

BrightLink User Guide

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Overview

BrightLink provides a touchless interactive solution for any digital signage application by enabling users to view and control an interactive digital sign with their mobile phone. BrightLink uses proven BrightSign technology that can easily be deployed with confidence for new & existing installations. BrightLink does not need an internet connection or a phone app to connect to or control the digital sign. With BrightLink, the possibilities are endless in terms of the touchless interactive user experiences that can be achieved both onscreen using our vast collection of BrightSign features and on the user phone via the custom device webpage using whatever HTML programming you employ that is optimized to run on a connected mobile phone.



BrightLink supports two engagement options:

- **1-way engagement:** plays your content on a personal phone to enhance or augment the onscreen experience. It also works without a screen, thereby making the user's phone the digital sign.
- **2-way engagement:** provides customers with the ability to remotely control a display using their phone.

This document explains the BrightLink requirements and components as well as how to implement it in BrightAuthor presentations using the example BigBoxMedia project provided in the **BrightLink-BigBoxMedia-v0.0.93-PACKAGE.zip**. The BigBoxMedia BrightAuthor project is an interactive movie trailer kiosk that replaces what would be a traditional touch screen experience with a BrightLink experience.

How it Works

The BrightLink solution configures the BrightSign player to act as a web server which uses the installed wireless module as a Wi-Fi access point and hosts a Custom Device Webpage containing your content. This allows a user to connect their phone to the broadcasted Wi-Fi network or **SSID** which does not offer Internet access (the **SSID** is a user variable set to **BigBoxMedia** in the provided example demo). Once the user's phone is connected to the Wi-Fi access point, they can easily scan a QR code that is linked to a specified **hostname** (the hostname is a user variable set to **http://watch.now** in the provided example demo) which will automatically open a phone's default browser to display your custom content as a Custom Device Webpage optimized for a smartphone. A BrightSign player configured for BrightLink not only plays the digital signage presentation shown onscreen, but also hosts the custom device webpage displayed on a connected user's phone and manages the interactivity between the player and the connected phone.

1-way engagement

BrightLink implemented using 1-way engagement allows a user to simply view custom content on their connected phone that matches, enhances or augments what is shown on screen. With this implementation a multitude of phones can be linked at once to the BrightSign player's Wi-Fi access point to view the content. This implementation can also operate without a screen at all and instead printed instructions to connect with the Wi-Fi access point and then scan a QR code to view content can be employed. Possible applications include company directories, retail shelf printed signs to get info or coupons, museum exhibits, etc.




2-way engagement

BrightLink implemented using 2-way engagement allows a user to view custom content and remotely control the onscreen content playback from their connected phone. This implementation is called 2-way engagement as the user is controlling the onscreen experience and the BrightSign player is both delivering content to the connected phone and screen while also listening for and triggering onscreen events based on selected phone commands. 2-way engagement must be designed into both the BrightAuthor project running onscreen and within the Custom Device Webpage displayed on the connected phone. In this implementation only one phone can be linked to control the experience at once, much like only one person can interact with a touch screen at any one time.

BrightLink Developer Package Contents

The downloadable **BrightLink-v0.0.93-PACKAGE.zip** contains the following two folders:

1. **BrightLink-BigBoxMedia-v.0.0.93** folder: contains an example BrightLink demo with 2-way engagement including the BrightAuthor project file, associated source files and content as shown.

- content
- Products-customDeviceWebPage
- QRcode-Control
- QRcode-Join
-  BrightLink-MovieTrailers-WifiName.bpf
-  httpServer-npm-auto_v3.brs
- npm.zip
-  Set_Player_As_Access_Point_plugin.brs

2. **BrightLink-Docs** folder: contains this **BrightLink-UserGuide-v093.pdf** document

BrightLink Requirements

BrightSign Player Requirements

- Any series 3 or series 4 BrightSign player running BrightSign OS v8.1.69 or higher which can be downloaded here: <https://www.brightsign.biz/downloads/overview>
- An installed Wireless Module (WS-103)
 - The wireless module is solely used for BrightLink functions and cannot be configured or utilized for publishing presentations or any other functions
 - Wi-Fi module signal strength can be reduced by using an attenuator or by removing the antenna off the back of the device for maximum reduction of the signal
 - Video instructions on how to install a wireless module can be found here: <https://www.youtube.com/watch?v= ck3RskJxBQ>
- Micro SD card with a published BrightLink presentation created in BrightAuthor or BrightAuthor:connected

BrightSign Player Setup

A BrightSign player running a BrightLink presentation configures the installed Wireless Module to act as a Wi-Fi access point. Therefore, the Wireless Module cannot be used for any other purposes such as a Wi-Fi client or for publishing presentations via BrightAuthor or BrightAuthor:connected.

