

**AMPLIFY YOUR COACHING™**



**SMART VIDEO REPLAY ▶**

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# HARDWARE GUIDE

MAY 25, 2016

Hardware is your biggest cost in video replay systems. Make sure you have someone who understands technology and wireless networking. There is no such thing as plug and play systems that anyone can run... just ask around to coaches that have purchased those types of systems. You have to have a tech person to help you set up and a good server operator and good camera operators... or you will not be successful.

## Before we start...

What we expect from the person reading this manual and tasked with putting together the replay system hardware:

- You have an understanding of the Microsoft Windows™ operating system.
- You have an understanding of computer networking.
- You have an understanding of wireless networking routers.

If you are not this person and have been tasked with setting up the Smart Video Replay hardware system, you need to seek the help of someone who meets the above criteria.

Before you read this manual, here are a few things you should know:

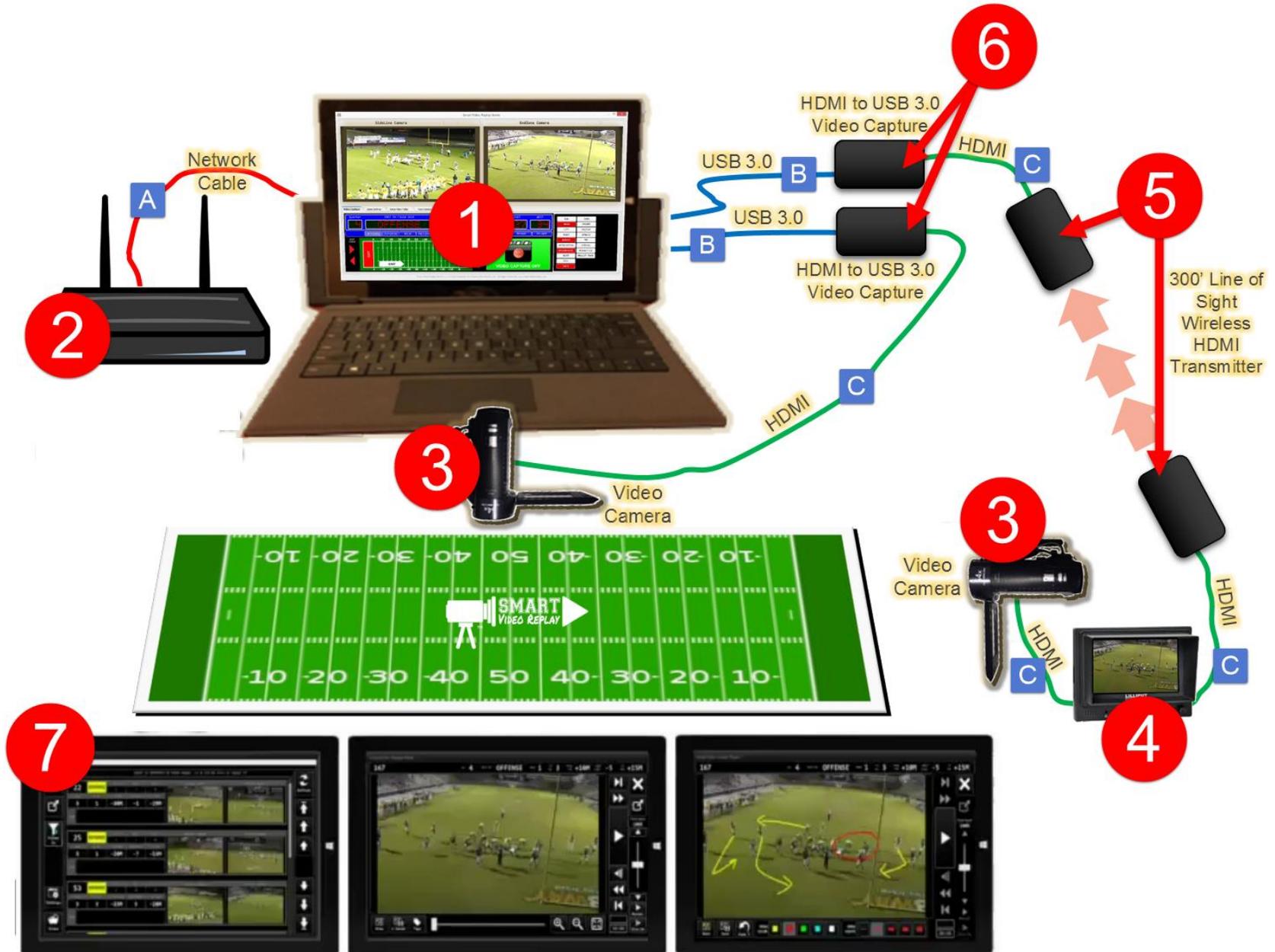
- When you see a (1) or other number, we are more than likely referencing a red circle with the same number on a picture in the manual.
- We purposely insert page breaks (leaving lots of white space) where we feel it is necessary to keep text and graphics together on the same page.
- “Client” in this manual refers to the Smart Video Replay Client software program running on a computer or tablet.
- “Server” in this manual refers to the Smart Video Replay Server software program installed and running on a computer or tablet.

# Introduction

In this guide, we go through all the hardware required to implement a 2 camera replay system. We also review and recommend rugged equipment cases so you can safely store and efficiently transport the Smart Video Replay system to away games without damage.

