

## Mobile Mania

Are you a person on the go who likes to stay connected? Perhaps you are grudgingly carrying around your electronic leash. Regardless of your position you know that mobile devices have become a big part of our lives and as they grow in abilities their connections grow as well. In the beginning all we cared about was charging them. Then we started wanting to connect them to our computers. Now we are lost with all of the connections that can be made. How does one keep track of all of the options for video, pictures, music and other data? Mobile multimedia and its corresponding connectivity has grown by leaps and bounds in the last several years. Be it an alliance of manufacturers seeking to unify standards for interoperability, new connections or revolutionary ways to utilize existing connections. CableWholesale is here to inform, educate and explain the new, the old and how they can work together to enrich your cellular experience.



### What is DLNA?

The [DLNA](#) (Digital Living Network Alliance) is an alliance of companies, founded in 2003, with the goal of making their respective products interoperable. They published their first set of guidelines in 2004 and a revision (version 1.5) in 2006. So why are we only now telling you about this technology?

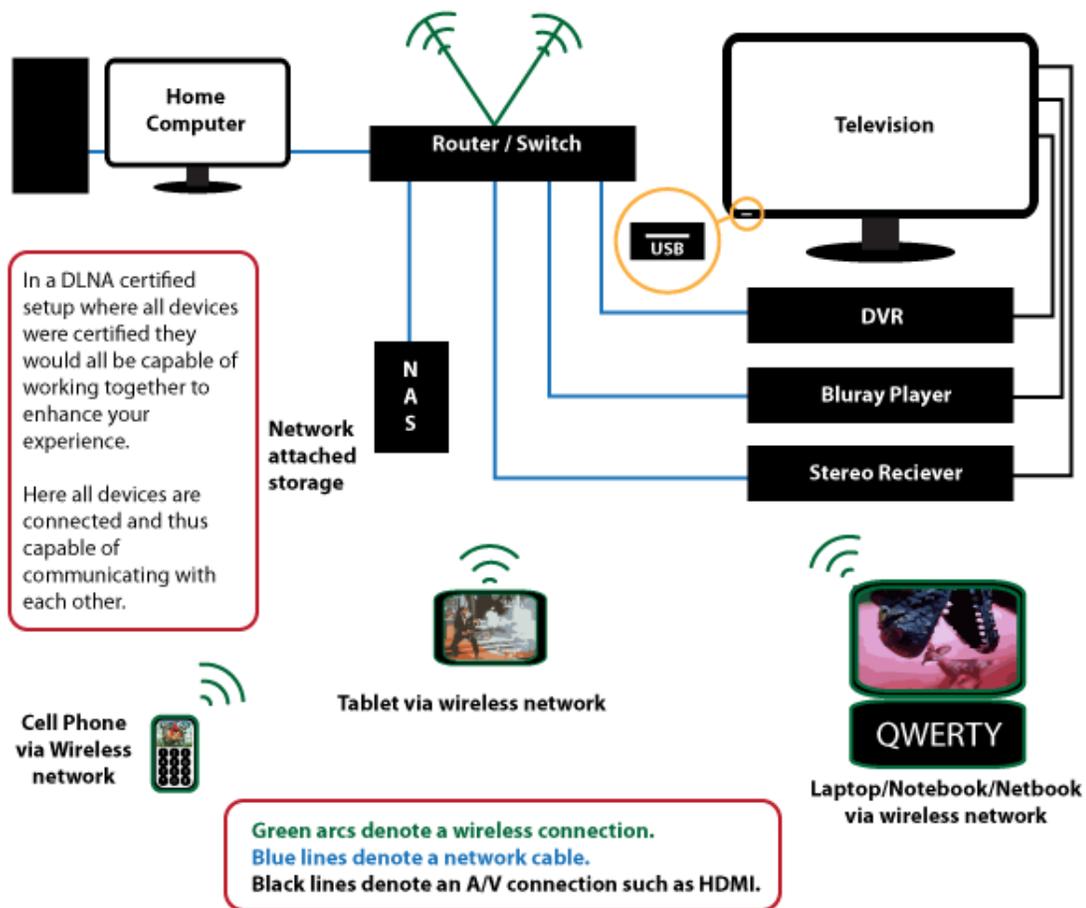
The biggest reason we waited until 2011 is that the alliance didn't get serious in promoting that they existed until this year's [CES](#) (January, 2011). It was then that DLNA made its largest media splash in the United States. We think that they may have been waiting for mobile devices to grow in power as they have over the last two years. Face it, it takes a lot of horse power to play HD (high definition) video; we have really only seen this capability be properly polished in the last year. Now that phones are coming with discrete video cards and dual core processors, we are able to do much more with them than just playing Angry Birds (yes we know it is a rather physics intensive game.).

