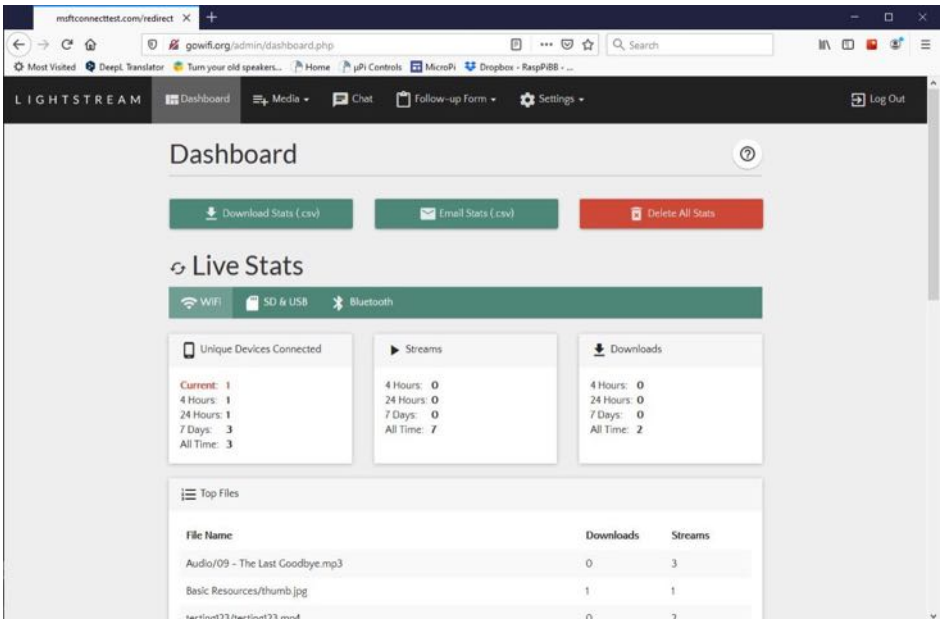
Price: $82.00 USD for the Lightstream Pocket (16gb version), $102 USD (32gb version), $122 (64gb version)



Lightstream interface on a phone



Lightstream interface on a computer



Lightstream admin interface on a computer

The MicroPi

The MicroPi is a wonderful surprise! It is smaller and less expensive than the other units, but offers the same functionality. It is a do-it-yourself project, so requires some technical knowledge and the ability to follow the steps laid out in the instructions. The documentation is well written and easy to follow. It covers everything from loading the operating system onto the microSD card, first boot, expanding the memory, loading content, and managing the options available to the administrator. The documentation is all located on the MicroPi website.

There are only two items to purchase: a Micro Pi Zero W kit and a microSD card. It is advisable to purchase at least a 32gb microSD card, but depending on how much content will be loaded, the MicroPi can handle a microSD card up to 512gb.

Once assembled and powered up, it's easy to get connected. When a user connects to the MicroPi Wi-Fi signal, they open a browser and type "http://mpi.local" in the URL bar and the main interface opens. The user is greeted with easy to recognize icons, with text below them: video, audio, text, images, apps, contact, synchro, and language. Tapping on an icon takes the user to a folder containing resources of that type. The administrator of the

MicroPi can load content into these folders, and can create sub-folders to organize the content being offered. Content is loaded onto the MicroPi from a computer using a program like WinSCP (Windows) or Forklift (Mac). Other programs can be used as well.

A feature that sets the MicroPi apart from the others is its ability to connect to ScriptureEarth.org and download language-specific files. The user needs only to enter the Ethnologue code and language name, and the MicroPi then clones the files from that language and saves them to its memory.

A MicroPi Zero W kit, microSD card, and external battery can be purchased on Amazon.com for less than $40 USD. The kit comes with a universal power adapter that works in all countries. The battery allows it to be used as a portable Wi-Fi media box.

I love this unit! It's so small! The interface is clean and easy to understand. It is easy to load with content and it's so inexpensive! The administrator panel allows me to change a few settings without overwhelming me with choices.