In this Hardware Guide, Smart Video Replay, Inc., shares information based on our experience using specific hardware devices to operate the Smart Video Replay Software Product. Smart Video Replay, Inc., does not guarantee the Purchaser will have the same experience using the specific hardware devices. Smart Video Replay does not warranty or guarantee the performance of any hardware devices used by the Purchaser to operate the Smart Video Replay software product.

# Hardware Overview Diagram by the Numbers



# 1 THE SERVER

The server must be a laptop running Windows 8.1 or greater. Handling multiple video streams into a computer takes a bit of computer horsepower. If you do not have an adequately powered windows laptop, you will not be able to handle the HD video input. You must have a high performance computer with an SSD.

**WHAT WE USE & RECOMMEND:** We have tested the **ASUS ROG G751JL FHD 17.3 Laptop (with i7 4720HQ 2.6 GHz) with great success.** \$1250 from Amazon. Since it comes with a very slow 1TB spinner hard disk, we replaced that drive with a Samsung 850 PRO 1TB SSD (around \$450) and now have a very nice computer.

**WHAT WE USE & RECOMMEND:** We have tested the **Lenovo Y50 UHD 15.6 inch Touchscreen Gaming Laptop with some great success. Here is what we put together:** Lenovo Y50 Model 59441402 (with i7 4720HQ 2.6 GHz). for \$999 -- but it comes with a very slow 1TB 5400rpm spinner hard disk. We replaced that drive with a Samsung 850 PRO 1TB SSD (around \$450) and now have a very nice computer.

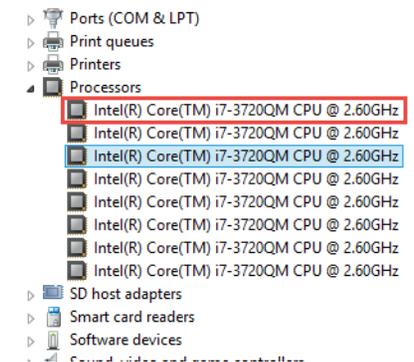
**IF YOU GET THE SAMSUNG 850 PRO SSD, make sure you use the Samsung Magician software to "optimize" your hard drive performance** (1) Set OS Optimization for Max Performance, 2) Enable Rapid Mode and 3) assign 10% of the drive for Over Provisioning). We did this for one of our power customers (a beta site) and it was very powerful and by our calculations it can hold 5 or more years of video. **WARNING:** If you choose this option, YOU MUST clone the contents of the hard disk that comes with the computer to the new SSD. **DO NOT INSTALL WINDOWS FROM SCRATCH** you will have issues with missing drivers, etc. We recently had this issue at a customer site and the computer was slow. We fixed it quickly by getting them to clone the drive to the new SSD.

**The Minimum Server Specifications for 2 video feeds:** Any laptop or desktop computer with an \*\*Intel i7 Quad Core Processor or better, Windows 8.1 or better, 8GB RAM or better, 2 x USB 2.0 ports (for the USB 2.0 video capture device to connect), a Gigabit Network connection (to connect to the wireless router), and we strongly recommend\* at least a 256GB Solid State Drive (SSD).

\*\*IMPORTANT: The Intel i7 processors come in quite a few different horsepower configurations. To see if your processor meets the minimum requirements, go into your device manager, look up the processors and get the exact i7 number. In the example image shown, the process number is i7-3720QM. Once you have your number, lookup it up at the following website...

[http://www.cpubenchmark.net/cpu\\_list.php](http://www.cpubenchmark.net/cpu_list.php) You must have a processor that has a Passmark CPU Mark of 4000 or better.

**Important:** Your server should never have power save or sleep enabled for USB ports, hard drives, etc., processor, etc. Check your Power Management settings. You want maximum performance.



## 2 THE WIRELESS ROUTER

There are many different methods you can use to broadcast the network to your clients. We use a different setup for different stadiums. We will cover them here:

**Primary Router: ASUS RT-AC87U Dual-Band Gigabit Router.** This one of the best routers on the market. Easy to setup and you can have separate bands for 2.4 and 5ghz so you can connect your clients to the best signal.

Note: NEVER CONNECT YOUR SERVER TO THE WIFI. CONNECT IT USING AN ETHERNET CABLE TO THE ROUTER. MAKE SURE THE SERVER WIFI IS OFF SO IT IS NOT ACTIVE. OTHERWISE YOUR CONNECTION TO THE SERVER MAY TRY STREAMING VIDEO OVER 2 WIRELESS HOPS.

The going price on Amazon.com is around \$190. *Amazon ASIN #:* **B00MPI5N7U**.

You do not need an Internet Connection during a game.

**IMPORTANT WIRELESS SETUP INFORMATION:** Make sure your router is connected to the internet FOR SETUP ONLY because you will get new firmware updates (if available) at the beginning of the setup process. If not, you can connect to the internet and download the firmware update.

**ROUTER PASSWORD:** The Wireless Network Password is your key to network security. Also, you can simply “hide” the SSID (your Wireless Network Name) broadcast so nobody can attempt to connect unless they know the name of our network. Make sure you disable Guest Access too so that connection is not broadcast (if you want...).

**NOTE: THIS IS THE SETUP WITH JUST A SINGLE ROUTER. THIS WORKS WELL IN MANY SITUATIONS. HOWEVER, YOU MIGHT WANT TO INVEST IN SOME UBIQUITY NANOBEAM AC DEVICES. THESE DEVICES ALLOW THE HIGH SPEED TRANSMISSION FROM POINT TO POINT OVER GREAT DISTANCES. WE HAVE AN ENHANCE WIRELESS SETUP GUIDE YOU CAN DOWNLOAD TO GET MORE INFORMATION.**



To achieve this “optimized” router setup, there are a few inexpensive items we can buy that make this a snap. The pictures show the ASUS 3200 router but this method works with most wireless routers. We find the router above (ASUS RT-AC87U) has the greatest wireless distance.