1. If repurposing an existing player, you **must** factory reset your player
 - Hold down both SVC and Reset buttons while applying power until the red light starts to flash quickly, then release the buttons.
 - If the player does not reset fully, contact our [support team](#) for a reset script
 - Install OS 8.1.69 or higher. [click here](#) for OS downloads.
2. Setup the player
 - a. **DO NOT** enable wireless under **Network Properties**.
 - BrightLink uses the wireless module to connect and communicate with a linked phone & cannot be used for other functions like publishing presentations
 - b. Under **Unit Configuration**, check the box to **enable Diagnostic web server**. This allows you to access the Admin Portal (accessible at <http://hostname/admin>). If you do not enter a password, no password will be needed to access the Admin Portal. It is highly recommended that you enter a strong password here to ensure that the Admin Portal is secure.
 - Please note that the traditional diagnostic web server is not accessible via the wireless module for BrightLink applications therefore the only way to access the diagnostic web server is with a wired Ethernet connection utilizing the setup username and password

- c. Under **Unit Configuration**, check the box to **enable local web server**, but **DO NOT** enter a username and password. If login credentials are set, the user will need them to view your menu content.
- d. Under **Unit Configuration**, choose your preferred publishing method, such as Standalone.
 - If you choose a networked publishing method, wired Ethernet must be used – the wireless module cannot support networked publishing for BrightMenu applications.

BrightAuthor Project Requirements

BrightLink requires the following elements in a BrightAuthor project file to implement its functionality on a BrightSign player. Each of these elements are described in detail in Implementing BrightLink in BrightAuthor section of this guide.

- BrightLink User Variables (appropriately set in a BrightAuthor project file)
- Plugin file **Set_Player_As_Access_Point_plugin.brs**
- Plugin file **httpServer-npm-auto_v3.brs**
- **npm.zip** file
- **instructions.zip** file (only used in BrightLink 1-way presentations)
- Custom device webpage (created for and optimized to run on a smartphone)
- QRcode-hostname HTML
- QRcode-SSID HTML (optional)

BrightLink Deployment

Wireless Signal Range

When deploying BrightLink, adjusting and testing the WiFi access point signal range of the installed wireless module is a good idea. The typical signal range of a BrightSign player with an installed wireless module and connected antenna is about 15 feet. Attenuators can also be used to help reduce the wireless signal range. When the wireless module antenna is not used, the wireless signal range can drop to about 4-5 feet. Please note that the signal range is also affected by where it is placed – in line of site of the user or not such as mounted behind a display.

What's Not Required for Deployment

- Internet access to the player is not needed, which makes it extremely easy to deploy in a wide variety of applications

- User phones do not need a particular app installed in order to connect to the player, view the custom content or control the digital sign playback
 - BrightLink uses existing features available on all smartphones to connect to a Wi-Fi access point hosted by the BrightSign player and to scan a QR code using the phone's camera
- A display is not required for 1-way engagement implementations of BrightLink to function but certainly can be employed to enrich the experience.
 - If a connected screen is not utilized, a printed sign of some sort would be needed to explain to a user how to connect to the WiFi access point and display a QR code that can be scanned in order to view the content hosted on the BrightSign player.
 - If using a printed sign for your application, a connected display can be useful for setup & testing purposes as shown in our BrightMenu example demo

Implementing BrightLink in BrightAuthor

1-way Engagement

BrightAuthor projects designed for BrightLink 1-way engagement primarily employ the following elements:

1. Configures the BrightSign player as a wireless access point
2. Hosts an image or a Custom Device Webpage that gets viewed as on a connected phone
3. Optionally plays non-interactive content on a connected screen

This approach can be good for applications that don't have or require a display such as a retail shelf with a QR code to scan for a coupon or a museum exhibit with a QR code to scan for more information. Please see the **BrightLink-1way-v0.0.9.3** example demo to see how a 1-way engagement application can be achieved in a very simplistic approach to display images on a user's phone instead of custom device webpages. Please note that there are many different ways in which to apply 1-way engagement for an even wider variety of applications using custom device webpages.

