

## THE TRANSFORMING DIGITAL LIVING ROOM

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### Abstract

*The digital home is an evolution of the idea that PCs, consumer electronics and mobile devices should work together seamlessly through a wired or wireless network to share digital content within a home environment. Digital living extends that idea to include sharing content on the go as well.*

*The goal of digital living is to provide you with an immediate connection between your digital devices, regardless of the manufacturer. You will finally enjoy the freedom to access, play and share your favorite movies, music and photos at home and on the go using products from your most trusted brands.*

**Keywords:** digital, dvd, lcd

We're in the midst of the biggest transformation of living room entertainment since the radio console replaced the family sing-along. What's more remarkable is how many changes we're seeing -- all at once -- in the way home entertainment is conveyed, played and displayed. In short, if you haven't lately strolled through your local consumer electronics emporium, then you have some catching up to do. But in the end, you're going to end up with a private entertainment pavilion that would dwarf the dreams of 18<sup>th</sup> century royalty.

In the living room it all begins with the image. Larger screens are the inevitable result of the move to high definition television, and the old-fashioned cathode ray tube is being lost in the transition: as screen widths go up, those old glass tubes get awfully large. But if you don't mind their size and weight, cathode ray tubes still provide superb and cost effective HDTV in fairly large screen sizes, as in the 34 inch Toshiba Cinema Series HD 34HF84.

Go much beyond that size and you're looking at plasma, LCD and projection sets. Plasma screens are an excellent and well-established technology with great black levels (a key element in picture quality) and wide viewing angles; Panasonic's units, such as the 42" HD TH-42PX25U/P get consistently good reviews. And prices are rapidly dropping, due to both production over-capacity and overblown fears about "burn-in" (easy to avoid: just don't leave the set on overnight with a single motionless picture on screen).

### Digital Living

Today's digital technology and digital entertainment choices are pretty incredible. Just think of what your DVR can do, or your mobile phone. If only they could all easily share content, right? Introducing DLNA Certified™ devices – and digital living.

### Getting Started

You already know something about digital living. There's the TV and digital video recorder in your family room. (And another set in your bedroom.) You have a PC and digital printer in your office, along with a network attached storage device. And you've copied all your music onto your portable music player and haven't had to open a CD case for years

Then there are the devices that go where you go, like your mobile camera phone, digital camcorder and laptop. All from the best brands.

<p><b>The compatibility challenge</b></p> <p>But something's missing. Why is it still so difficult to send digital content from one device to enjoy on another device?</p> <p>Take video for example. It can be a real challenge to get it from your PC to the large flat-panel TV in your living room. You need to download the video from your digital camcorder to your PC, burn it onto a DVD (with complicated software) and then hand-carry it to the DVD player attached to your TV.</p> <p>It can take hours. And in the end your DVD player might not even be able to read the DVD format you chose. Try it with products from different manufacturers and you might just want to skip it altogether.</p>	<p><b>DLNA Guidelines: building your network</b></p> <p>Digital Living Network Alliance (DLNA) is helping put an end to that frustration. A collaboration of the world's leading consumer electronics, PC and mobile companies, DLNA has created design guidelines for a new generation of DLNA Certified products that can work together — no matter the brand.</p> <p>In the DLNA defined future, you'll buy DLNA Certified products that help you share and enjoy your digital content where and when you want, at home or on the road, by yourself or among friends.</p>
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### Digital living in two steps

1. First you need a **home network -- wired or wireless** -- and you're ready to get started. That's because DLNA Certified devices today connect, discover and communicate with each other over a home network, like the one you might already have for sharing your broadband Internet. (There might be other ways to connect in the future.)
2. Next, go and buy the new **DLNA Certified products** available on the market today, and many more that will be available soon. Once you have those connected to your home network, you can find out what they can do in **The Possibilities**.

### The Possibilities

If you own two devices, you want them to be compatible. The same is true for three devices, or four or ten.

DLNA Certified products are built to work together, even though they come from many different companies. Finally, you have the freedom to choose the DLNA Certified device that's right for you, regardless of the manufacturer, and to create a digital network that fits your life.

Here are just a few examples of what's possible with DLNA Certified products:

- [Watching home movies](#)
- [Listening to music](#)
- [Watching photo slideshows](#)
- [Enjoying music on-the-go](#)
- [Watching TV shows](#)
- [Printing photos](#)

### Watching home movies



You recently downloaded your daughter's birthday party video from your digital camcorder to your PC, and stored it on your DLNA Certified network attached storage (NAS) drive. Now you want to share it with your parents who are visiting. Step one: Use the TV's remote to call up the video on your DLNA Certified TV. That's it. No step two.

