Diagnostic Web Server

The Diagnostic Web Server (DWS) allows you to view and modify various settings on a networked BrightSign player. You can access the DWS with the BrightSign App or with a web browser on any computer connected to the local network. This page will walk you through setting up and using the features of the Diagnostic Web Server.

Setting up the DWS

The Diagnostic Web Server is enabled out of the box. If you'd like to access the DWS before performing the player setup process, skip down to the Accessing the DWS section. Otherwise, follow the below steps to configure the DWS during the player setup process.

BrightAuthor Setup

Follow these steps to enable and configure the DWS during the player setup process in BrightAuthor:

1. In BrightAuthor, navigate to **Tools > Setup BrightSign Unit**.
2. Check the **Enable diagnostic web server** box in the **Unit Configuration** section.
3. (Optional) Enter a **Password** for the DWS for additional network security. The **User name** will always be "admin".
4. (Optional) Check the **Enable local web server** box if you would like to be able to access the Local Web Server as well. The Local Web Server allows you to modify User Variables in the presentation using a web browser or the BrightSign App.
5. (Optional) Check the **Enable remote snapshots** box if you would like the player to take screenshots of the display area. These screenshots are accessible from the Application tab on the DWS.
6. Specify other player settings as desired. See the Setting Up BrightSign Players section to learn more about the options in the **BrightSign Unit Setup** window.
7. Click **Create Setup Files** when finished. Save the setup files to an SD card.
8. Insert the SD card into the player.
9. Power up or power cycle the player. Once the player boots up and establishes an IP address, you will be able to access the Diagnostic Web Server.

Advanced Setup

You can also configure the Diagnostic Web Server using the BrightSign serial command prompt or a custom script.

SERIAL PROMPT

Input the following commands in the serial prompt to run the DWS on the standard port:

```
>>registry write networking http_server 80
>>registry flush
```

> ⚠️ **Note**
>
> A registry flush is necessary if you plan to power cycle the unit after executing the registry command. Registry writes will buffer for a few seconds because the EEPROM and NAND have a limited number of writes (and thus need to protect against carrying out too many writes too quickly).

BRIGHTSCRIPT

The DWS can also be enabled in a custom script using the *roNetworkConfiguration* object. Include the following lines in a *autorun.brs* script to enable the DWS on Ethernet port 80:

```
nc = CreateObject("roNetworkConfiguration", 0)
rebootRequired = nc.SetupDWS()
if rebootRequired RebootSystem()
```

SETTING THE PASSWORD

By default, the DWS is enabled with the player serial number as password. To set a custom password with digest authentication, use the *roNetworkConfiguration* object:

```
nc = CreateObject("roNetworkConfiguration", 0)
rebootRequired = nc.SetupDWS({open:"password"})
if rebootRequired RebootSystem()
```

Use the username "admin" and your chosen password when connecting to the DWS.

Accessing the DWS

Follow these steps to access the Diagnostic Web Server:

1. If you don't know the IP address of the player, do the following:
    a. Power off the player by unplugging the power supply.
    b. Remove the SD card (as well as any internal storage devices, if applicable).
    c. Power on the BrightSign player by reconnecting the power supply.
    d. Wait for the player to boot up: The IP address of the player will be displayed on the screen.
2. Enter the IP address of the networked player into the address bar of a web browser:
    a. If you've set up the DWS with a password, enter the password. The username is always "admin".
    b. If you haven't previously configured the DWS, use the serial number of the player as the password.

⚠ **IP Address Variants**

- If the player is still set to factory defaults (i.e. the IP address returns the Device Setup screen), append "/index.html" to the end of the IP address (e.g. "10.1.0.99/index.html").
- If the player is configured to use Appspace, append port 8080 to the end of the IP address (e.g. "10.1.0.99:8080").
- If the player is running the Streaming Server module, append port 80 to the end of the IP address (e.g. "10.1.0.99:80").

Using the DWS

The Diagnostic Web Server user interface consists of several tabs. This section details the information and settings offered by each tab.

Info

This page provides general information about the player and its current status:

- **Time**: The current time as it is configured on the player. Click **set** to configure the time on the player:
    - **Automatically**: Click **Use Current Time** to set the time of the player using the current time of the browser. Note that the listed **Time** and **Date** refer to the time reported by the browser when this page was loaded.
    - **Manually**: Enter a **Time** and **Date** to set on the player. These values will go into effect the moment you click the **Set Time** button. If you would like to interpret the date/time using the time zone of the player, check the **Apply Timezone** box. Otherwise, the date/time will be applied as a UTC value.

⚠ **Note**

You cannot edit the time zone of the player from the DWS. To change the time zone, you will need to perform the player setup process again.

