

# Networking Overview

## General Information

In order to make networking as simple and easy as possible Denon have employed and implemented guidelines and the network framework as set down by the Digital Living Network Alliance (DLNA).

We recommend a visit to [www.dlna.org](http://www.dlna.org) for more detailed information regarding the benefits of the DLNA standard.

### Special Note:

- Not all computers components are automatically DLNA compliant and some configuration adjustments may be required.

## System Requirements for Networking

### Broadband Internet connection

A broadband line connection to the Internet is required in order to use the Internet radio function and firmware update feature.

### Special note:

- When using firmware upgrade feature: slow or inconsistent broadband bandwidth can cause signals to falter and corrupt the firmware upgrade process so please be advised not to use this feature unless guaranteed high speed and consistent broadband is available. Wired connection is recommended for firmware updates.

### Router

Denon recommend you use a router equipped with the following functions:

- Built-in DHCP (Dynamic Host Configuration Protocol) server. This function automatically assigns IP addresses on the LAN.
- Built-in 100BASE-TX switch
- When connecting multiple devices, we recommend a switching hub with a speed of 100 Mbps or greater.

### Special note:

- The quality of wireless routers varies dramatically so please ensure a quality router is used.
- Often a wireless router/ modem/switch combination unit is supplied by an ISP provider as part of a broadband package, but these combination units are not always adequate for wireless network audio and picture streaming in a whole house situation. These combination units are more suited to single open room situations. For a more consistent whole house solution it is recommended you consider the use of a separate WAP (Wireless Access Point) device which is designed to be placed higher and give much better wireless reception throughout most household environments. Denon cannot be responsible for the performance of any router or wireless device.
- When using wireless it is necessary to use a WEP or WPA or WPA2 (recommended) security code. The setup of this code can vary from router to router and may need to be configured to meet DLNA compliance. Please remember passwords are case sensitive.
- Denon units are not compatible with routers using the PPPoE protocols so if you encounter this please contact your ISP.

### Modem

This is a device that is connected to a broadband ISP to communicate with the Internet in order to access the Internet radio and firmware upgrade features.

### Ethernet cable (CAT-5 or greater recommended)

When using a wired LAN.

- Denon models do not come with an Ethernet cable.
- Some flat type Ethernet cables are easily affected by noise.
- Denon recommend using a normal type cable.
- For the Ethernet cable, used a shielded twisted pair (STP) cable.
- Do not use an unshielded twisted pair (UTP) cable, as it may exceed noise standard limits.

### Computer

A computer with the following specifications is required

- OS - Windows® XP Service Pack2 or Windows Vista
- Software (Prepare one of the following.)
- NET Framework 1.1
- Windows Media Connect
- Windows Media Player ver.11
- DLNA-compatible server software
- Internet browser
- Microsoft Internet Explorer 5.01 or later
- LAN port

**Special notes:**

- Windows Media Player 11 must be present as this is used as the file sharing program. Please make sure file sharing is activated in Windows Media Player 11 to ensure file access.
- Shared files should be stored under My music or My Pictures, external drives are not automatically detected but can be assigned in the options menu of Windows Media Player 11.
- Some recent makes of both PC and laptops have included a new “DRM” Digital Rights Management feature which can interfere with the sharing function. If this occurs Denon recommends contacting the PC manufacturer.
- Streaming from a MAC is possible providing a 3<sup>rd</sup> party program called “Twonkyvision” is present. Info regarding this can be found at [www.twonkyvision.com](http://www.twonkyvision.com)

**Audio & picture files supported**

- MP3
- WMA
- AAC (non DRM encoded)
- WMA Lossless
- FLAC (Free Lossless Audio Codec) (not available on all models)
- WAV
- Jpeg (not available on all models)

Please note that when using a wireless connection compressed formats such as WMA & MP3 are recommended.