

Digital Signage, (DIY) Do It Yourself

I have always felt as though I could do it myself. In most instances, that was the end result. One of my success stories is Digital Signage. I've been working on it for a while and here is what I have come up with.

Digital signage/ Digital Message Boards

Digital signage has been in use for decades. In the past, its delivery was in the form of LED ticker signs and LED video walls. Digital Signage or Digital Message Boards is now in the form of an electronic display. These digital displays show content in different formats such as text, images and video. This content is displayed with the goal of delivering the content, to specific locations and/or audience at specific times.

Digital signage or narrow casting has a lot of moving parts and can be complex. although that may be the case, this document's intent is to give you an overview project task, then give options and solutions to how to setup your own digital signage network. There is no way around the hardware investment, but we give several setup options based on your budget. That can vary from using old equipment at no cost, to a cost effective deployment of a new hardware network.

- project planning
- displays
- installation (may require field service)
- management server and/or software
- network connectivity
- content creation
- media player

1. Hardware

- An **output device** (Monitor, TV, SmartTV, Commercial Display, Digital Display and etc.) in most cases this is the largest of your hardware investments. Here is a range of ideas for display options
 - **Costs**
 - *New hardware*
 - \$100 for 27" HDTV
 - \$500 for 40" SmartTV
 - \$800 for 40" commercial displays and upward
 - *Old hardware (no cost)*
 - There are some scenarios where there is an older that you would like to try and use.*
 - CCTV system with monitors, VCR or DVD player
 - Computer monitor
 - TV
- A **Server** or computer is needed to control and manage the (*hardware*) display device. Here are a few possible setup configurations.
 - Depending on your setup determines if a server is necessary.*
 - USB thumb drive – *this is the simplest and least expensive route to go.*
 - Computer connected to a display
 - SmartTV connected to the internet

- TV connected to an Internet converter
- A Digital display connected to a proprietary 3rd party device
- Digital Signage Services **does not require a server, included with subscription**
- **A Content Server** to create, control, manage and update your content
Depending on your setup determines if a server is necessary.
 - Dedicated server – computer with software installed to create and deploy new and existing content.
 - 3rd party proprietary device - use to control and manage content
 - Digital Signage Services **does not require a content server, included with subscription**

2. Installation

Display has to be secured to the wall with a wall mount

- Wall mount needed \$60 - \$100
- You can always (DIY) Do It Yourself, you hang the display
- **Hanging a display** is possible to do own your own, but here are a few considerations
 - Locate a wall that has high visibility and high traffic
 - Must find and mount the displays on a wall stud
 - Locate near power source. most power cords are 3ft long
 - Locate near network jack
 - Use a level to verify that it is straight and hung properly
 - There are options other than wall mounting, like display stands
- **Outsourcing the installation** is an option for large deployments or complex installation
 - Cost varies from \$150 to \$300+ depending on requirements
 - Verify contractors work references
 - Get 2 or 3 bids for best price
 - Get in writing the installation requirements and the price

3. Communication

- **Network connection** – connecting your display to your network is as simple as connecting to your router.
 - Wire connection offers a more reliable connection to your display. Wired connections sometimes have additional cost and consideration, like long cables runs and visual look of the cable run.
 - Wireless connection can be reliable and stable but there may be brief instances of lost connection. The advantage that wireless has over wired is flexibility
- **Internet Service** - this is a necessary component to use the service. It is also used for management and remote management of your display network. This will give you the ability to
 - update content remotely
 - manage devices remotely

4. Labor

- **Human Support**
 - An **IT professional** or an IT savvy person to manage server and devices physically
 - Server is up and running and accessible
 - Software management and updates
 - Securing server and content
 - Backup of content

- In most cases, mount and connect the display device
- **Graphic Designer** or someone who can produce professional content
 - Produce new content
 - Manage & update old content
- **Digital Signage Services** *does not require server and software management which reduces IT cost. It also reduces graphic design cost by utilizing the built-in templates that are included with subscription*

5. Media player

- **A Player for the end device.** This allows you to display or play your content
 - Software to play content
 - Provided by 3rd party vendor
 - *Not necessary with cloud services, it's included with your subscription*

Let's Get Started

Location for your display

First you need to decide where to put the display. Here are a couple of things you need to consider.

