

HDX111 Powerline HD Plus Ethernet Adapter User Manual



NETGEAR®

NETGEAR, Inc.
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Technical Support

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Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, NETGEAR reserves the right to make changes to the products described in this document without notice. NETGEAR does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

Safety Instructions

Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage.

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions.

- Observe and follow service markings.
 - Do not service any product except as explained in your system documentation.
 - Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Only a trained service technician should service components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
 - The power cable, extension cable, or plug is damaged.
 - An object has fallen into the product.
 - The product has been exposed to water.
 - The product has been dropped or damaged.
 - The product does not operate correctly when you follow the operating instructions.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide or contact your trained service provider.
- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.

- Use the product only with approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.
- To help avoid damaging your system, be sure that the voltage selection switch (if provided) on the power supply is set to match the power available at your location:
 - 115 volts (V), 60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - 100 V, 50 Hz in eastern Japan and 100 V, 60 Hz in western Japan
 - 230 V, 50 Hz in most of Europe, the Middle East, and the Far East
- Also, be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cables. If you have not been provided with a power cable for your system or for any AC powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent electric shock, plug the system and peripheral power cables into properly grounded electrical outlets.
- The peripheral power cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications.
- Always follow your local and national wiring rules.
- Move products with care; ensure that all casters and stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces.

Regulatory Notices

FCC Statement

The HDX111 has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

Canadian Department of Communications Industry Canada (IC) Notice

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

“To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.”

“Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence.”

Europe – EU Declaration of Conformity

A printed copy of the EU Declaration of Conformity certificate for this product is provided in the HDX111 product package.

Product and Publication Details

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About This Manual

The *NETGEAR® HDX111 Powerline HD Plus Ethernet Adapter User Manual* describes how to install, configure and troubleshoot the HDX111 Powerline HD Plus Ethernet Adapter. The information in this manual is intended for readers with intermediate computer and Internet skills.


Conventions, Formats, and Scope


The conventions, formats, and scope of this manual are described in the following paragraphs:


- **Typographical Conventions.** This manual uses the following typographical conventions::

<i>Italic</i>	Emphasis, books, CDs, file and server names, extensions
Bold	User input, IP addresses, GUI screen text
<i>italic</i>	URL links

- **Formats.** This manual uses the following formats to highlight special messages:

	Note: This format is used to highlight information of importance or special interest.
--	--

	Tip: This format is used to highlight a procedure that will save time or resources.
---	--

	Warning: Ignoring this type of note may result in a malfunction or damage to the equipment.
---	--

- **Scope.** This manual is written for the Powerline HD Plus Ethernet Adapter according to these specifications:.






Product Version	HDX111 Powerline HD Plus Ethernet Adapter
Manual Publication Date	March 2008



Note: Product updates are available on the NETGEAR, Inc. website at <http://www.netgear.com/support>.

How to Use This Manual

The HTML version of this manual includes the following:

- Buttons,  and , for browsing forwards or backwards through the manual one page at a time
- A  button that displays the table of contents and an  button. Double-click on a link in the table of contents or index to navigate directly to where the topic is described in the manual.
- A  button to access the full NETGEAR, Inc. online knowledge base for the product model.
- Links to PDF versions of the full manual and individual chapters.

How to Print this Manual

To print this manual, you can choose one of the following options, according to your needs.

- **Printing a Page from HTML.** Each page in the HTML version of the manual is dedicated to a major topic. Select File > Print from the browser menu to print the page contents.
- **Printing from PDF.** Your computer must have the free Adobe Acrobat reader installed in order to view and print PDF files. The Acrobat reader is available on the Adobe Web site at <http://www.adobe.com>.
 - **Printing a PDF Chapter.** Use the *PDF of This Chapter* link at the top left of any page.

- Click the *PDF of This Chapter* link at the top left of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
 - Click the print icon in the upper left of your browser window.
- **Printing a PDF version of the Complete Manual.** Use the *Complete PDF Manual* link at the top left of any page.
- Click the *Complete PDF Manual* link at the top left of any page in the manual. The PDF version of the complete manual opens in a browser window.
 - Click the print icon in the upper left of your browser window.



Tip: If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

Chapter 1

Installing and Using the Powerline HD Plus Ethernet Adapter

This chapter describes the HDX111 Powerline HD Plus Ethernet Adapter, and explains how to install it on your local area network (LAN) and connect to the Internet.