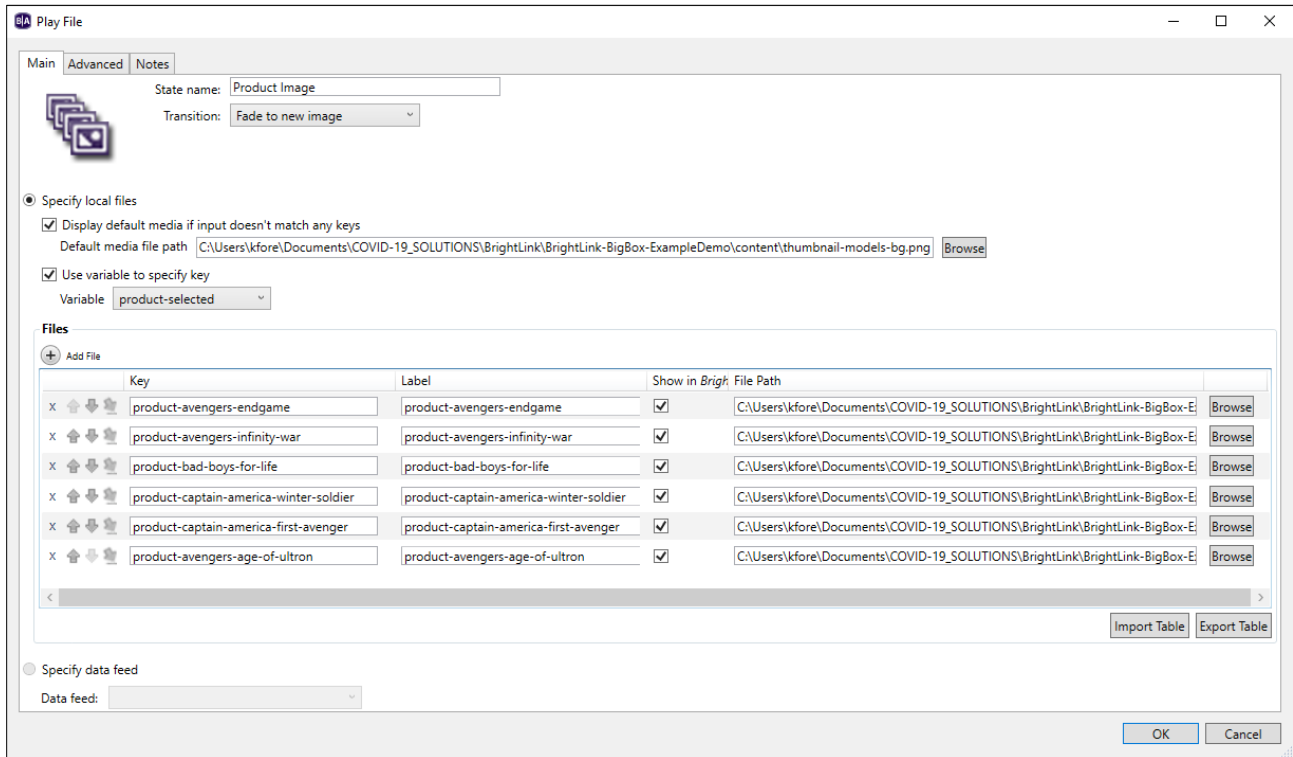
2-way Engagement

BrightAuthor projects supporting BrightLink 2-way engagement primarily employ the following elements:

1. Configures the BrightSign player as a wireless access point
2. Hosts an interactive Custom Device Webpage that gets viewed as a menu on a connected phone
3. Plays interactive content on a connected screen that listens for & executes on commands sent by a connected phone

To implement interactive controls in a BrightLink presentation, utilizing UDP commands to trigger actions on the BrightSign player is the most straightforward. These UDP commands can trigger actions such as playing specific video files onscreen, playing specific audio files, changing LED lighting and more. Essentially the UDP commands can trigger whatever actions BrightSign supports, making the implementations limitless. Other ways to implement interactivity between a connected phone and the BrightSign player can also be employed in BrightAuthor such as employing user variables and zone messaging to trigger playback.

- In the Movie Kiosk Example Demo, the BrightAuthor project file listens for UDPs from the Custom Device Web Page running on a connected phone and then plays back the selected videos with a Video Play File widget.



BrightLink User Variables

BrightLink supports an array of customizable user variables allowing you to customize the experience for your implementation. These user variables configure the associated plugins which in turn program your BrightSign player to perform as a web server and wireless access point using the installed wireless module which does not need an Internet connection. Please note that the wireless module is solely used for BrightLink functions and cannot be used for publishing presentations.

The user variables must reside in the BrightAuthor project file under **Presentation Properties > Variables dialog** as follows:

	connect-status	disconnected	Private	Local
	ssid	BigBoxMedia	Private	Local
X	password		Private	Local
X	hostname	WATCH.NOW	Private	Local
X	ipstart	192.168.10.2	Private	Local
X	ipend	192.168.10.10	Private	Local
X	gatewayaddress	192.168.10.1	Private	Local
X	ipaddress	192.168.10.200	Private	Local
X	frequency	2412	Private	Local

- **connect-status:** This variable is used to track whether or not a phone is connected to the WiFi access point and using the custom device webpage. If the value is “disconnected” the WiFi access point SSID is displayed onscreen notifying a user to connect. If the value is “connected” then the SSID is hidden from view on screen in order to limit the number of users interacting at once.
- **ssid:** This variable is the name of the Wi-Fi network broadcasted by your player. It can be as descriptive as you would like to match your application.
 - Note: the BigBoxMedia example demo has users to manually connect to this SSID on their phone by instructing them to do so onscreen. However, this example demo also provides free HTML code that automatically generates a QR code based on the assigned SSID value (please see the **QRcode-Control HTML** section)
- **password:** This variable is the password needed to connect to the Wi-Fi named under the SSID variable. If you leave the default value blank, no password will be required by the user to connect.
- **hostname:** This variable is the address assigned to the Custom Device Webpage hosted on the BrightSign player which displays on a connected phone in a browser. Please note that your name must end with a valid top-level domain name such as **.com, .now, .link, etc.** (for list of valid top-level domain names, [click here](#)). Otherwise, the value can be set to anything you would like to match your application. The hostname also offers access to the Admin Portal by typing in **http://hostname/admin** into a browser of a connected device.
 - Note: Our recommended method of user operation to access this hostname is by scanning a QR code. When scanned, the hostname translates to a URL which a connected phone is pointed to play in its default web browser
 - In the BigBoxMedia example demo, free HTML code has been provided that automatically generates a QR code based on the assigned hostname value (please see the **QRcode-hostname HTML** section)
- **ipstart:** this variable represents the start of the IP addresses available for the BrightMenu wireless network hosted by the BrightSign player
- **ipend:** this variable represents the end of the IP addresses for the BrightMenu wireless network hosted by the BrightSign player. Set this user variable to a number that will provide an acceptable range of available IP addresses in order to support all of the users you would like to be able to connect to BrightLink player at once. For 1-way engagement this number can be set to hundreds. For 2-way engagement it is advisable to restrict the number so that multiple users are not able to connect simultaneously and therefore could be competing to control the playback of the digital signage at once.
- **gatewayaddress:** this variable is the default gateway assigned to the BrightLink wireless network
- **ipaddress:** This is the IP address assigned to the player
- **frequency:** This variable sets the Wi-Fi frequency