### What Types of Devices will this affect?

Many popular smartphones already have DLNA support. Just look for the DLNA logo (shown above) in your smartphone's apps or desktop area, as well as on DLNA-compliant devices such as televisions and network-attached storage devices. The whole point of DLNA is easy interoperability between different devices, so expect to see more and more critters with this technology.

### How will this benefit me?

So, what can you accomplish in your home or office using DLNA? With certified devices you can centralize your media storage and serve it across many platforms without a lot of fuss. Imagine your TV being able to access videos, pictures and music from your computer, laptop, tablet and/or NAS with none of the traditional difficulties. In this new world each device is aware of the other and able to accomplish what you want with simple built in programs/systems. Imagine an office where the waiting room has music playing through wireless speakers in the corners, the conference room has a presentation video playing onscreen via a projector and you are at your desk looking through pictures from your latest completed job. Now picture that all of this is stored on a NAS box in the closet, completely out of sight, and completely available to all people and devices that should have access. Some of you are thinking, "But I can already do this." While that may be true, it has traditionally been a somewhat complicated task, involving arcane knowledge of networking and wireless configurations. DLNA is different because the companies involved have made it a point to simplify deployment and use. We will discuss connections for cell phones in greater detail below so keep reading for your phone related options.



### What is MHL?

The [MHL](#) Consortium was formed by Samsung, Sony, Nokia, Toshiba and Silicon Image. Their goal was to develop a new mobile audio/video interface standard for directly connecting mobile phones and other portable consumer electronics to HDTVs and displays. The [MHL standard features a single Micro USB cable](#) that is able to support up to 1080p high-definition (HD) video and digital audio while simultaneously charging the connected device. This new standard (first used in the [Samsung Galaxy S2](#)) also allows for some data to be sent back from HDTVs such as using the TV's standard remote control to also control the device. It fully supports High-bandwidth Digital Content Protection (HDCP) technologies for the safeguarding of high-value digital motion pictures, television programs and audio against unauthorized interception and copying.

### What Types of Devices will this affect?

Anything with a battery, really. From mobile phones and tablets to cameras, camcorders and even powered headphones. The devices will connect via a micro USB connector on one end, and an HDMI connector on the other. Although a very small cable, it's capable of carrying Full HD (1080p) video and 7.1-channel HD Audio. You can then browse the content of the portable device using the TV's remote control and charge your device at the same time.

### How will this benefit me?

This solution is optimized for mobile phones and portable devices. More of those products will be capable of utilizing HD quality digital rich media and seamlessly integrating with home entertainment systems and the broad digital media ecosystem. This will allow you to easily access, share and enjoy more content in more ways while charging your device. You will be able to watch movies, share photos, games and more from your portable device onto an HDTV, at home or on the road.

The MHL Consortium is committed to the goal of enhancing the multimedia capabilities of mobile phones and portable devices. They will be enabled to fully integrate with HDTVs for high-definition (HD) content and other CE products, while delivering high-definition (HD) content with an easy-to-implement digital connectivity solution. With backing from Samsung, Sony, Nokia, Toshiba and Silicon Image this new standard is sure to be a strong influence in the mobile HD technology market.

[CableWholesale Video: See MHL in Action](#)



### **What is USB OTG?**

[USB OTG](#) (stands for On The Go) is a USB connection that allows devices such as mobile phones or tablets to act as hosts letting peripherals such as a USB flash drive, keyboard or mouse to be attached. This type of connection is accomplished through three new protocols. Host Negotiation Protocol (HNP), Session Request Protocol (SRP) and Attach Detection Protocol (ADP) more details in the glossary.