### The “Parts List”

**Tripod for the Wireless Router:** Mounted on a tripod the router easily flips up and you can aim it at the sideline and get the best possible signal. You can use any tripod – we use the Vanguard VS-82 Table Top Digital Camera Tripod and we got it on Amazon for \$22. *Amazon ASIN#: B0002J2TLC*

**Tripod adapter Mount the Wireless Router:** To attach the router to the tripod we got this nice little Tripod Adapter Mount (meant for a tablet) and it worked perfectly and even has a quick release attachment. We got it on Amazon for \$13 *Amazon ASIN#: B008UH8SRM*

**Hint:** a big zip tie (like the kind they use for attaching a/c ducts) securing holding the router to the bracket is always a good idea to make sure it does not pop out of the bracket.

**Attach Router to Tripod so you can flip it up on the side with the front (top) facing the users.... a few zip ties will make sure it stays on the bracket...**





Make sure all the antennas are fully extended out...



Point the front (actually the top) of the router towards your sideline (the location of your users)...



The front edge of the antenna is the broadcast side so adjust the antennas so that edge is facing the sideline (user location).

Make sure each antenna is finger tight.

## 3 VIDEO CAMERAS

Any video camera with an HDMI output will work.

While we use many in our testing, our base test cameras are actually very reasonably priced Sony cameras for less than \$225. The only other criteria to consider is the battery life and optional long life batteries. We found some great prices on Amazon.com.

### Important Things to Consider when Purchasing a Camera:

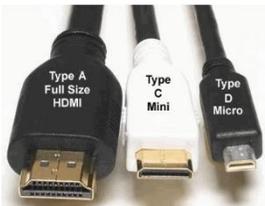
- 1) Must have HDMI output. Mini or Micro HDMI is fine as you can get an adapter as your feed to the computer will be a full size HDMI connection.
- 2) Must use either a power source or have a battery. If you are filming an entire game from the End Zone, a long life battery is recommended.
- 3) A tripod with remote control. This allows for great camera control for good video.
- 4) If you are running 2 cameras, best to have the same cameras or at least cameras that use the same battery model. This will save you many headaches in the long run.
- 5) If you are running a remote control to a camera, remember there are different interfaces even within the same brand.

### Recommendation:

**Camera:** Sony HDRCX330 Video Camera – with a HD camera with micro HDMI connection for the video output. Our price check on this was \$218 on Amazon.com. *Amazon ASIN #: B00HNJWWL6 (The long life battery for this can be found on Amazon with ASIN #: B00336G7FA)*

*Also, the battery attaches to the back so you can purchase the long life version (pictured next to the camera to the right).*

**Tripod:** Sony VCT-VPR1 Compact Remote Control Tripod that plugs right into the camera and allows for great camera control and so you get good video of each play. Our price check on this was \$95 on Amazon.com. *Amazon ASIN #: B00C9FJLNQ. (We realize in the end zone you will not be using this tripod unless you have a lift).*



Tip: You will need the various length HDMI cables depending on how you configure your setup. With the cameras above, you will need a MicroHDMI to HDMI cable. Also, if there is no power you will need extra batteries or some other way to get power to your cameras.

Note: See the special End Zone Camera section on how to get video from your end zone to your Server.

FOR A REMOTE WITH A 20' FOOT EXTENSION TO THE END-ZONE CAMERA, CHECK OUT OUR GUIDE ON MAKING AN EXTENSION CABLE FOR THE SONY MULTI TERMINAL CABLE EXTENSION FOR THE ENDZONE CAMERA REMOTE CONTROL.

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## 4 VIDEO MONITOR FOR END ZONE CAMERA (HDMI IN/OUT)

You must send HDMI video from the end-zone camera to the server. However, most end zone camera systems also have a monitor for the video. This means you either need to 1) have an HDMI splitter or 2) have a monitor with HDMI input & output.

If you already have one, then you are good to go. If not, here is what we use.

Lilliput 665GL-70NP/HO/Y (6650). This comes with a power cord but also you can get batteries for it so you can run your system when no power outlet is available. The battery it uses is the Sony (or compatible) NP-F950/F970. We got our monitor for about \$230 from Amazon.com. Amazon ASIN #: B008FJJJPO.

If you use HDMI out already to your monitor but you do not have HDMI out on the monitor, you can use an HDMI splitter.

If you use an analog video monitor (the yellow RCA video plug) then you can see if your camera will feed HDMI out and RCA out at the same time. If it can, just get a long HDMI cable and continue using your existing analog monitor. However, if it does not support both outputs at the same time, your best bet is just to buy the Lilliput monitor listed here.



## 5

**WIRELESS HDMI TRANSMITTER (USED TO CONNECT A REMOTE CAMERA)**

If your camera is more than 45 feet from your server, a long cable is not an option due to the limitations of HDMI over cable. You will need an HDMI wireless transmitter. The technology is commonplace and it has been around for years. We use devices designed for drones.