[Set_Player_As_Access_Point_plugin.brs](#)

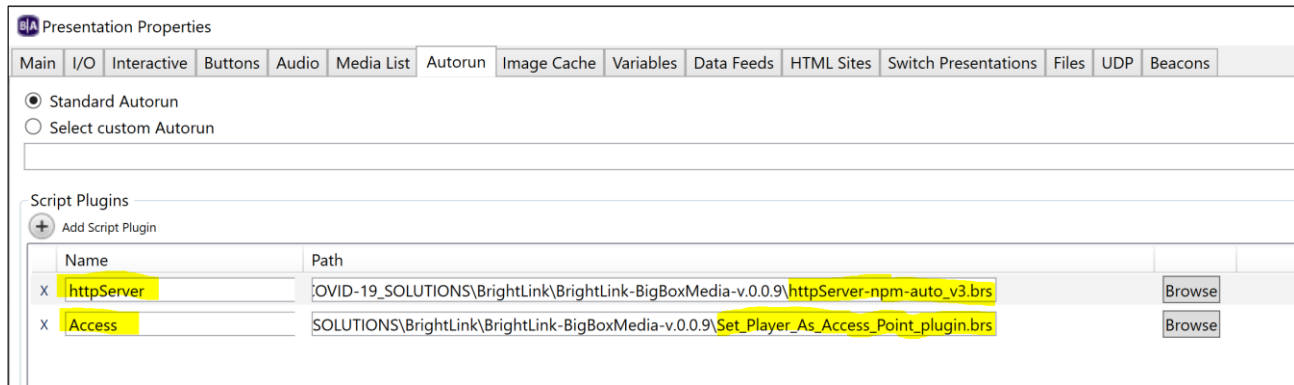
This plugin configures the BrightSign player to act as a web server and a Wi-Fi access point which is what allows a user device to connect to it. No Internet is required for the BrightSign player to enable this BrightLink feature.

This plugin file needs to be referenced in your BrightAuthor project under **Presentation Properties > Autorun > Script Plugins**. The name must be **Access** (it is case sensitive) and the path must be indicated.

httpServer-npm-auto_v3.brs

This plugin starts a node server on the player and unzips **npm.zip** to the card. The plugin creates a **/node** folder with **server.html** and **portal.js** files. These files setup the player proxy to direct the connected phone to the menu's Custom Device Webpage hosted on the BrightSign player. The webpage's URL is accessible via the specified hostname in the user variables described previously. This plugin also builds the server containing the Admin Portal webpage code.

This plugin file needs to be referenced in your BrightAuthor project under **Presentation Properties > Autorun > Script Plugins**. The name must be **httpServer** (it is case sensitive) and the path must be indicated.



npm.zip

The **npm.zip** file contains all the files for configuring the proxy. You can create your own node.js file which could contain further functionality for the experience.

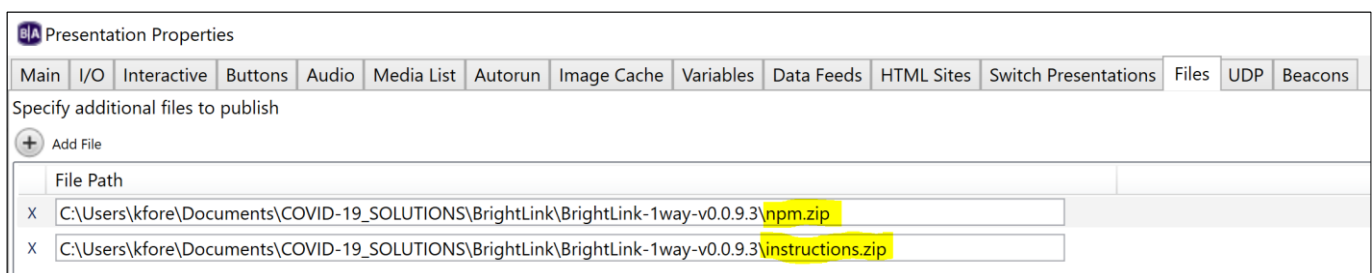
This **npm.zip** file must be referenced in the BrightAuthor project under **Presentation Properties > Files dialog**.

instructions.zip

The **instructions.zip** file is only used for BrightLink 1-way implementations using images to display on a user's phone instead of custom device webpages. This file is unzipped and the contents are placed into a folder named **uploads** on the SD card when the presentation is run for the first time. The files this zip file contains in the **BrightLink-1way example demo** are example images to test with for various retail, museum and transportation applications. It also contains the instructions.png file which is activated by default to display on a connected phone when it scans the QR code. The instructions detail how to access the Admin Portal and upload menu images and activate them to display on a user's phone.