### **What types of Devices will this affect?**

For about 7 years now peripherals such as keyboards, mice, mass storage drives, flash drives and others of this type have been manufactured with OTG in mind. The goal for the USB designers was to make it possible for you to connect these types of devices into more than just your computer. Where else would you want to plug these into? Well, anything that uses a battery. Tablets, cell phones, cameras, mp3 players... the list goes on and on. The types of devices in your life that could benefit from using a flash drive on your phone, or a USB keyboard on your tablet.

### **How will this benefit me?**

You will now be able to plug in a USB keyboard directly into your cell phone be able to type on it and have the text input into the cell phone, just like you already do on your computer. With the limited amount of space cell phones have, this setup will allow you to carry a flash drive around and still be able to access it on your phone. Stream a movie onto your tablet that a buddy has on his flash drive, or browse the internet effortlessly by connecting a keyboard and mouse. USB OTG is 100% backwards compatible and is fully compliant to USB 2.0 specifications. Essentially, anything that you would want to plug in to the USB port on your computer, you'll now be able to plug in to your cell phone. You will still be able to connect your cell phone or tablet on your USB port on your PC. Now you will be able to access and control many of the 1 billion supported devices shipped in the past half decade on your mobile device.

What about Bluetooth? Will the need for bluetooth be eliminated with USB OTG? USB OTG does not compete directly with Bluetooth. USB OTG however, is much faster and cheaper than Bluetooth. It is expected to co-exist with Bluetooth. What happens when you connect two USB OTG dual-role devices together? In this case the connection will set a default host and default slave. If an application demands the other route, an invisible hand shake will perform HNP and swap the slave and host roles on each device.

### **Other Connection Options**

So now you know about DLNA, MHL and USB OTG but you still want to know the rest of the ways you can connect your cell phone to your computer or other devices. Over the years many companies seemed to try and make this process as painful as possible. The situation is getting better these days, and there are many options out there for getting your cell phone to talk to other devices. Here are a few options.

### **USB connectivity**

More and more companies are moving away from proprietary data and charging connections in favor of standard USB type connections to handle both data transfer and charging. Now you can purchase one cable and have it work for your current phone and maybe even the next one. You can purchase [USB A/C adapters](#) and [cigarette lighter converters](#) for charging and leave them in place.

You can even charge your phone off the USB port on your computer. Having one cable that can take care of both data transfer and phone charging does tend to make our lives a bit easier.



Card readers have been around for quite some time, however a compact SD card reader that plugs into a USB port and fits in your pocket or on a key chain is new. Micro readers offer a very unique function and an unrivaled convenience factor. One way to get data/music/video from your PC to your phone is to connect a USB data cable to the USB port. This is a reliable and easy method, as long as you have the main component - the USB cable. You don't have to think very hard to envision a place where you might not have your trusty USB cable with you, such as your friend's house or the office. Either one of those locations can have some goodies you would also like on your phone. How do you get them to your phone now? Enter our very travel friendly [Micro SD Card Reader](#) that is less than an inch long. It comes with a lanyard, can go on your key chain and comes in a variety of colors. Now you have everything you need to transfer files from your computer to your phone and vice versa. Simply remove the Micro SD card from your device. Place it in our reader. Plug the reader into the USB port on your computer and voila! You can now access the storage and transfer files back and forth all day long. Another huge benefit of this reader is for sharing pictures or videos on a TV. A lot of newer televisions are DLNA enabled which means they will have a USB port on them. Just put your Micro SD card into our reader as usual, and plug it into the TV. Now you can share that funny cat video you have on your phone with everyone at the party.

### [CableWholesale Video Product Showcase: Micro SD Card Reader](#)

#### **Wireless**

Many phones support 802.11 [wireless standards](#). This means that you can connect them to your home's wireless network and browse the web or even take advantage of other devices on your network (a convenient solution if you're not set up for DLNA). Some phones can even act as internet hotspots for other wireless devices (watch that data cap).