**WHAT WE RECOMMEND: The Amimon Connex Mini HD Video Link.** This device costs \$1299 but it is worth every penny!

[http://www.bhphotovideo.com/c/product/1217783-REG/amimon\\_amn1811pb\\_01\\_connex\\_mini\\_full\\_set.html](http://www.bhphotovideo.com/c/product/1217783-REG/amimon_amn1811pb_01_connex_mini_full_set.html)

**This is an (up to) 1600' line of sight transmitter. Here are some things you must know:**

- 1) Do not use “aftermarket” batteries. They do not have the juice and they do not give the same results.
- 2) Make sure your HDMI video feed into the transmitter is 1080p and 60FPS. If not the video transmission is not going to be reliable. You can set this up in the camera settings typically found under HDMI output settings.
- 3) For the Receiver, mount it on a small tripod and point it at the transmitter (listed in below pages). For the Transmitter, mount it on a clamp point it at the receiver. Both transmitter and receiver have 1 / 4 inch mounting threads on them.
- 4) Do not overtighten antennas on transmitter. Do not overtighten 1 / 4 inch tripod and clamps to the devices.
- 5) Treat these items with care. Get a pelican case or something similar to transport them safely to games.
- 6) These devices can be plugged in or powered by external batteries.



See the EndZone Transmitter Panel Antenna info selected below.

**WHAT WE ALSO RECOMMEND: The Paralinx Triton 1:1 wireless transmitter.** This device costs \$1299. These devices came out in 2015 and rumor is they are going to be discontinued so go with the Connex listed on the previous page unless you can find one of these Tritons for a really good price.

**This is an (up to) 450' line of sight transmitter. Here are some things you must know:**

- 7) Use only a Canon battery (LP-E6 or LP-E6N) on the Transmitter. Use only a Sony battery (NP-F970) on the Receiver. Do not use "aftermarket" batteries. They do not have the juice and they do not give the same results.
- 8) Make sure your HDMI video feed into the transmitter is 1080p and 60FPS. If not the video transmission is not going to be reliable. You can set this up in the camera settings typically found under HDMI output settings.
- 9) Purchase only from [www.Paralinx.net](http://www.Paralinx.net) website. There is an early version of this device from B&H that is "buggy" and we got one. We called Paralinx and they quickly exchanged it for us with one that worked perfectly.
- 10) For the Receiver, mount it on a small tripod and point it at the transmitter. For the Transmitter, mount it on a clamp point it at the receiver. Both transmitter and receiver have 1 / 4 inch mounting threads on them.
- 11) Do not overtighten antennas on transmitter. Do not overtighten 1 / 4 inch tripod and clamps to the devices.
- 12) Treat these items with care. Get a pelican case or something similar to transport them safely to games.



**PARALINX Triton 1:1 System** <http://www.paralinx.net/store/paralinx-triton-system>

**Canon LP-E6N Lithium Ion Battery Pack** [http://www.bhphotovideo.com/c/product/1081825-REG/canon\\_9486b002\\_lp\\_e6n\\_battery\\_f\\_7d\\_mark.html](http://www.bhphotovideo.com/c/product/1081825-REG/canon_9486b002_lp_e6n_battery_f_7d_mark.html)

**Canon LC-E6 Charger for LP-E6N** - [http://www.bhphotovideo.com/c/product/590433-REG/Canon\\_3348B001\\_LC\\_E6\\_Battery\\_Charger.html](http://www.bhphotovideo.com/c/product/590433-REG/Canon_3348B001_LC_E6_Battery_Charger.html)

**Sony NP-F970 L-Series Info-Lithium Battery Pack** - [http://www.bhphotovideo.com/c/product/352125-REG/Sony\\_NPF970.html](http://www.bhphotovideo.com/c/product/352125-REG/Sony_NPF970.html)

See the EndZone Transmitter Panel Antenna info selected below.

## Setting up the End Zone Transmitters

When using the wireless HDMI transmitter where the requirement is transmission between stationary points (Point To Point or PTP) for end zone to press box, directional panel antennas are the way to go. The TP-Link 5Ghz (open band) directional panel antennas have proven up to the task during games. With these antennas, end-zone video is the clearest (no artifacts or graininess) and the communication link between the transmitter and receiver is reliable and resilient to interference issues as the stands filled with spectators.

The entire antenna kit (2 Antennas, 2 Antenna Cables and the Stand) will cost about \$175 to rig up and the also cost of a few ¼ wing nuts to replace the regular nuts that come with the antenna rigging. This makes it easy to set them up, aim them at the receiver and break them down after the game.

### The Antennas

**TP-LINK TL-ANT5823B 5GHz 23dBi Outdoor Directional Panel Antenna, N Type Female connector.** Available on Amazon for \$60 each. You need 2 of them. They come with all the mounting hardware but they do not come with cables so you do need to get 2 cables.

*Hint: When you mount the antenna to the stand, consider replacing the bracket nuts with wing-nuts (1/4 inch) so you can easily adjust them and set them up and break them down and store them.*

### The Antenna Cables

**TP-LINK TL-ANT24PT .5m/1.5ft N Male to RP-SMA Male Pigtail Cable.** You need 2 of them. This cable is a little bit short but anything longer loses signal power. Available on Amazon for \$19 each.