Package Contents

The product package should contain the following items:

- HDX111 Powerline HD Plus Ethernet Adapter.
- A blue Ethernet cable.
- Quick Install Guide
- *Resource CD*, including:
 - This manual.
 - HDX111 configuration utility
 - HDX111 Powerline HD Plus Ethernet Adapter Installation Guide.
- Registration, Warranty Card, and Support Information Card.

If any of the parts are incorrect, missing, or damaged, contact your NETGEAR dealer. Keep the carton, including the original packing materials, in case you need to return the Powerline HD Ethernet adapter for repair.

Connectors, Ports, and Label Information

Each unit has various status indicators and a label with important information. Familiarize yourself with these features of your product.

Physical Features

The HDX111 contains two buttons, three status lights, and an Ethernet port.

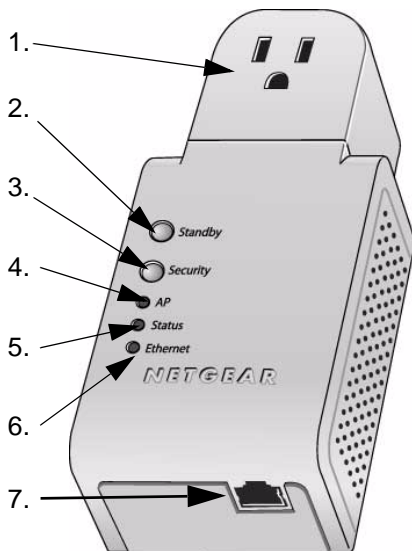


Figure 1-1

The following table describes these physical features.

Table 1-1. HDX111 Physical Features

Item	Description
1. Pass-through AC outlet	For best Powerline performance, connect adjacent electrical appliances of up to 15A directly to the pass-through AC outlet. The outlet filters out noise that affects Powerline performance.
2. Standby button	Turn Standby mode on or off. See “Standby Mode” on page 1-8 .
3. Security button	Set up Powerline security or reset to factory default settings: <ul style="list-style-type: none"> • To configure security, see “Securing Your Powerline Network” on page 1-7”. • To reset to factory default settings, press for about 12 seconds, until the Status light (5) goes off.
4. AP light	Indicates the Powerline security access point and security configuration (see “Securing Your Powerline Network” on page 1-7 ”): <ul style="list-style-type: none"> • Blinking orange indicates that security is being configured. • Solid orange on indicates that the Powerline HD Ethernet adapter is configured as the Powerline security access point.

Table 1-1. HDX111 Physical Features (continued)

Item	Description
5. Status light	Indicates the link speed or other quality states: <ul style="list-style-type: none">• Solid green when the link speed is greater than 80 Mbps.• Solid orange indicates the link speed is between 80 Mbps and 50 Mbps.• Solid red when the link speed is less than 50 Mbps.• Blinking red twice every 5 seconds when in Standby mode.• Blinking red once per second when the Powerline HD Ethernet adapter cannot find any other Powerline devices with the same network ID.
6. Ethernet light	Indicates the status of Ethernet traffic: <ul style="list-style-type: none">• Solid green when the Ethernet port is linked but there is no activity.• Blinking green when there is traffic between an Ethernet port and the Powerline.• Off when there is no Ethernet connection.
7. 10/100 Ethernet port	Connect an Ethernet cable to a router, computer, or other peripheral device.

Label on the Rear Panel

The label on the rear panel of the HDX111 contains the items listed below.

- MAC address
- Model number
- Serial number

Powerline HD Ethernet Adapters and Your Network

After you install the Powerline HD Plus Ethernet Adapters, your network will combine an Ethernet portion, where the devices are connected with cables, with a Powerline portion, where the devices are connected over your electrical wires.

devices allow you to implement or extend an Ethernet local area network anywhere in your house using your existing electrical power line in place of a dedicated LAN wiring infrastructure. An example is illustrated in the following diagram for a network with two Powerline devices:

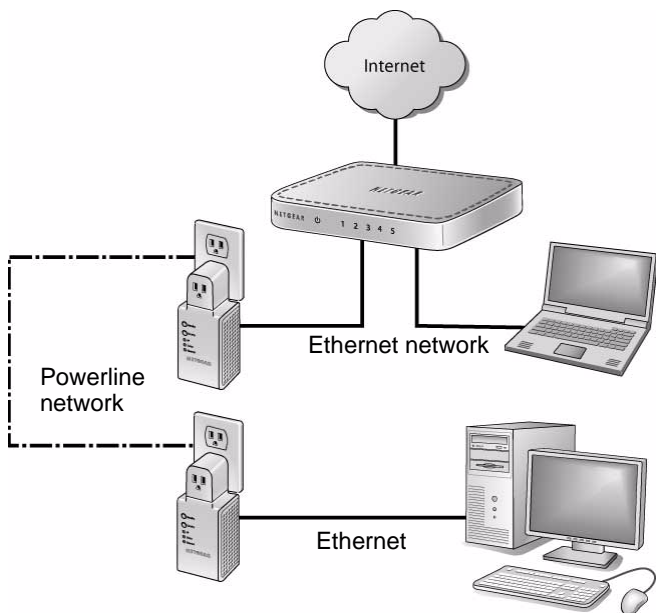


Figure 1-2

Preparing for Installation

To prepare for installation:

1. Before you begin, verify the following:

- Your Ethernet network is set up and an Ethernet port is available on your router.
- Your Internet connection is working.
- Each computer that will use the Powerline HD Plus Ethernet Adapter has an Ethernet port available and is configured to work on your network. Usually, the default configuration settings (TCP/IP and DHCP) are fine.

2. Familiarize yourself with the Powerline HD Plus Ethernet Adapter. The front panel has a pass-through outlet, a Standby button, a Security button, and three LEDs: AP, Status, and Ethernet. The Ethernet port is located on the bottom.

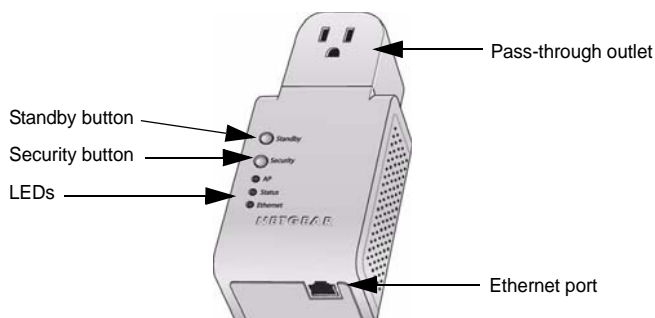


Figure 1-3

3. Plan the location of your Powerline devices.
 - Do not connect the Powerline HD Plus Ethernet Adapter to a power strip, extension cord, or surge protector as this might prevent it from working properly or degrade the network performance.
 - Use an electrical outlet that is not controlled by a wall switch to avoid someone unknowingly turning off the power to the outlet.
 - For best Powerline performance, plan to connect adjacent electrical appliances of up to 15 amps directly to the pass-through AC outlet. The outlet filters out noise that affects Powerline performance.

Installing the Powerline HD Plus Ethernet Adapter

These instructions explain how to add Powerline HD Plus Ethernet Adapters to your existing network.

Follow these steps:

1. Plug a Powerline HD Plus Ethernet Adapter into a power outlet near your router.



Note: If the router is plugged into an adjacent outlet, you can plug it into the pass-through outlet of the Powerline HD Plus Ethernet Adapter. The outlet filters out noise that affects Powerline performance.

2. Use the Ethernet cable that came in the package to connect the Powerline HD Plus Ethernet Adapter to a LAN port on the router so that the Powerline network can gain access to the Internet.
3. Plug your other Powerline HD Plus Ethernet Adapters into power outlets near the computers and peripherals to be included in your Powerline network.

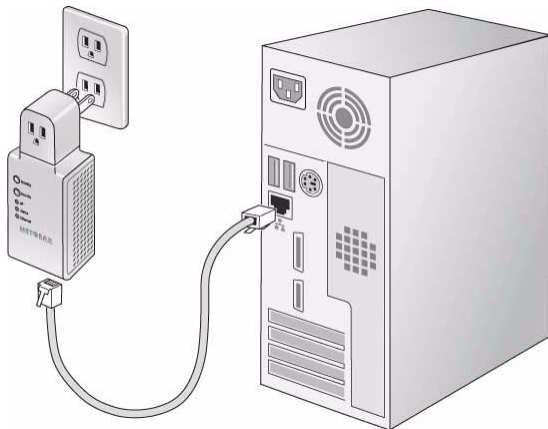


Figure 1-4

4. If an appliance of up to 15 amps is plugged in next to the Powerline HD Plus Ethernet Adapter, you can plug it into the pass-through outlet of the Powerline HD Plus Ethernet Adapter.
5. Use the blue Ethernet cable from the HDX111 package to connect each Powerline HD Plus Ethernet Adapter to an Ethernet port on a computer or peripheral.
6. Wait 20 seconds for each Powerline HD Ethernet adapter to be recognized by the Powerline network.