- **instructions.png** | instructions image that displays the very first time a BrightMenu presentation is run and directs the user how to login to the Admin Portal to customize their menu view.
- **Specials1.jpg, Specials2.jpg, Museum.jpg, Transportation.jpg** | these are example images that can be activated for testing purposes

The **instructions.zip** file must be referenced in the BrightAuthor project at **Presentation Properties > Files dialog**.



Custom Device Web Page

The Custom Device Web Page is the HTML content that displays on phone connected to a BrightLink enabled BrightSign player. This content should be optimized to run on a mobile phone, not a BrightSign player. A mobile phone connected to the player's WIFI access point (SSID) can view this content by scanning a QR code which opens the default web browser and displays the assigned Custom Device Webpage content. There are multiple ways to create a Custom Device Webpage to play content on a connected phone:

1. HTML content for viewing purposes only for use in BrightLink 1-way engagement implementations
 - The HTML could also be designed to simply display a PNG or JPG image file which is what BrightMenu does. Please refer to the BrightMenu example demo and User Guide for details
2. Interactive HTML content that offers a user interface to remotely control a digital sign for use in BrightLink 2-way engagement implementations
 - The Custom Device Webpage used in the example BigBoxMedia project is called **product-index.html** and is simply a working sample to guide you in your own designs and applications.

Note: Please contact your sales representative if you would like a reference to a BrightSign partner that is experienced in creating Custom Device Webpages.

In BrightAuthor, the Custom Device Webpage is assigned under the **Presentation Properties > Variables dialog**. This webpage is accessed via the assigned 'hostname' variable which a connected phone can view by scanning a QR code assigned to that hostname or by typing the hostname into any browser. If using BSN.cloud or BrightSign Network to publish your presentation, the HTML site name must be a unique name that does not match any other HTML site name saved in your account.

Presentation Properties

Main | I/O | Interactive | Buttons | Audio | Media List | Autorun | Image Cache | Variables | Data Feeds | HTML Sites | Switch Presentations | Files | UDP | Beacons

Device Web Page Display

No device web page

Standard device web page

Custom device web page

HTML site name: Products

Location: C:\Users\kfore\Documents\COVID-19_SOLUTIONS\BrightLink\BrightLink-BigBoxMedia-v.0.0.9\Products-customDeviceWebPage\product-index.html

If using BSN.cloud or BrightSign Network to publish your presentation, the HTML site name must be unique

QRcode-hostname HTML

This free HTML code auto generates a QR code based on the currently assigned **hostname** user variable value. Once that value is changed, the QR code is auto generated for the new value.

- In the BigBoxMedia example demo, this HTML code is used to display a QR code onscreen in a zone that matches the hostname variable value.
- This HTML code is also used to create the QR code that is generated and displayed within the Admin Portal when the same hostname variable value has been changed.

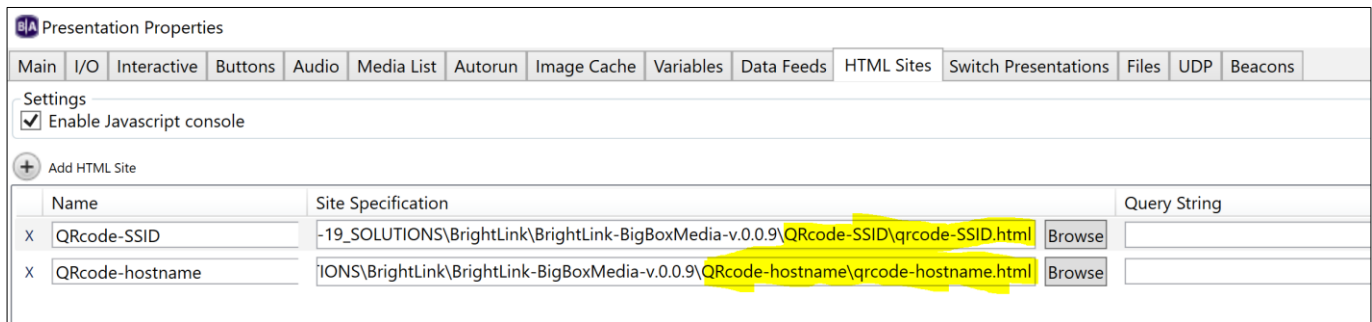
If using this HTML for your onscreen content, the file needs to be referenced in your BrightAuthor project under **Presentation Properties > HTML Sites**.

QRcode-SSID HTML

This free HTML code auto generates a QR code based on the currently assigned **SSID** and **password** user variable values. Once that value is changed, the QR code is auto generated for the new values.

- The BigBoxMedia example demo provides this HTML code but it is not utilized in the presentation to display onscreen

If using this HTML for your onscreen content, the file needs to be referenced in your BrightAuthor project under **Presentation Properties > HTML Sites**.



Admin Portal

The Admin Portal has primarily been designed for BrightMenu to easily distribute menu images to patrons, however it can be customized it to meet the needs of a BrightLink application by editing the html files found in the **npm.zip** file. For BrightLink, the provided Admin Portal allows you to update the **hostname** user variable and auto generates a new QR code for it that you can download. It also allows you to update the **SSID** user variables and the password to log into the Admin Portal. The Admin Portal can be accessed by typing in **hostname/admin** into the browser of a connected device (for the BigBoxMedia example demo it is **watch.now/admin**).