#### **HDMI**

Some phones even have output via HDMI ([mini](#) or [micro](#)). These phones can play video directly to a TV or monitor from themselves. Someone email you a funny clip that you want to share with some friends at a party? Just plug the phone in, pick the right input on the TV and hit play! Yep it is that simple.



Bluetooth is a wireless interface designed for communication between devices. It uses short range radio waves and defined "profiles" to create a link between your phone and devices. You are likely familiar with hands free Bluetooth headsets. Maybe you even know about Bluetooth printing. But Bluetooth is capable of so much more, such as transferring contact information between cell phones (Paris Hilton's contact list, anyone?) and file sharing.

Whether or not your phone can do these things depends on which "profiles" are supported by your device. It can be hard to keep

track of what your phone supports and which devices use specific profiles. Some of the most common devices that would concern you and their respective protocols are listed below to give you a better understanding.

### **Human Interface Device (HID)**

The HID profile is a way for [Bluetooth keyboards](#), mice, and other input devices to communicate.

### **Advanced Audio Distribution Profile (A2DP)**

This profile kicks into play when you want to hear those sweet tunes. This is the profile that gets transferred over the airwaves to your listening device, such as your [wireless headphones](#), your [portable speakers](#), or an in car [FM transmitter](#).

### **Audio/Video Remote Control Profile (AVRCP)**

The next profile works hand in hand with A2DP. We all agree it is great to hear those tunes wirelessly but doesn't everyone want their cake and to eat it too? Enter Audio/Video Remote Control Profile or AVRCP for short. This protocol gives you playback control of those tunes being transmitted. Fast forward, rewind, pause, and play are all available to you if you have this profile.

### **Data transfer protocols**

All of this tunes broadcasting talk is terrific, but what about getting those tunes and other files to your mobile phone in the first place? Yes, there is the data transfer cable. But Bluetooth has your back as well. Plus, it has some really sweet sync features. To get data to and from your Bluetooth-enabled phone to your computer, you'll need a Bluetooth transmitter for the computer. [5301-10301](#) should do nicely. Next, pair the device to your computer. Done! You are now able to drag and drop files directly to your phone. Wirelessly! Again, there are different profiles available for this functionality.

### **Phone Book Access Profile (PBAP, PBA)**

This allows you to transfer contacts from your phone to your computer and maintain backups in case your phone dies on you. This profile is also responsible for displaying caller info on a display for car kits.

### **Object Push Profile (OPP)**

The Object Push Profile (OPP) allows you to send "objects" such as pictures, and virtual business cards. But this profile can only work as a "push" meaning the transfer has to be initiated by the sender not the receiver.

### **Basic Imaging Profile (BIP)**

This profile can swap files initiated by either the sending or receiving units. This is one of the better profiles because it allows automatic archive. For instance whenever the device comes into range it will automatically back up your files to the predesignated folder for safe keeping. What about syncing your music to keep it up to date? Yup that too. Lets say you predesignate all songs that you rate 4 stars or higher in your Classic Rock Genre to transfer to your phone. That is great for your initial transfer but rather than connect your phone once a week to keep your phone library current with your computer just place your phone within range of your computer while it's on and the newest songs you rated will pop over to your phone automatically. (See, we told you it has some sweet sync features!)

There are a few other profiles worth a mention.

### **LAN Access Profile (LAP)**

This is great for phones that do not have Wi-Fi built in. You can use your Bluetooth to connect to your LAN that is connected to your computer for high speed data internet access that won't run your cell plan data limit up.

### **Basic Printing Profile (BPP)**

This is also a handy feature. Basic Printing Profile allows you to send your pictures to your printer for a nice hard copy of camera phone shots.

### **Hands-Free Profile (HFP)**

This will help you out on the road while you are in your car and these handy [speakerphones](#) will get you talking while keeping your traffic citations down. You can do most everything you can with your headset. Answer a call, end a call, redial but this is a fixed option. You can attach to your visor and use the speakerphone to aid you while you drive.