*Very Important: When you attach the antenna cables to the HDMI transmitter, do not overtighten them or you will rip the antenna mounts out of the transmitter. Snugly tighten them... you can use a pair of small needled nose pliers to make sure they are snug*

*Hint: Turn the HDMI transmitter and receiver on before you turn on your routers and any other wireless equipment. Routers have auto channel settings where they seek and use the least congested channel. The Connex Mini will auto select channels. Paralinx Triton has a fixed channel. Select you Paralinx Triton channel and turn the transmitter and receiver on, then turn on your routers (or turn them off and on if already on) so the routers do not lock onto the Paralinx Triton channel.*



The

## Antenna Transmitter Stand

**Ravelli ALS Full 10' Air Cushioned Light Stand With Included Adaptor To Also Support 1/4" and 3/8" Photo Equipment and Heavy Duty Carry Bag.**

The stand comes with a 1/4 inch mount on the top which is perfect for the HDMI transmitter to mount on. Available on Amazon for \$34.

*Note: Consider getting one of these stands for the small HDMI Receiver in addition to the small desktop tripod you are probably using. When you have the server in a press box, use the desktop tripod for the receiver. When the server is on top of a press box or at some other outside location, use the tall Ravelli tripod to keep the receiver above any rails, etc., that could cause interference.*



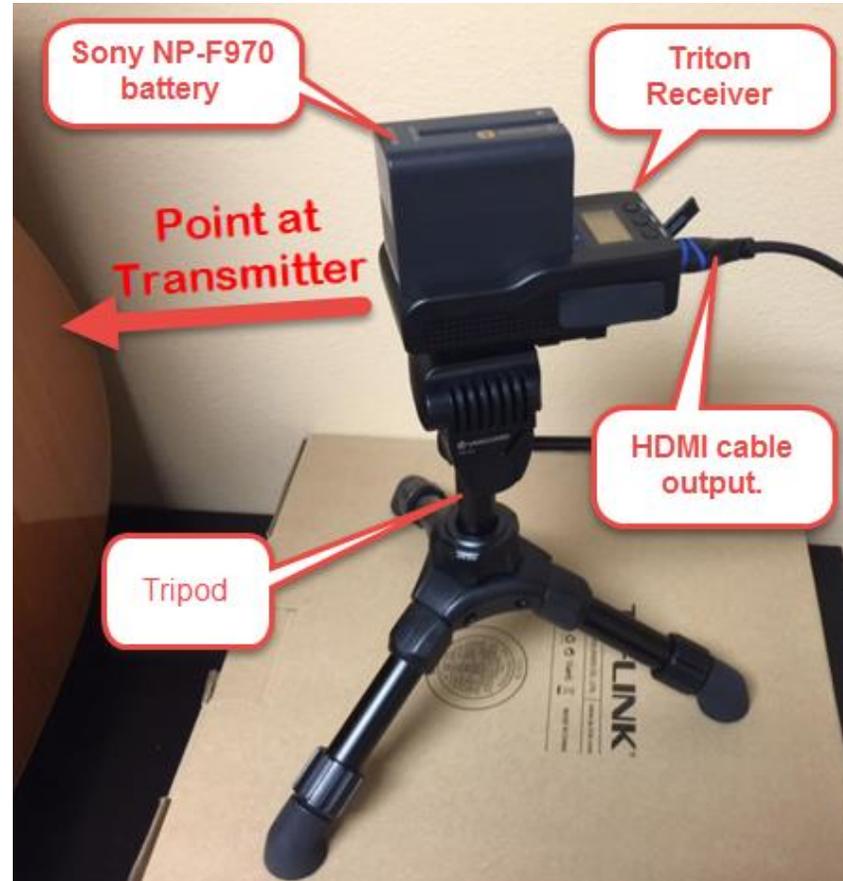
**Quick Release Pipe Clamp for the HDMI Transmitter:** This nice little device allows you to attach the PARALINX Transmitter (with the PARALINX Shield on it) and then you can clamp it on your end zone (or other remote) camera tripod and aim the transmitter at the receiver. We got one called the “Grifiti Nootle Quick Release Pipe Clamp” from Amazon.com for about \$14. There are quite a few available so choose one that fits your end zone tripod. *Amazon ASIN#: B00E5M39AW*