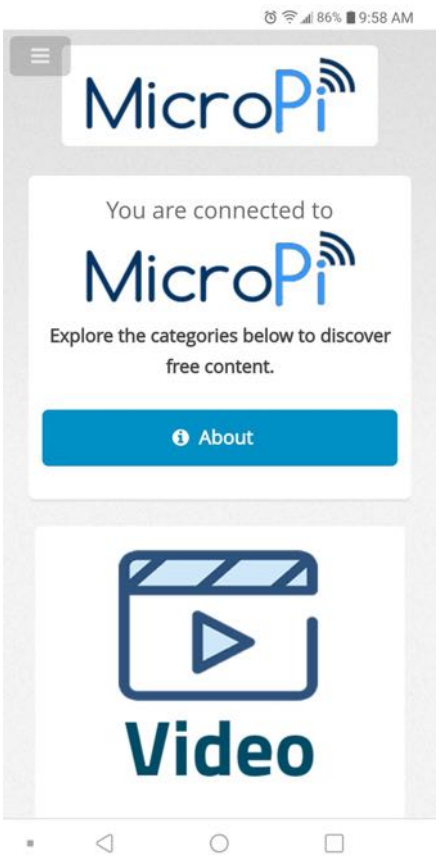
This unit is best designed for someone:

- Not afraid of basic electronics assembly
- Looking for an economical solution
- Looking for something inconspicuous and portable
- Who is a pastor/trainer/promoter that travels to remote locations and needs something small and light that lasts a long time on one charge
- With a specific language interest - download all resources from ScriptureEarth
- Who needs the functions of a basic wireless file server

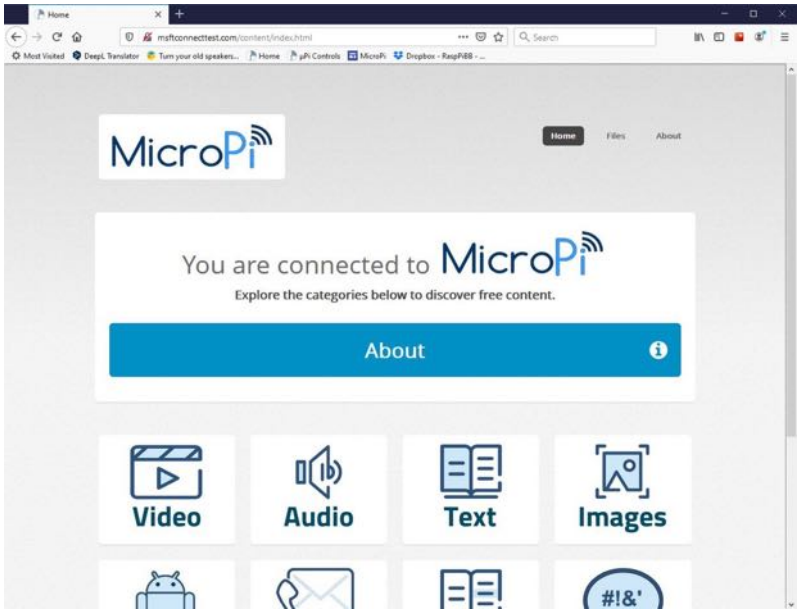
Price: $40.00 USD from Amazon

MicroPi Kit from Amazon
32 gb MicroSD card from Amazon

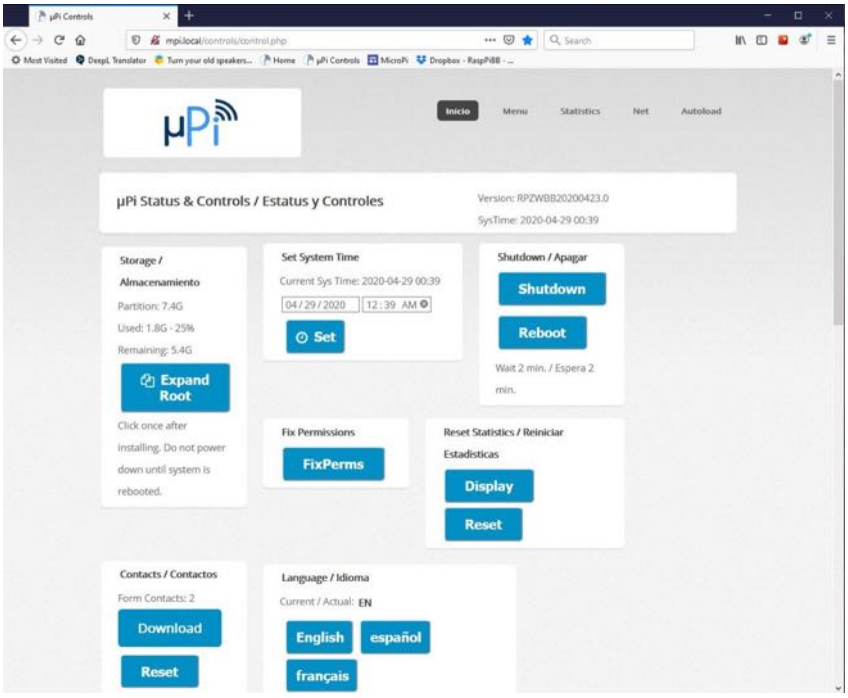
Optional External Battery for Portable Use:
Rechargeable Battery from Amazon
Solar Rechargeable Battery from Amazon