**Before DLNA:** You probably had to burn a DVD of that video, taking hours, or you had to hook up the camcorder to the TV to watch it, fiddling with messy cables that are never where you thought you put them.

### Just the beginning

We're continually updating our DLNA Design Guidelines, which means there will be more DLNA Certified devices, and even greater possibilities, over time.

Finally, because DLNA Certified products are based on industry standards established by our more than 250 member companies, all leaders in their industries, you can count on easier upgrades in the future, support and interoperability for your DLNA Certified products.

### How it works

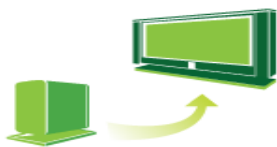
If your devices can do more things, you can do more things. Check out how the expanded capabilities of DLNA Certified devices can revolutionize the way you find, send, store, get, play and print your digital content. All you need to get started is a network – wired or wireless. That's because DLNA Certified devices today connect, discover and communicate with each other over a home network – like the one you might already have for sharing your broadband Internet. (There might be other ways to connect in the future.).

### How DLNA Certified devices ...

- [Find and play movies](#)
- [Send and display photos](#)
- [Find, send and play music](#)

- [Upload photos](#)
- [Download music](#)
- [Send and print photos](#)

### Find and play movies



Your movie collection is stored on your network attached storage (NAS), a certified **digital media server (DMS)**. Instead of watching the movie on the little PC monitor in your office, you want to enjoy it on the large flat-panel TV in your living room. Because your DLNA Certified TV is certified as a **digital media player (DMP)**, you can use the **DMP** capabilities of your TV to find the movies on your NAS, and then play them on the TV.

### DLNA Certified Products

You'll find the DLNA Certified logo on all kinds of digital devices for your home and on the go — TVs, PCs, mobile phones, you name it. But they aren't the same TVs, PCs and mobile phones you're used to.

Built to DLNA certification standards, this new generation of devices offers expanded capabilities that enable these products to play not one but multiple roles in your digital network.

DLNA Certified devices are certified in a number of different **DLNA Device Classes**. It is this embedded DLNA Device Class certification that allows the product to do more things. To play *and* render content in some cases. To find *and* upload content in others. Here's a rundown of the digital products that you may already be familiar with. See what each device can do if they are also a DLNA Certified device:



### Televisions (TVs)

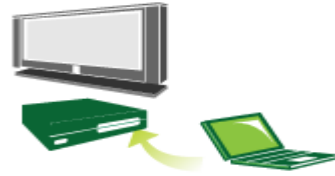
DLNA Certified TVs will be able to work as either a **Digital Media Player (DMP)** or **Digital Media Renderer (DMR)**, enabling you to enjoy more than just what's broadcast over the air or fiber optic networks or in your DVD collection.

As a **DMP**, it can browse digital content on other DLNA Certified devices – such as **Digital Media Servers (DMS)** – on your network, and play them. As a **DMR**, the TV can be controlled by a **Digital Media Controller (DMC)** to play the digital content you send from your **Digital Media Server (DMS)**.

### DLNA Certified Device Classes

#### Home Network Devices

- **Digital Media Server**
- **Digital Media Player**
- **Digital Media Renderer**
- **Digital Media Controller**
- **Digital Media Printer**



### Digital Media Server (DMS):

These devices store content and make it available to networked **digital media players (DMP)** and **digital media renderers (DMR)**. Some **digital media servers** can also help protect your content once stored.

Examples: PCs and network attached storage (NAS) devices.

### Mobile Handheld Devices

- **Mobile Digital Media Server**
- **Mobile Digital Media Player**
- **Mobile Digital Media Uploader**
- **Mobile Digital Media Downloader**
- **Mobile Digital Media Controller**



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

These wireless devices store content and make it available to wired/wireless networked **mobile digital media players (M-DMP)**, **digital media renderers (DMR)** and **digital media printers (DMPr)**.

Examples: mobile phones and portable music players.

### Home Infrastructure Devices

- **Mobile Network Connectivity Function**
- **Media Interoperability Unit**

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

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



## Conclusion

Content management and control will enable devices and applications to identify, manage and distribute content across your home network. UPnP Audio/Video (AV) technology addresses all of these needs and is the content management and control solution for products based on DLNA guidelines.

DLNA broadened the reach of its Home Networked Device Interoperability Guidelines with the release of the group's first Optional Media Format Addendum. The Addendum outlines technical guidelines supporting 11 additional media formats for imaging, audio and video. Included with the purchase of the Home Networked Device Interoperability Guidelines, the Addendum increases the value and applicability of devices based on DLNA's guidelines.

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