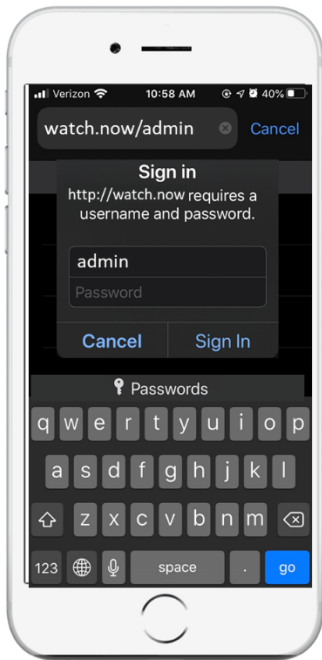
Admin Portal Operations

The default Admin Portal supports the following operations and customizations:

- **UPLOAD MENU:** Uploads any image file in the format of **JPG** or **PNG**. Only 1 file can be uploaded at a time.
- **SELECT MENU:** Activates an uploaded file to be viewable when the QR code is scanned. Multiple image files can be selected and viewable. If multiple images are activated, they will display in alphabetical order and can be viewed by scrolling vertically through them in a browser.
- **SET SSID VARIABLE:** Changing the SSID value to a custom name is supported to make it easy for users wanting to connect to recognize and find your Wi-Fi access point
- **SET HOSTNAME VARIABLE:** Changing the hostname value to a custom name is supported allowing you to match the name to your application and offer an easy way for connected users that do not or cannot scan a QR code to type the hostname into their browser to see your custom content. Please note that the hostname must end with a valid top-level domain name such as .com, .now, .link, etc. (for list of valid top-level domain names, [click here](#))
- **PASSWORD:** Updating the password to log into the Admin Portal is important to ensure your broadcasted content is secure.
- **QR CODE IMAGE:** this image automatically updates when the hostname value has been updated. The QR code image can easily be saved and communicated to users onscreen or as a printed sign.

Login Credentials

No login credentials are required to enter the Admin Portal unless a password has been set for the **Diagnostic Web Server** in the player setup process. If the password field is left blank, then no password will be required and the Sign In screen to the Admin Portal will not be displayed. If a password has been set, the username will be set to **admin** and you be prompted with a Sign In screen when accessing the Admin Portal. You can change the password at any time through the Admin Portal.



BrightSign Unit Setup

Name Specification

Name:

Description:

Customization:

Use name only

Append unit ID

Unit Configuration

Enable diagnostic web server

Diagnostic Server Authentication (optional)

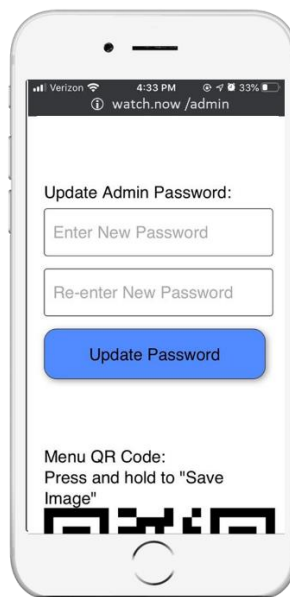
User name:

Password:

- If left blank, no password needed to access the Admin Portal at **hostname/admin**
- It is highly recommended to enter a strong password here for a secure Admin Portal

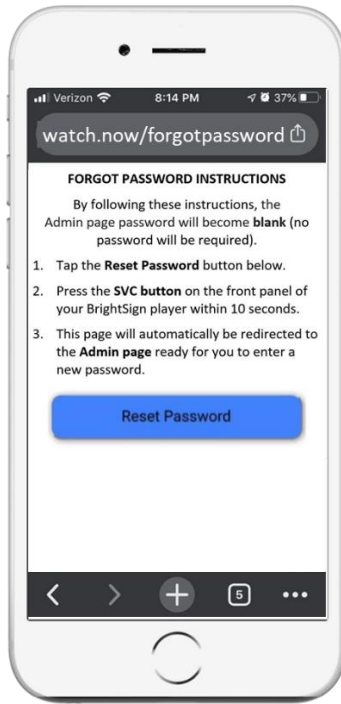
Updating the Admin Portal Password

These fields allow you to change the password to enter the Admin Portal at any time. If the password was not set during the player setup process, then the default password is blank meaning no password is required. Once a new password is entered here and the **Update Password** button is pressed, the user will automatically be logged out and prompted with a Sign In page to log back into the Admin Portal. Note that the **username = admin** & the password value is whatever was just applied.



Resetting a Lost Admin Portal Password

If you forget your password, it can be reset by visiting **hostname/forgotpassword** and following the provided onscreen instructions (for the BigBoxMedia example demo it can be accessed at **watch.now/forgotpassword**). Please note that the SVC button is utilized in the process to reset the password, therefore the normal SVC button operation is no longer supported. However, a line of code in the **httpServer-npm-auto_v3.brs** plugin can be uncommented out to return the SVC button back to normal operation if desired.