MicroPi interface on a phone



MicroPi interface on a computer



MicroPi admin interface on a computer

The BibleBox Pi

As a prelude to this review, it must be mentioned that the BibleBox Pi project is no longer being supported by its developer, even though the hardware it is based on is still available.

The BibleBox Pi is a DIY project based on the Raspberry Pi 3 circuit board. An individual board or a kit can be purchased on Amazon and easily assembled. The user guide and system image are downloaded from www.biblebox.org and the user follows the instructions in the user guide to put the system together. Note that it only runs on the Raspberry Pi 3b or 3b plus. It does not run on a Raspberry Pi 4.

The BibleBox Pi infrastructure is based on the WordPress content management system. If the user is familiar with WordPress, operating and administering the BibleBox will come naturally. If not, the user will have to invest time learning WordPress by watching YouTube tutorials or documentation from wordpress.com.

The instructions were a bit difficult to follow at times, but after carefully re-reading them I was able to get the BibleBox Pi up and running. Once connected to the Wi-Fi signal, the browser opens up and makes it clear to the user to tap on the icon to continue. After a five

second delay, the user interface appears. It is quite impressive! There is a blog, courses, a list of the download categories, a list of the top downloads, and a featured video. There is a good assortment of sample content that comes pre-loaded.

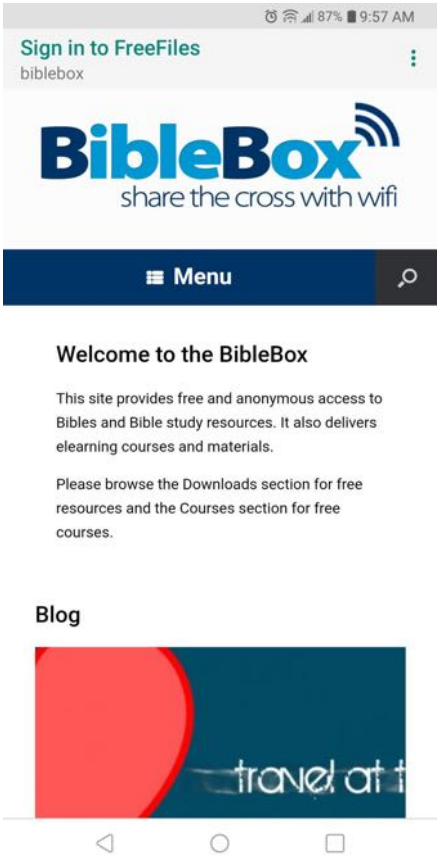
To administer the content, the user must log in to the WordPress admin interface. The pre-installed content can be deleted and the administrator can add their content. For someone who is unfamiliar with WordPress, the interface can be daunting.

After using the Lightstream, MicroPi and ConnectBox, which have been designed to be easy to use from the beginning, I found the BibleBox Pi somewhat difficult to set up and administer. If someone has a good working knowledge of WordPress, the BibleBox Pi can be configured as a very powerful tool that is highly configurable. But I can't recommend it for people without that background when there are easier devices available.

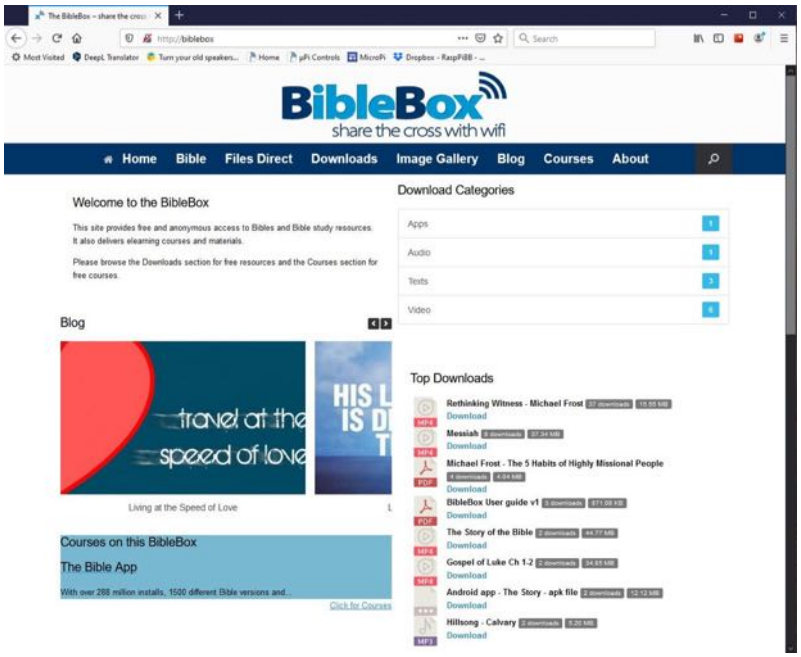
This unit is best designed for someone who:

