

Understanding DLNA

What is DLNA? How does DLNA affect your multimedia and network products? What does it mean when a product is DLNA-certified?



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What is DLNA?

DLNA, which stands for **Digital Living Network Alliance**, is a series of guidelines used by manufacturers of consumer electronics to allow entertainment devices within a home share media content with each other seamlessly across a home network.

The Digital Living Network Alliance is an international, collaborative organization of companies involved in consumer electronics, the computer industry, and mobile devices. Members of DLNA have developed an emerging concept of network communication where digital content such as photos, music, and videos can be shared across multiple electronic devices in and beyond the the home. The organization provides guidelines defining a framework of network protocols that support this interoperability concept. There is also a certification program to identify products that comply with DLNA guidelines.

The Digital Living Network Alliance was founded in 2003 and published its first set of Interoperability Guidelines in June 2004. Version 1.5 of the DLNA Interoperability Guidelines was published in March 2006 and then expanded in October 2006. The current guidelines expand the capabilities of the DLNA-defined network to include more device classes and functional capabilities—including printers, mobile devices, controllers, uploaders and downloaders. They also include specifications for digital rights management.

DLNA Certification

Products that are certified as DLNA-compliant by an accredited testing laboratory are allowed to use the DLNA CERTIFIED logo. In order to achieve DLNA certification, products must pass conformance and interoperability test suites conducted by the testing lab. In addition to this testing, DLNA certification requires Universal Plug and Play certification on products that can be tested for UIC certification. Similarly, products that support the IEEE 802.11 wireless interface are required to achieve Wi-Fi™ certification.

The Iomega® Home Media Network Hard Drive and the Iomega® StorCenter™ ix2 and StorCenter ix4 series NAS Servers use a Media Server based on DLNA and are DLNA-certified products.

Types of DLNA Devices

There are three main roles for a DLNA device, and a particular device may have one or more of these roles.

Digital Media Server (DMS)

A digital media server has a store of content (such as video files) which it makes available for client devices to use. If a client device cannot use a particular format, the media server may be able to convert the file before sending.

Digital Media Player (DMP)

A digital media player can show or play content which it requests (or is sent) from a server. Examples of digital media players include the Sony® PlayStation® 3, the Microsoft® Xbox 360™, and some of Sony's Bravia range of televisions.

Digital Media Controller (DMC)

A digital media controller can instruct another device to do something, such as telling a server to play a video on a particular television or a photoframe to send a photo to a printer.



DLNA Design Guidelines

The DLNA Networked Device Interoperability Guidelines specify the interoperable building blocks that designers can use to build platforms and software infrastructure for networked platforms and devices. The guidelines focus on interoperability between devices for personal media uses involving imaging, audio and video. The stated goals of the guidelines are to support the digital home vision, which integrates the Internet, mobile, and broadcast networks through a seamless, interoperable network.

Under the digital home vision, consumers can:

- Easily acquire, store and access digital music from almost anywhere in the home
- Effortlessly manage, view, print and share digital photos
- Carry favorite content anywhere to enjoy while on the road
- Enjoy distributed, multi-user content recording and playback

The guidelines currently consist of three volumes covering Architecture & Protocols, Media Format Profiles, and Link Protection.

DLNA and Digital Rights Management

Digital Rights Management (DRM) is technology designed to protect commercial digital content from unauthorized copying and use. Digital Rights Management presents complex challenges for DLNA interoperability. Typically, commercial digital content acquired from different channels (cable, satellite, Internet, etc.) has different usage rights. For example, a movie ordered through pay-per-view on a cable set-top box has different usage rights from a video purchased from an Internet video download service. In addition, the different DRM technologies available to device designers do not necessarily support interoperability between devices. Instead, they often limit usage of media content to a single device.

In contrast, consumers generally expect to be able to store, transport, and use content they have purchased at any location and on any device on their wired or wireless home network. The challenge for DLNA is to support the digital home vision of seamless integration and at the same time safeguard the rights of providers to prevent unauthorized usage of protected content.

Given the technical challenges of DRM interoperability and the critical need to address DRM so commercial digital content is available for use with DLNA devices, the DLNA focused initially on link protection technologies to protect content in transit from a source (DMS, DMC or DMP) to a display device (DMR). The Content Protection Subcommittee completed its link protection guideline work in March 2006, resulting in the DLNA Networked Device Interoperability Guidelines Expanded, October 2006. Complete DLNA DRM interoperability guidelines are still in development.

With DNLA link protection, commercial content, which is stored on a digital media server and protected by a DRM technology, is decrypted and re-encrypted using a link protection technology by the digital media controller or digital media player before being sent to a digital media receiver (such as a television). The digital media receiver decrypts the content stream and then displays/outputs it.

DLNA link protection supports the vision of device interoperability while achieving the required balance between protection, availability, and usability. Ideally, future DRM methods will foster an integrated, user-friendly, and backward compatible system that meets the rights, needs, and expectations of providers, consumers, and device manufacturers.



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