Changing the SSID & hostname

This section walks through how to change the name of your Wi-Fi Network (**SSID**) and the name of your custom device webpage (**hostname**) so that they match your application.

1. Connect to **SSID** on your device.
2. Login to the **Admin Portal** by typing in **hostname/admin** into your browser.
 - For the example BrightMenu demo, type in **watch.now/admin**
3. Under the **hostname** section, type in the name of your webpage.
 - Please note that your name must have a **period** in it.
4. Under the **SSID** section, type in the name of your Menu's Wi-Fi Network.
5. Choose the **Set Values** Button to apply your new names.
 - Please note that this will reboot your BrightSign player and configure it with the new names. It will also create a new QR code assigned to your new hostname
6. Scroll down to the QR code and save the QR code image that was generated for the webpage you just created and add it to the
7. Once the player reboots, you will be able to connect to the new **SSID** and scan the updated QR code to view your content at the new **hostname**.

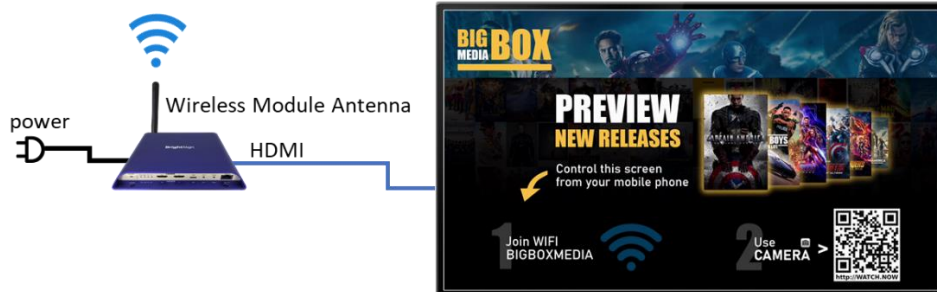


Example BrightLink BigBoxMedia Demo

This section describes how to setup, publish and operate the example BrightLink BigBoxMedia BrightAuthor project.

Demo Equipment Setup & Publishing

1. Obtain and setup a BrightSign player as described in the **BrightLink Requirements** section of this document.
2. Connect the player as shown in the diagram.



3. Open the provided **BrightLink-MovieTrailers-WiFiName.bpf** presentation in BrightAuthor or BrightAuthor:connected and locate all files you are prompted for.
4. Publish the presentation to an empty SD card
 - Use the publish method you selected during setup – either standalone to a micro SD card or over a wired Ethernet connection using your selected networked publishing method. Wireless publishing is not supported with BrightLink.
5. Insert the SD card into a & reboot the player
 - **Note:** the player may take extra time to boot up as it configures itself for BrightLink, so please be patient.

Presentation Operation

The player is ready to interact with after it boots up and shows the main Big Box Media screen as shown below. Follow the onscreen instructions to connect your phone and control the experience.

1. Using a smartphone, connect to the **BigBoxMedia** Wi-Fi network as prompted onscreen as Step 1. Please note that no password is required.



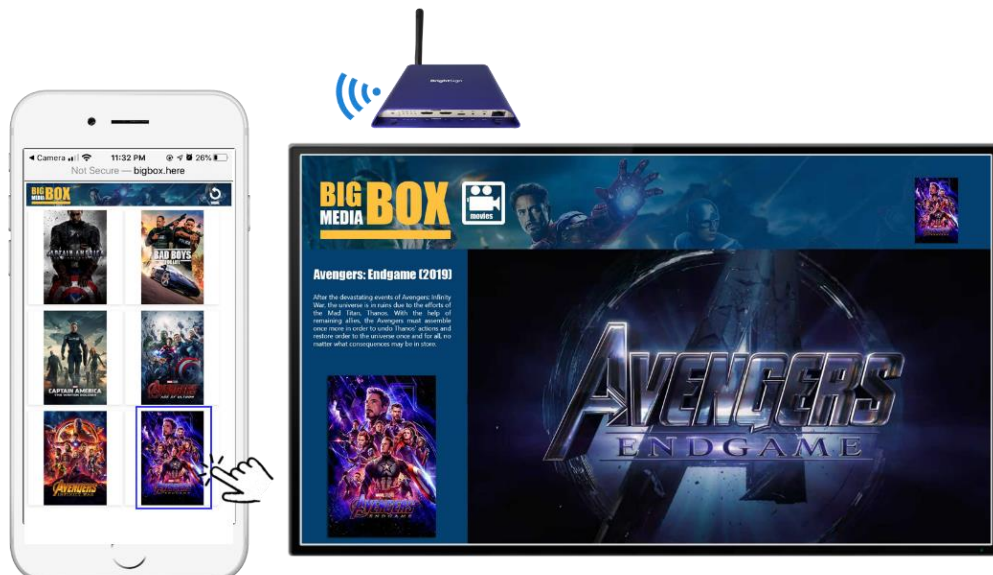
2. Once connected, scan the onscreen QR code
 - To scan a QR code, simply open the camera app and aim the phone at the QR code which will automatically grab the code
3. Tap the notification displayed to open the “watch.now” URL in your default browser.



- Notice that your phone now displays the user interface to control the kiosk in a browser and the kiosk display has changed to display a movie select screen.