- Has experience with WordPress
- Has a high level of technical computer skill
- Needs a hotspot with a customized interface offering the ability for the user to download materials, take courses offline, or stream media content

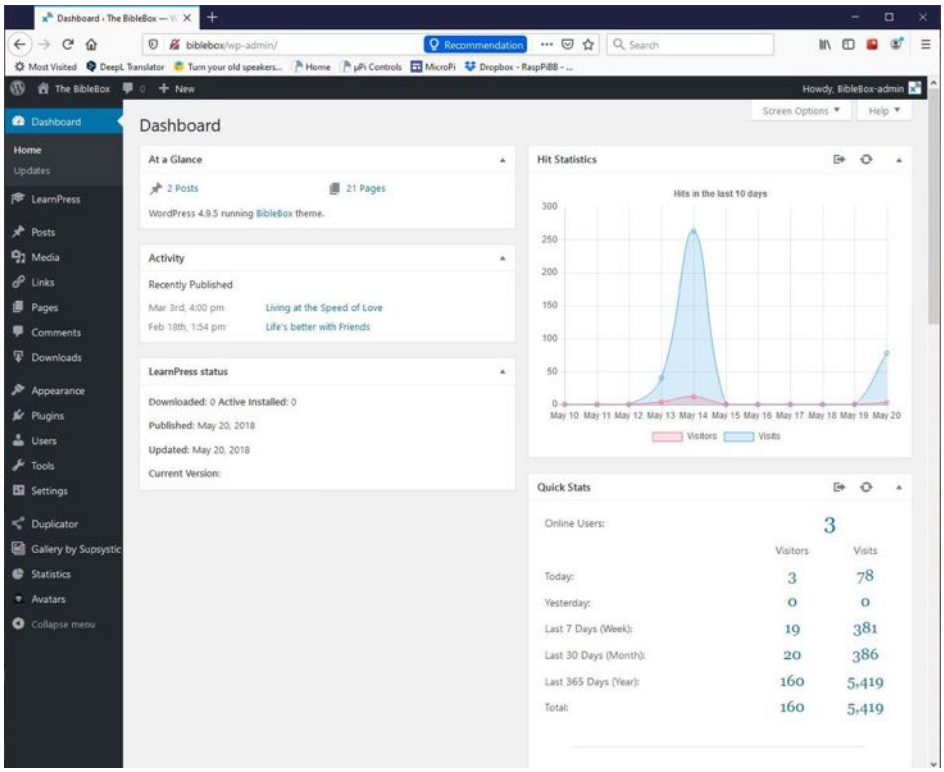
Price: $80.00 USD [from Amazon]