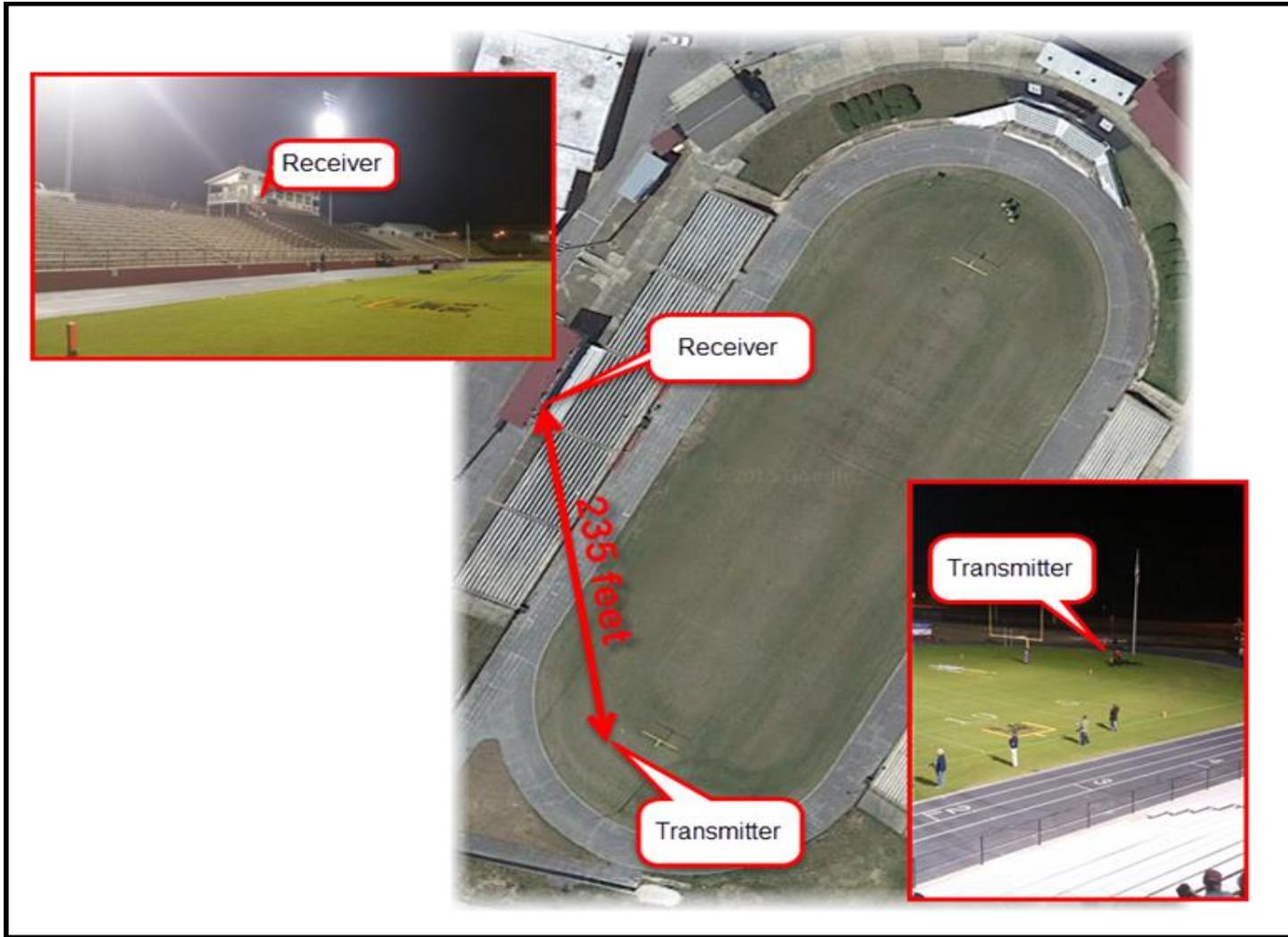


To the transmitter, simply attach it to the tripod with the quick release pipe clamp and connect the antennas. The HDMI cable from the endzone monitor output simply plugs into the transmitter and it sends the video signal to the receiver in the press box. Point the panel antennas at the receiver. Do not let anybody stand in front of them and block the signal, etc.



**Tripod for the HDMI Receiver:** With this you can aim the Receiver at the Transmitter and get the best possible signal. (The bottom of the receiver has the threaded female receiver so it attaches to a tripod). You can use any tripod – we use the Vanguard VS-82 Table Top Digital Camera Tripod and we got it on Amazon for \$22. *Amazon ASIN#: B0002J2TLC*





## 6 HDMI to USB 2.0 Video Capture Devices

For camera 1, use the Avermedia LGB Lite (aka HD & Live Gamer Portable Lite & GL310). You can find them on Amazon.com for around \$105. Search the ASIN of B0010QZMPE on Amazon to order the device.

[http://www.amazon.com/AVerMedia-AVerCapture-PlayStation-Hardware-Encoding/dp/B0010QZMPE/ref=sr\\_1\\_1?s=pc&ie=UTF8&qid=1458634184&sr=1-1&keywords=B0010QZMPE](http://www.amazon.com/AVerMedia-AVerCapture-PlayStation-Hardware-Encoding/dp/B0010QZMPE/ref=sr_1_1?s=pc&ie=UTF8&qid=1458634184&sr=1-1&keywords=B0010QZMPE)



For camera 2, use the Avermedia LGP (Live Gamer Portable) (aka C875). You can find them on Amazon.com for around \$145. Search the ASIN of B00B2IZ3B0 on Amazon to order the device.

[http://www.amazon.com/AVerMedia-Technologies-Portable-Recording-Directly/dp/B00B2IZ3B0/ref=sr\\_1\\_1?s=pc&ie=UTF8&qid=1458634301&sr=1-1&keywords=B00B2IZ3B0](http://www.amazon.com/AVerMedia-Technologies-Portable-Recording-Directly/dp/B00B2IZ3B0/ref=sr_1_1?s=pc&ie=UTF8&qid=1458634301&sr=1-1&keywords=B00B2IZ3B0)



**IMPORTANT:** Make sure you install the drivers for each device before connecting the devices to your computer's USB ports. You can download the drivers from the Avermedia web site:

**Avermedia LGB Lite:** [https://s3-us-west-2.amazonaws.com/avermedia/web\\_release\\_www/GL310/GL310\\_driver\\_v3.7.x.22\\_20160219.zip](https://s3-us-west-2.amazonaws.com/avermedia/web_release_www/GL310/GL310_driver_v3.7.x.22_20160219.zip)

**Avermedia LGP:** [https://s3-us-west-2.amazonaws.com/avermedia/web\\_release\\_www/C875/GL710\\_driver\\_v3.7.x.39\\_20160219.zip](https://s3-us-west-2.amazonaws.com/avermedia/web_release_www/C875/GL710_driver_v3.7.x.39_20160219.zip)

## Settings for the Avermedia Video Capture Devices:

Important Note: Plug in your video capture devices to the USB ports before you start the Smart Video Replay Server application. Also, the first time you configure your cameras, you may need to select the Video Capture Method & the Video Capture Device, then save the settings and restart the application and finish configuring the camera settings (exactly as shown below). Make sure you save once they are configured.