### **Headset Profile (HSP)**

We saved the most recognized for last; even if you don't recognize the acronym you will recognize what it is used for. The Headset Profile is responsible for making you look like a crazy fool in the supermarket when people don't notice the Bluetooth headset in your ear. This profile enables you to use your phone while it stays in your pocket or purse or however you carry it. You can make calls, answer them, turn the volume up and down. All you need is a [headset](#) and your Bluetooth enabled phone.

As you can see Bluetooth is quite extensive and we covered a lot. But don't feel lost if you couldn't keep up or feel guilty if you skimmed this article. We have developed our [cable wizard](#) packed full of everything we know. You can use it to find your specific

device and the parts you need to try anything we discussed in this article. It is extensive and ever growing so stay in touch with it as it is updated often.

## Glossary

### DLNA - Device classes

#### Home Network Devices

##### **Digital Media Server (DMS)**

These devices store and provide content for networked digital media players and digital media renderers.

Examples: Your home computer and/or a NAS box.

##### **Digital Media Player (DMP)**

These devices provide playback for content located on digital media servers.

Examples: TVs, stereos and game consoles.

##### **Digital Media Renderer (DMR)**

These devices play content received from a digital media controller.

Examples: TVs, audio/video receivers and remote speakers.

##### **Digital Media Controller (DMC)**

These devices locate content on digital media servers.

Examples: Tablets, Wi-Fi enabled digital cameras and personal digital assistants (PDAs).

##### **Digital Media Printer (DMPPr)**

These devices provide printing services to the DLNA network. Generally, digital media players and digital media controllers with print capability can print to a DMPPr.

Examples: Any networked printer.

#### Mobile Handheld Devices

##### **Mobile Digital Media Server (M-DMS)**

These wireless devices store content and make it available to wired/wireless networked mobile digital media players, digital media renderers and digital media printers.

Examples: Cell phones and portable music players.

##### **Mobile Digital Media Player (M-DMP)**

These wireless devices find and play content on a digital media server or mobile digital media server.

Examples: Cell phones and tablets designed for viewing multimedia content.

##### **Mobile Digital Media Uploader (M-DMU)**

These wireless devices send (upload) content to a digital media server or mobile digital media server.

Examples: Digital cameras and mobile phones.

##### **Mobile Digital Media Downloader (M-DMD)**

These wireless devices find and store (download) content from a digital media server or mobile digital media server.

Examples: Portable music players and cell phones.

#### **Mobile Digital Media Controller (M-DMC)**

These wireless devices find content on a digital media server or mobile digital media server and send it to digital media renderers.

Examples: Personal digital assistants and cell phones.

### **Home Infrastructure Devices**

#### **Mobile Network Connectivity Function (M-NCF)**

These devices provide a bridge between mobile handheld device network connectivity and home network connectivity.

Examples: Network switches and routers, preferably with Wi-Fi capabilities.

#### **Media Interoperability Unit (MIU)**

These devices provide content transformation between required media formats for home network and mobile handheld devices.

Examples: Any device running software that is capable of transcoding media formats.

### **USB OTG**

#### **HNP**

HNP is the protocol that allows two USB OTG devices to exchange host/slave roles as long as both devices have dual-role capabilities. This protocol allows either device to control and/or initiate data transfer and become the host device allowing power transfer to the slave as well. HNP also denotes polling in its specifications, where the host device periodically polls the slave during a session to determine if it wishes to become host.

#### **SRP**

SRP allows the host device to control the power consumption to the slave device. When a session is in progress it is not always necessary for the slave device to be powered. The OTG host can leave the link un-powered until a request of power comes from the slave device. This is very important for battery operated devices which have limited available power.

#### **ADP**

ADP is the detection protocol for power between USB bus devices. The USB port will periodically measure capacitance to determine if a device is attached or if it is just a cable. When the capacitance is large enough that would indicate a device the port will supply power and search for a device connection. The slave device will activate SRP and wait for the bus to power it.

### **Other Useful Terms**

#### **NAS**

Network attached storage. Essentially, it can be thought of as an external hard drive with some form of network connectivity. These can be prebuilt units, a full blown server or a DLNA certified router/switch with a flash card slot, usb port and/or an E-SATA port.

#### **HD**

High Definition as in video resolutions and frame rates.

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