- **Name** : The user-supplied name of the player
- **Description**: An optional user-supplied description for the player
- **Model**: The model number of the player
- **Unique ID**: The serial number of the player
- **(Ethernet/WiFi) IP**: The IP address of the player
- **(Ethernet/WiFi) MAC**: The media access control (MAC) address of the player
- **Boot Version**: The current version of the primary boot loader
- **Boot Extra Version**: The current version of the secondary boot loader
- **Firmware Version**: The current version of firmware installed on the player
- **Video Mode**: The current video resolution of the presentation on the player. You can change the video resolution of the presentation in the **Video** tab
- **Uptime**: The amount of time the player has been powered on and working correctly
- **PoE**: The status of the PoE interface (applicable to 4Kx42 and XDx32 models only)
- **Extensions**: A list of Firmware Extensions currently installed on the player

- **Change password**: Changes the password settings for logging into the DWS:
    - **Change Password**: Enter the password twice and click **Set Password** to modify the existing DWS password.
    - **Remove Password**: Enter the current DWS password and click **Remove Password** to disable the password protection for the DWS.

Log

This page provides a log of system processes and events on the player. The output is similar to the information generated through a serial, Telnet, or SSH connection.

Click **Download log** to retrieve the current log. If the last reboot was caused by a crash, the **Download crash dump** option will also be available: Use this option to retrieve information about the crash; you can then send it to BrightSign Support for analysis.

Control

This page allows general control of the system processes of the player:

- **Reboot**: Reboots the player remotely.
- **Force Recovery**: Sends the player into recovery mode by deleting instances of *autorun.brs* from all available storage devices (SD, uSD, USB) and rebooting the player.
- **Reboot with Log**: Reboots the player while preserving the current log file.
- **Factory Reset**: Resets the player to factory defaults, erasing all persistent registry settings for networking, security, and other applications.

SD / MicroSD / MSATA / USB

This page provides information related to the storage device attached to the player. At the top of the page is a bar that displays the amount of occupied space on the storage device. If the storage device is an SD card, you can click the bar to view more information about the card (class, manufacture date, voltage, etc.).

FILE UPLOADS

You can use this page to upload files to the player storage. Files are uploaded to the currently selected directory. To upload files, click the **Choose Files** button to select one or more files, then click **Upload**.

FILE LISTING

This page also provides a listing of all files on the storage device. Depending on the type of file, there will be several options:

Explore: Opens the specified file directory. Use the **Upload to this directory** option near the bottom of the page to upload a file to the current directory.

Download: Downloads a file from the SD card to your computer. This is helpful if you need to view autorun or log files, but don't want to disable the player by removing the SD card.

View: Allows you to view the contents of a file as plain-text webpage.

Edit: Gives access to various file-editing tools:

- **Delete**: Deletes the file.
- **Rename**: Provides various options for renaming the file. You can specify a custom name or choose from among a list of common filenames.
- **Set Autorun**: Sets the file as the current autorun by copying the file and renaming it "autorun.brs". The replaced autorun file will be preserved as "autorun.backup".

> ⚠️ **Note**
>
> The system does not check the integrity of the new autorun file (i.e. any file can be assigned as the autorun file).

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- **Content Playback**: Replaces the current autorun on the device with a script that will attempt to play back the current file (the replaced autorun will be renamed). You will need to observe the video output to learn the results of the script. The current video mode will be displayed on screen for 5 seconds before displaying the content.
- **Video Mode Test**: An extension of the Content Playback test described above, this script will also cycle through all video modes.

Diagnostics

This page provides various network and system tools that are helpful for diagnosing problems and getting information about a BrightSign player:

- **Network Diagnostics**: Runs network diagnostics. This process may take some time to complete, especially when certain tests fail.
- **DNS Lookup**: Tests the specified DNS address to check whether name resolution is working.
- **PING**: Pings a device with the specified IP address or DNS name.
- **Trace Route**: Performs a standard traceroute diagnostic on the specified IP /DNS address. Check the **Resolve IP Addresses** box to resolve the specified DNS name.
- **Download Speed Test**: Tests the download speed of the network connection against the specified URL.
    - **Ignore Proxy Settings**: Check this box if you have a proxy configured for your player and would like to ignore this proxy setting for the speed test.
    - **Test Storage Speed**: Check this box to store the URL target on available storage. This option will likely yield more accurate download speed test results.
- **Network Configuration**: Provides extensive information about network interface settings.
- **Network Neighborhood**: Displays information on the current network neighborhood.
- **Network Packet Capture**: Provides access to tcpdump functionality.
    - **Source**: Select a network interface to use for packet capture.
    - **Capture filename**: The name of the capture file, which will be saved on the primary storage device of the player
    - **Capture time**: The duration of the packet capture operation
    - **Capture number of packets**: The number of packets to capture before concluding the process
    - **Capture size**: The maximum size of each packet. Specifying 0 will instruct the function to capture the entire packet no matter the size.
    - **Filter**: A field for conditional filtering of packets. This operation uses standard pcap syntax.
    - **Start**: Begins the packet capture process. Once the process begins, you can click **Stop** to prematurely halt packet capture.
    - **Refresh Status**: Returns you to the capture options section if the capture process is complete.
- **Disable Autorun**: Causes the player to reboot and disables the autorun script when the device restarts. This allows the unit to display the firmware version and IP address on screen (if the unit is connected to a local network). If the player has a serial port, you will be able to access the system shell over a null-modem serial cable.
- **Channel Scan**: Takes you to the **Channel Scan Diagnostics** page, which provides options for scanning the RF modulator (available on the XD1230 only). Please see the following section for more information.
- **Format Storage**: Takes you to the **Format Storage** page, which allows you format storage devices attached to the player.
    - **Storage**: Select a storage device. You can only format storage devices that are currently unformatted; storage that already contains content files or autorun scripts cannot be reformatted.
    - **File system**: Select a supported file system to use when formatting the storage device.

Network Diagnostics
Click on the button below to run network diagnostics, note this may take some time to complete.
[Run]

DNS Lookup
Please enter a DNS address below that you wish to test name resolution on.
[   ]
[Lookup]

PING
Please enter a IP/DNS address below that you wish to ping.
[   ]
[Ping]

Trace Route
Please enter a IP/DNS address below that you wish to trace the route of.
☐ Resolve IP Addresses
[   ]
[Trace]

Download Speed Test
Please enter a URL below that you wish to test.
☐ Ignore Proxy Settings
☐ Test Storage Speed
[   ]
[Speed Test]

Network Configuration
Click on the button below to view the network configuration.
[View]

Channel Scan Diagnostics

XD1230 Only

- **Scan**: Allows you to retrieve channel information (including frequency, video PID, and audio PID) from the RF input.
    - **Channel Map**: Choose "ATSC", "QAM", or "ATSC and QAM". Please consult your source provider for more information.
    - **Modulation Type**: Choose "QAM 64", "QAM 256", or "QAM 64 and QAM 256". Please consult your source provider for more information.
    - **First RF Channel**:(Optional) Specify a lower limit for the range of the channel scan.
    - **Last RF Channel**:(Optional) Specify an upper limit for the range of the channel scan.

⚠️ **Note**

If you do not specify an upper and/or lower limit for the channel scan, the player will scan the entire range of possible channels. A complete scan will take a substantially longer amount of time.

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- **Save Results To Storage**: Check this box to save the results of the channel scan to the SD card in addition to displaying it on screen.
- **Generate Scan Debugging**: Check this box to save a script log of the channel scan to the SD card.
- **Begin Scan**: Click this button once you have specified the options above to start the scanning process. Results will be shown on the attached display device.
- **Download Scan Results**: Copies the results of the above channel scan from the local storage of the player to your computer. You can also retrieve the channel data by downloading the "ScannedChannels.xml" file in the SD tab once the scan is complete
- **Download Scan Diagnostics**: Copies the results of the diagnostics generated by the channel scan from the local storage of the player to your computer.

Video

This page provides several diagnostic tools related to the video settings of the player:

- **Current Video Mode**: The video resolution currently being output by the player. If the player is set to a 4K video mode, this field will also indicate whether the10-bit colorspace and/or HDR (high dynamic range) is currently being output.
- **Change Video Mode**: Changes the display mode/resolution of the player on all video outputs (HDMI, VGA, Component). The device will reboot and disable the current autorun script (similar to the Disable Autorun button in the **Diagnostics** tab). Otherwise, the autorun script will reset the video mode of the player by default.
- **Video Mode Test**: Replaces the current autorun on the player with a custom script that tests all possible video modes (the current autorun will be renamed instead of being deleted). The custom script will display the current mode on screen for five seconds before transitioning to the next video mode; you will need to observe the output on the connected display to see the results of the script.
- **Powersave**: Disables HDMI output, the syncs for VGA output, and/or the DAC output for component video. The absence of a signal will cause some monitors to go into standby mode.

Application

Clicking the **Application** tab takes you to the BrightSign Application Server (BAS).

The BAS hosts the Remote Snapshot application. If you enabled the Remote Snapshot feature during player setup, you can view screenshots of the display area here.

Custom Tabs (Advanced)

You can use the DWS to link to a customizable set of hosted files. This functionality requires a custom autorun or BrightAuthor plugin. See the entry for the *roHttpServer.SetupDWSLink()* method for more details.