- High visibility – locate the display where it will get the most visibility
- Power – ideally the power is located behind the display for neatness. If that is not practical or an outlet relocation is not possible, then try to locate the display within 3 ft of a power outlet. You can hide the wires with decorative wire casing or covering.
- Network outlet (optional) - For wired setup you need to connect the display via Ethernet to the outlet or jack.

Mounting the display

To mount the display you need a wall brace.

- Choose an appropriate wall mount based on the size of the display or screen.
- Find wall studs to secure the brace to.
- Mark the mounting bracket hole location
- Then secure the brace with large head wood screws or toggle bolts.
- Then level your display
- Cloud services don't require a dedicated cable to be run from the display back to the host server or controlling computer.

Diagrams

Diagram 1 - Digital Display via USB

The setup for Digital Display using a USB thumb drive is the simplest and least expensive route to go. Although it is the least expensive and there are minimal resources needed, this setup has a lot of issues. Here are a few

- Manual update - someone has to remove the device to update its content.
- Distribution to more than one device is an issue
- Create content to device update with
- Remote management not possible

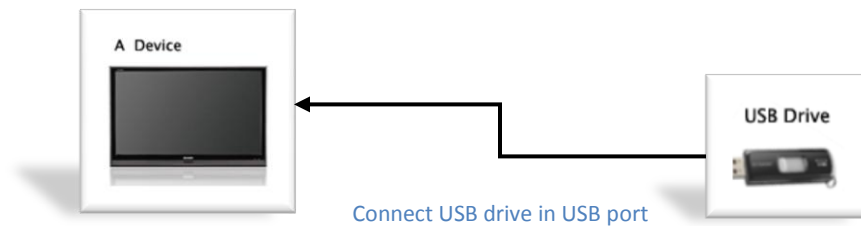
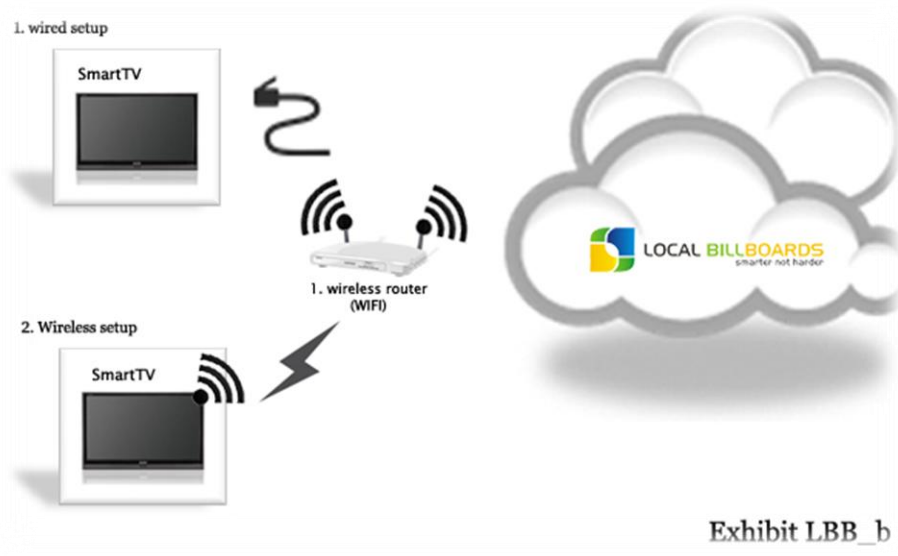


Exhibit LBB_a

1. Locate and Mount the Display (*choose high visible or high traffic areas*)
2. Copy content to USB drive (*use "jpg" images*)
3. You need to plug the USB into the USB port on your display.
4. With the remote change the input on the TV to USB drive
5. On most devices with USB, you can use it to rotate photos (*slide show*). Play the slide show
**note: Not all TV vendors have slide shows software built-in. in that case, the device is not appropriate for this use*
6. That is it...
7. When you get ready to update the content, remove the USB drive and update it with your new content.
8. Repeat from step 3