The image displays two screenshots of the Smart Video Replay Server application's 'Camera Settings' interface. Both screenshots show the configuration for a video capture device, with a red callout box highlighting the device name.

**Top Screenshot: Camera 1: SideLine Camera**

- Camera Description: SideLine Camera
- Video Capture Method: Video Capture Device (H.264 Hardware Encoder)
- JPEG Thumbnail:
- Compression: Best Speed
- Quality: 30
- Video Capture Device: AVerMedia C835 Capture (highlighted as **Avermedia LGP Lite**)
- Video Standard: NTSC M
- Video Size: full
- Video Sub Type: MPEG-Stream
- Flip Vertical:  Off
- Flip Horizontal:  Off
- Save SideLine Camera Configuration for Video Capture Device (H.264 Hardware Encoder)

**Bottom Screenshot: Camera 2: EndZone Camera**

- Camera Description: EndZone Camera
- Video Capture Method: Video Capture Device (H.264 Hardware Encoder)
- JPEG Thumbnail:
- Compression: Best Speed
- Quality: 30
- Camera 2 Status:  Enabled
- Video Capture Device: AVerMedia C875 Capture (highlighted as **Avermedia LGP**)
- Video Standard: NTSC M
- Video Size: full
- Video Sub Type: MPEG-Stream
- Flip Vertical:  Off
- Flip Horizontal:  Off
- Save EndZone Camera Configuration for Video Capture Device (H.264 Hardware Encoder)

## 7 THE CLIENT: THE WINDOWS OPTION

You can use a Windows laptop or a tablet computer to run the Smart Video Replay Client software or an iPad. This is personal preference and use. For the sideline, a tablet is good (but so is a laptop with HDMI out to a TV or even a touch screen monitor). For the coaches box, maybe a laptop... again, personal preference.

**Recommendation:** The Microsoft Surface Pro 3 Tablet is by far the best tablet device ever made. Microsoft got it right!

You can purchase the Microsoft Surface Pro 3 (i5, 4GB RAM, 64GB SSD) for about \$799 at Amazon or Best Buy or even the Microsoft Store online. These work great!

If money is not an object, then get the best one out there and use it as your laptop, desktop, etc. The Surface Pro 3 comes i7 processors too. They are a bit more but they are full blown computers that rival the power of any desktop around.

Here is our favorite for a laptop:

The Surface Pro 3 i7 is available on Amazon.com for \$1494.99. *Amazon ASIN #: B00KHQWRZS*

The Surface Pro 3 Docking Station is available on Amazon.com for \$155.55. *Amazon ASIN #: B00N3J8NRW*

The Surface Pro 3 Keyboard/Cover is available on Amazon.com for \$127.99. *Amazon ASIN #: B00N3K3KOC.*

You will want a rugged case and we use the Incipio Capture case for the Microsoft Surface Pro 3.

[http://www.amazon.com/Incipio-Capture-Microsoft-Surface-MRSF-072-BLK/dp/B00O1FPE74/ref=sr\\_1\\_1?ie=UTF8&qid=1431010780&sr=8-1&keywords=incipio+surface+pro+3](http://www.amazon.com/Incipio-Capture-Microsoft-Surface-MRSF-072-BLK/dp/B00O1FPE74/ref=sr_1_1?ie=UTF8&qid=1431010780&sr=8-1&keywords=incipio+surface+pro+3)

**The Minimum Client Specifications:** Any laptop or tablet with at least the Intel i5, Windows 8.1 or better, 4GB RAM, wireless 802.11ac networking. Note: When you transport a computer around, the first and usually only thing to break is the hard drive. Make sure you have an SSD.



## 7 THE CLIENT: THE IPAD OPTION

You can use an iPad to run the Smart Video Replay client. The iPad version of the client software works exactly the same as the Windows version\*.

**Minimum Recommendation:** Apple iPad Air with Wi-Fi (16GB). The system will work with this model or anything newer. We recently purchased this at Best Buy (on sale) for \$299. The regular cost was \$399.

We also recommend the OtterBox Defender Series case for your Apple iPad. For the iPad Air they are less than \$60 at Best Buy. For the iPad Air 2 they are less than \$100. These allow you to operate rain or shine.

*\*Our iPad version is new and not all of the functionality contained in the windows version is available for the iPad version. The iPad version does, however, have the complete list of videos (identical display to the Windows version) and you can play each video too. We are working as fast as we can to release iPad version updates so the functionality (things like play drawing, complex filtering, drawing, etc.) so is equal to that of our windows client. When we reach that point, we will begin preparing an Android version.*



## THE BEST CLIENT OPTION FOR THE SIDELINE

We have tested a 23" and a 27" touchscreen monitor on a stand... and this is a great option for the sideline. Draw and control the video from the actual screen and not a tablet plugged into the screen.

Dell 2714T 27-Inch Touchscreen LED-lit Monitor \$679 at Amazon.com

Dell 2314T 23-Inch Touchscreen LED-lit Monitor \$299 at Amazon.com

HOWEVER, for player instruction, set up a 32" to 42" TV on the sideline, connect your tablet to the TV (HDMI Cable) and then you can control the tablet, have them look at you and the TV and you will not have your back to them drawing on the screen (as you would with the touch screen).