BibleBox Pi interface on a phone



BibleBox Pi interface on a computer



BibleBox Pi admin interface on a computer

Comparison between the four currently available BibleBox units - May 2020

	Lightstream	ConnectBox-P	ConnectBox-S	MicroPi	BibleBox
Form Factor					
Type of Product	Commercial	Commercial	Commercial	Do-It-Yourself	Do-It-Yourself
Size in inches (L x W x H)	5 ⅛" x 2 ¾" x ¾"	4 ¼" x 3 ¼" x 1 ⅛"	2 ⅞" x 3 ⅛" x 1 ⅛"	3 ⅛" x 1 ½" x ½" (2)	3 ¾" x 2 ½" x 1 ¼" (2)
Size in millimeters (L x W x H)	130 x 70 x 19 mm	109 x 80 x 28 mm	73 x 80 x 28 mm	79 x 38 x 13 mm	95 x 64 x 32 mm
Weight (ounces / grams)	6 oz / 168g	5.7 oz / 162g	3.4 oz / 96g	1 oz / 28g	7.3 oz / 208g
Internal memory	16gb 32gb or 64gb	64gb	64gb	8 - 512gb	8 - 128gb
Branding	with/without	with/without (6)	with/without (6)	without	without
Pre-assembled	yes	yes	yes	no	no
Battery life indicator	yes	yes	n/a	n/a	n/a
Connected users indicator	yes	yes	yes	no	no
External antenna connector	yes	by special request	by special request	no	no
Portable	yes	yes	no (1)	yes	yes
Stationary	yes	yes	yes	yes	yes
Clear documentation provided	yes	yes	yes	yes	somewhat
Included in packaging	user guide, usb cable	charger, usb cable, user guide	charger, usb cable, user guide	n/a	n/a
Optional accessories	bluetooth dongle, solar panel, power adapter, custom content loading	metal security tie wrap, microSD card cover	metal security tie wrap, microSD card cover	n/a	n/a
	Lightstream	**ConnectBox-P**	**ConnectBox-S**	**MicroPi**	**BibleBox**
Power					
Internal battery	yes	yes	no	no	no
Battery run time	approx. 12 hours	approx. 4-6 hours	n/a	n/a	n/a
Power from external battery	yes	yes	yes	yes	yes
Run while plugged into external power	yes	yes	yes	yes	yes
	Lightstream	**ConnectBox-P**	**ConnectBox-S**	**MicroPi**	**BibleBox**
Functions					
MicroSD copy	copy and lock	no	no	no	no
Boost/Diminish signal	no	no	no	no	no
External USB content	yes (4)	yes	yes	no	no
Admin upgradeable firmware	yes	yes	yes	yes	no

Maximum concurrent connections	20 (5)	30 users or 17 video streams of 380p	30 users or 17 video streams of 380p	unknown	unknown
Auto shutdown	yes	yes	yes	no	no
	Lightstream	**ConnectBox-P**	**ConnectBox-S**	**MicroPi**	**BibleBox**
Interface					
Admin Panel	yes	yes	yes	yes	yes
Captive portal	yes	yes	yes	yes	yes
Require password for user to connect	yes	yes	yes	not yet	no
Multilingual interface	yes	customizeable banner message	customizeable banner message	yes	no
Icon-based interface	yes	yes	yes	yes	no
Statistics	yes	yes	yes	yes	yes (in admin mode)
Popular files/last files	yes	yes	yes	yes	yes
Chat box	yes	no	no	yes	yes
Contact form	yes (customizeable)	yes	yes	yes	no
Rename SSID	yes	yes	yes	yes	no
Hide SSID	no	no	no	no	no
View how many users connected	yes (leds and admin panel	yes	yes	no	no
Real-time view of downloads/streams	yes	yes	yes	no	no
	Lightstream	**ConnectBox-P**	**ConnectBox-S**	**MicroPi**	**BibleBox**
Content					
Autoload from Scriptureearth.org	no	no	no	yes	no
Autoload from JesusFilm	yes	no	no	no	no
Provide audio to SAB/RAB apps	no	no	no	yes	no
User selects download or play	yes	no (3)	no (3)	yes	no
Download multiple files	yes	no	no	yes (as zip file)	no
Password protected media	yes	no	no	no	no
Use with Sendit/Xender	yes	yes	yes	yes	yes
	Lightstream	**ConnectBox-P**	**ConnectBox-S**	**MicroPi**	**BibleBox**
Support					
Development	active	active	active	active	inactive

Ship to non-US address	no	yes	yes	yes via Amazon	yes via Amazon
Support Website	https://renewoutreach.org/equipment/lightstream-wifi-hotspot/	https://connectbox.technology/wp/	https://connectbox.technology/wp/	https://sites.google.com/sil.org/micropi/home	https://biblebox.org
Approximate Price	$82.00	$70.00	$60.00	$35.00	$60.00

(1) = use with an external battery is a possibility
(2) = depending on the size case you purchase
(3) = user has to right click and choose to download from a context menu
(4) = requires special formatting
(5) = can be adjusted
(6) = can be custom branded

Conclusion

There are now several affordable options for distributing digital content via a closed Wi-Fi network. Each one is backed by developers who want to make it easy for people to access and download Scripture and Scripture-related media on their phones and computers. These developers are responsive to user questions and user input because they want to continue to make their product better and easier to use. Except for the BibleBox Pi, there are more improvements planned for each one in the future.

I hope this guide will help you to choose the one which best fits your needs.