Diagram 2 - Digital Signage via Digital Display Services

Smart TV setup



1. Choosing a Smart TV could be daunting but for this purpose we have tested a few. A Smart TV allows the user to browse the web and or access web content from the TV.
Here are a few devices.
 - **Sony Internet TV** – Released Oct, 2010
 - NSX-32GT1 32” TV
 - NSX-40GT1 40” TV
 - NSX-46GT1 46” TV
 - NSG-MR1 Remote
 - **LG Smart TV** - Released May 2012
 - 47G2 47” TV
 - 55G2 55” TV
 - ANMR300Q Remote
2. Locate and Mount the Smart TV (*choose high visible or high traffic areas*)
3. Connect the device to your network. This can be done with a Ethernet cable (*more stable connection*) or wireless connection(*more flexible connection*)
4. Using the browser on the smart TV, log into your [Local BillBoards](#) account
5. Click the “Start Services” button
6. That is it...
7. When you get ready to update content, this is done remotely from anywhere from any device (computer, tablet or mobile). Simply log into your Local BillBoards account and update your content. When you’re done, save it and just click the ‘Update’ button. This will update all the displays in your digital display network.
8. It’s that easy

Diagram 3 – Digital Signage Network via Digital Display Services

Smart TV Network setup



Exhibit LBB_c

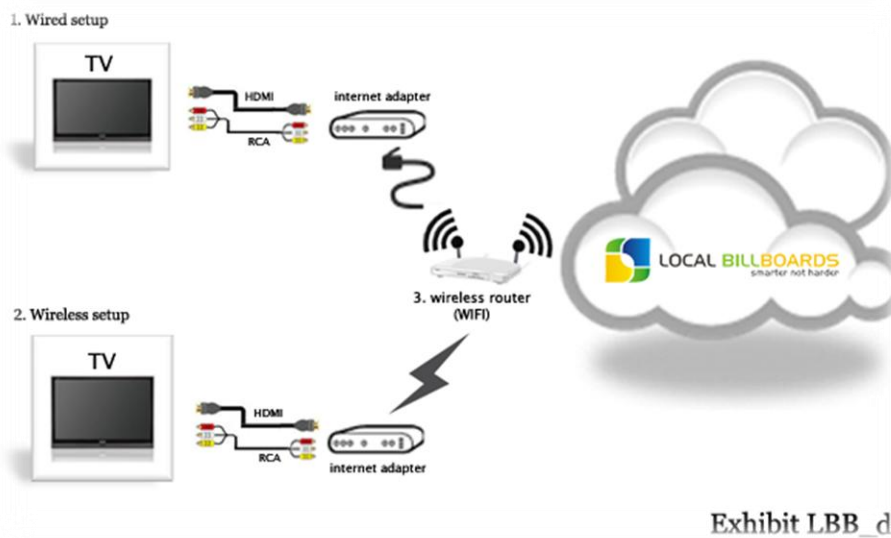
It doesn't matter if you are setting up a single display, a network of displays in a single location or a network across multiple sites, cloud services offer a scalable solution that is easily managed and deployed. It couldn't be easier.

Setup is the same

1. Locate and Mount the Smart TV (*choose high visible or high traffic areas*)
2. Connect the device to your network. This can be done with a Ethernet cable (*more stable connection*) or wireless connection(*more flexible connection*)
3. Using the browser on the smart TV, log into your [Local BillBoards](#) account
4. Click the "Start Services" button
5. That is it...
6. When you get ready to update your content, this can be done remotely from anywhere from any device (computer, tablet or mobile). Simply log into your Local BillBoards account and update your content. When you're done, save it and just click the 'Update' button. This will update all the displays in your digital display network.
7. It's that easy