This is all personal preference so go with what you want here...



**Securing your Smart Video Replay hardware for storage and away games.** The Pelican 1510 with pick and pluck foam. The perfect ruggedized case for keeping your Smart Video Replay system safe when not in use or transporting it to the sideline at home or away.

These ones came from Amazon.com for \$145. *Amazon ASIN #: B0002SKHIK*



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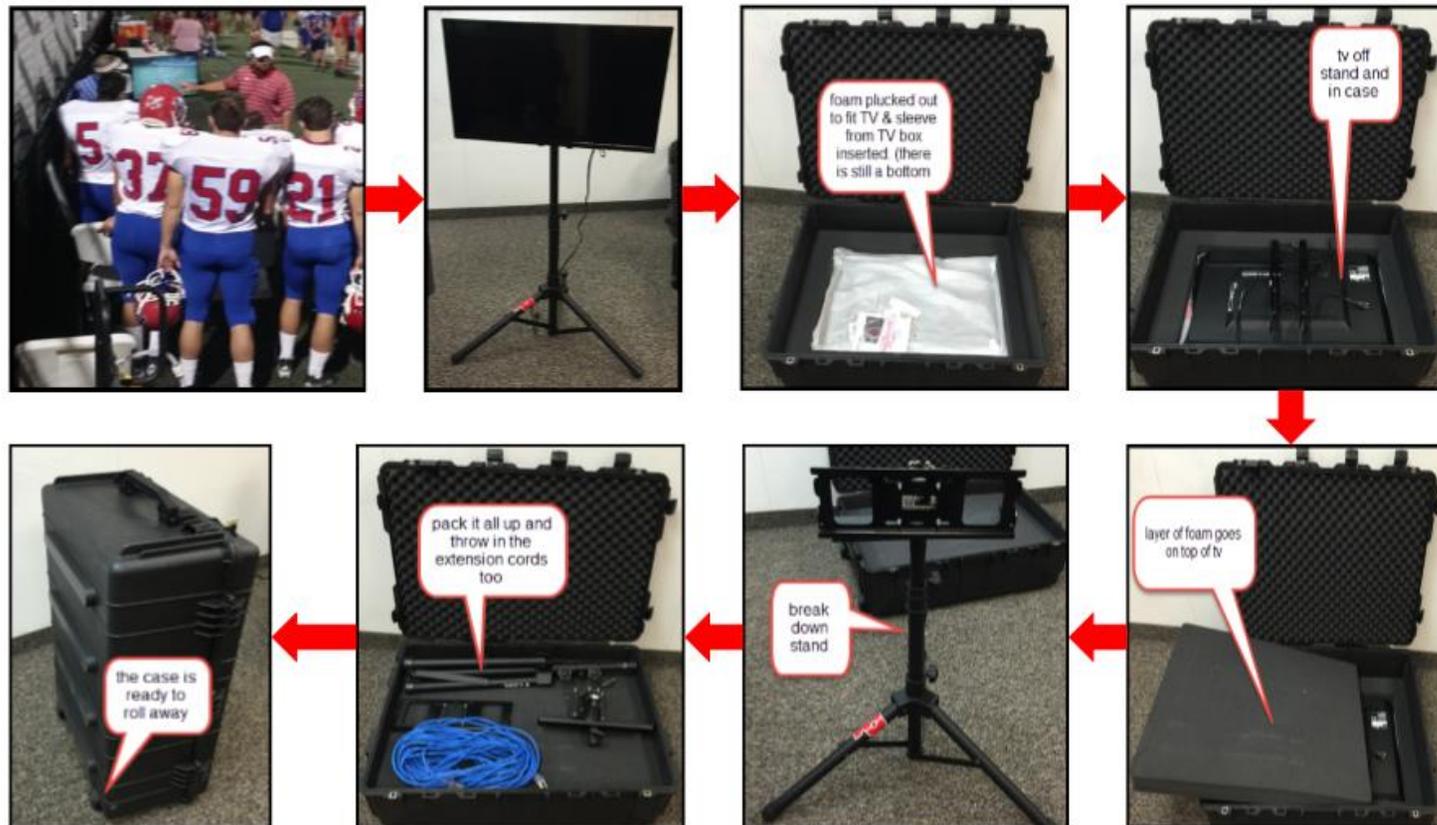
## The Flat Screen TV (or Touch Screen Monitor) with Stand for the Sideline or Locker Room

With your Client on the sideline or in the locker room (or your Server with the embedded Client mode), you can connect to a TV using an HDMI cable. The Dell Venue 11 Pro 7140 has a mini HDMI out so all you need is a TV, the TV Stand and a mini-HDMI to HDMI cable. The recommended Server hardware, the Microsoft Surface Pro 3, has a mini Display Port so all you need is a Mini Display Port to HDMI cable. These cables are just a few dollars online.

**The Stand.** We tried the Elitech Steel LCD TV Stand and it worked great. We got it on Amazon for \$150. *Amazon ASIN #: B00GGR37G0*

**The TV:** We found a Vizio 32" on sale for \$220 at Target. Dell has a 27" touch screen monitor with HDMI input for not much more. You would need to connect the USB cable from the computer/tablet to the screen in addition to the video hdmi cable. This would enable you to control the video on the big screen and draw on the screen too.

**The Storage Case:** We got the Pelican 1730 with the pick and pluck foam. This cost 345 at Amazon.com. *Amazon ASIN # B001BAPOHW*



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