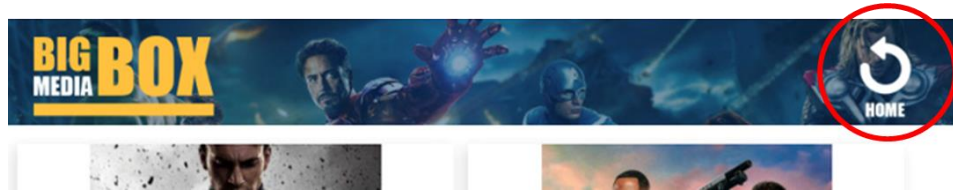


4. Using the interface displayed on your phone, tap on a movie image to view its movie trailer on the kiosk.



Operational notes:

- You can select another movie trailer at any time by tapping an image on the phone.
- After a video ends, it will return to the Movie Select screen which will time out back to the main screen after 30 seconds.
- To quickly return to the main screen, tap the Home button in the upper left corner on your phone.

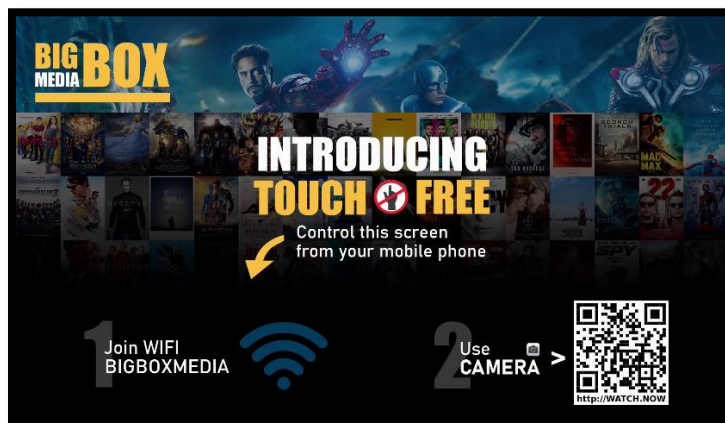


- The phone will automatically disconnect from the Wi-Fi connection when it is out of range.

Customizing the User Connection

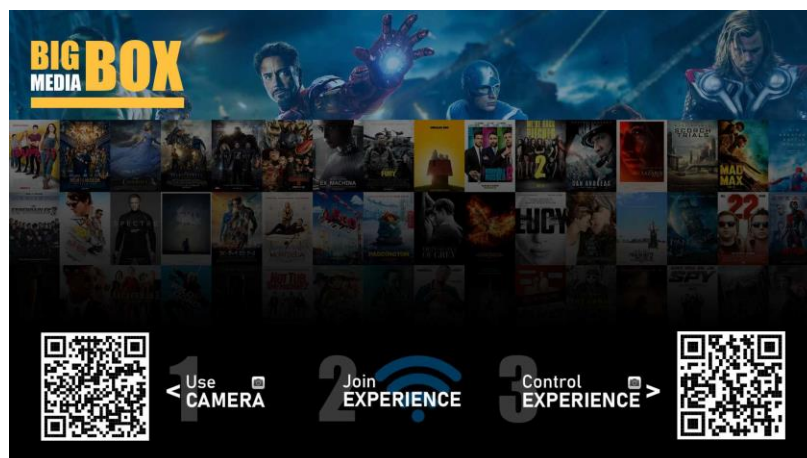
There are different ways for a user to connect to a BrightLink digital sign for 2-way engagement. BrightSign recommends a simple 2-step process as depicted in our example Movie Kiosk Demo which supports:

1. User manually connects to Wi-Fi with an on-screen prompt displaying the SSID
2. User scans QR code to launch the Custom Device Web Page to interact with.

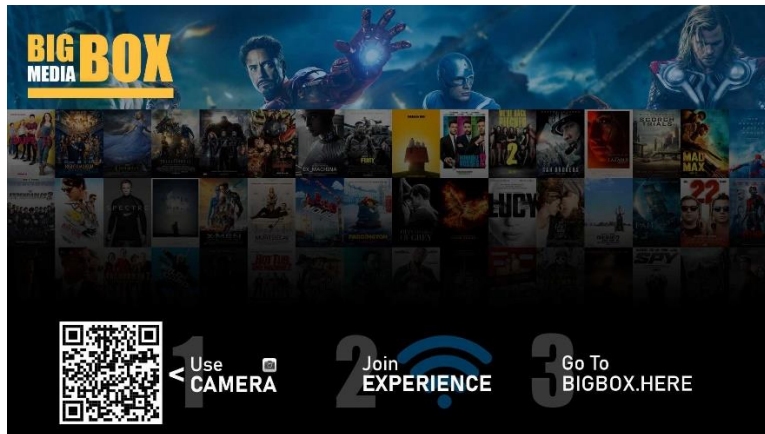


Other methods can easily be implemented to meet the needs of any application including:

- Dual QR codes – one to join the Wi-Fi connection for your display (using the SSID/Password variables) and one to launch a default browser with your hostname



- Using a QR code to join the Wi-Fi connection & displaying the *hostname* for the user to type into a browser (the hostname is **BigBox.Here** in the image below)



Developer Notes

If making custom edits to the http servers, etc. is required for your application, a version of unwebpacked portal.js is available upon request.