Diagram 4 - Digital Signage via Digital Display Services

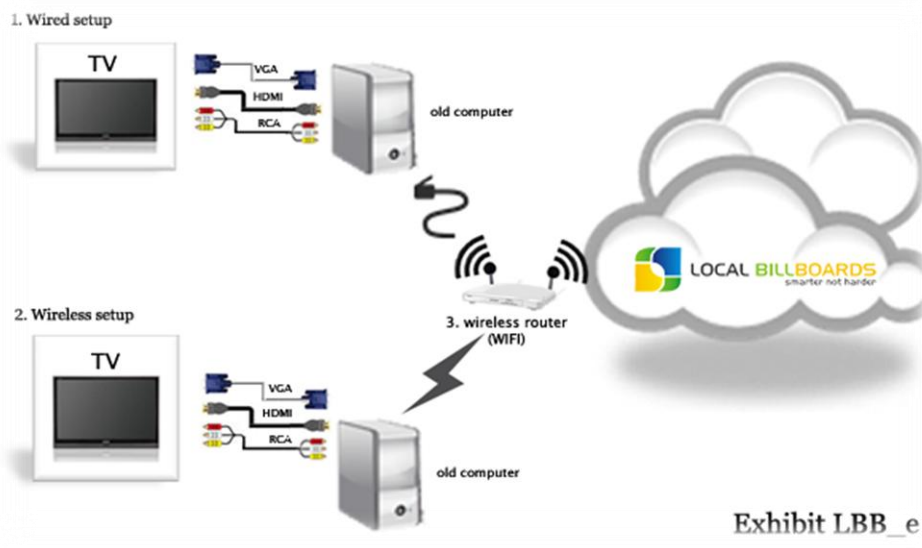
TV setup



1. Locate and Mount the TV (*choose high visible or high traffic areas*)
2. The TV or display needs to be able to connect to internet. One way to achieve this is with an internet adapter. This is a box or unit that can connect to the internet and output to a TV. There are a lot of products out there and growing, but here are a few.
 - **Logitech revue** - Released October, 2010
 - PN 970-000001 main unit
 - PN 920-003039 keyboard
 - **Sony Internet Player** (w/ Google TV) – Released July, 2012
 - NSZ-GS7 main unit
 - NSG-MR5U remote control
 - **Vizio Co-Star** – Released August, 2012
 - VAP430 main unit
 - XRA700 remote
 - **Hisense Pulse**
 - GX1200V main unit
 - NSG-MR5-U remote
 - **Netgear Neo TV Prime** (w/Google TV) – Released January, 2013
 - GTV100-100NAS main unit
3. Connect the device to the TV. This can be done with a HDMI cable or RCA/composite cables. Plug cable in the device then in the TV.
4. Connect the device to your network. This can be done with a Ethernet cable (*more stable connection*) or wireless connection(*more flexible connection*)
5. Using the browser on the internet adapter, log into your Local BillBoards account
6. Click the “Start Services” button
7. That is it...
8. When you get ready to update content, this is done remotely from anywhere from any device (computer, tablet or mobile). Simply log into your Local BillBoards account and update your content. When you’re done, save it and just click the ‘Update’ button. This will update all the displays in your digital display network.
9. It’s that easy

Diagram 5 - Digital Signage via Computer

Computer setup



1. Locate and Mount the TV (*choose high visible or high traffic areas*)
2. The TV or display needs to be able to connect to internet. One way to achieve this is with an old computer that is connected to the internet. Here is an opportunity to use that Windows XP machine that can't be upgraded.
3. Place the computer in a area where it is not visible but within cable distance of the TV or Digital Display. For instance, you can put it under the counter top or in a cabinet.
4. Connect the computer to your network. This can be done with a Ethernet cable (*more stable connection*) or wireless connection(*more flexible connection*)
5. Using the browser on the computer, log into your [Local BillBoards](#) account
6. Click the "Start Services" button
7. That is it...
8. When you get ready to update content, this is done remotely from anywhere from any device (computer, tablet or mobile). Simply log into your Local BillBoards account and update your content. When you're done, save it and just click the 'Update' button. This will update all the displays in your digital display network.
9. It's that easy