The Status and Ethernet lights should turn on. For details about how the LEDs work, see [“Physical Features” on page 1-2](#).

7. Make sure that each computer connected to an Powerline HD Plus Ethernet Adapter can use the Powerline network. For example, access the Internet from a remote computer. If there is a problem, see [Chapter 3, “Troubleshooting”](#).

NETGEAR recommends that you secure your Powerline network from unauthorized access. This is especially relevant in settings like apartment buildings. See [“Powerline Network Security” on page 1-7](#).

Adding a New Powerline HD Ethernet Adapter

If the Powerline network ID and encryption key are set to the default setting of **PowerlineHD**, all you need to do is to plug the new Powerline HD Ethernet adapter into an electrical outlet and connect its Ethernet cable to a PC. If the default setting has been changed, use the same method to work with the new device.

- If you used the Security button to customize the network ID and encryption key, see [“Securing Your Powerline Network”](#) on page 1-7.
- If you specified the network ID with the HDX111 configuration utility, see [“Specifying Your Powerline Network ID”](#) on page 2-9.

Powerline Network Security

Powerline devices on the same network must use an identical network ID and encryption key. The Powerline HD Plus Ethernet Adapter default Powerline network ID and encryption key are both **PowerlineHD**. If you do not set up security, anyone nearby with a Powerline network can use these to gain access to your network. Use the Security button on the Powerline HD Plus Ethernet Adapter to change the Powerline network ID and encryption key.

To return the Powerline HD Plus Ethernet Adapter to its factory default settings, press the Security button for 12 seconds until the Status light goes off; or use the NETGEAR HDX111 configuration utility. See [Chapter 2, “HDX111 Configuration Utility”](#).

Securing Your Powerline Network

To change the default Powerline encryption key to secure your Powerline HD Plus Ethernet Adapters:

1. Verify that all the Powerline HD Plus Ethernet Adapters on the Powerline network are plugged in.
 - Determine which Powerline HD Plus Ethernet Adapter will be the Powerline security access point (AP). One HDX111 acts as a security AP in your Powerline network.
 - For best video performance, select the HDX111 connected to the PC or device where your video files reside to be the AP.
2. On the Powerline HD Plus Ethernet Adapter that will be the security AP, press the Security button for 3 seconds until the AP light blinks. This indicates that it is searching to see if there is already a security AP on the Powerline network.

The AP light blinks for 30 seconds and then remains on. The Powerline HD Plus Ethernet Adapter does not discover a security AP, so it becomes the security AP and generates a new network ID and encryption key.

3. Press the Security button of the same Powerline HD Plus Ethernet Adapter again, for 3 seconds, until its AP light blinks. This puts it into search mode.
4. While the AP light is still blinking on the security AP adapter, press the Security button of the next Powerline HD Plus Ethernet Adapter, for 3 seconds, until its AP light also blinks.

The second Powerline HD Plus Ethernet Adapter discovers the security AP. The second Powerline HD Plus Ethernet Adapter's AP light blinks 3 times and goes off. It is now configured with the same network ID and encryption key as the first adapter.

5. To secure additional Powerline HD Plus Ethernet Adapters, repeat steps 3 and 4.



Note: After you secure your network, the AP light stays on only for the Powerline HD Plus Ethernet Adapter that is the security AP for the Powerline network. Adapters retain security settings even if unplugged.

Standby Mode

Standby mode allow the Powerline HD Plus Ethernet Adapters to save power when the Ethernet link is down for 5 minutes. In Standby mode, the LEDs are off, and the Status LED blinks twice every 5 seconds. You can use the Standby button to turn Standby mode on and off. The Powerline HD Plus Ethernet Adapter also has an automatic Standby mode feature.

- **Standby button.** To turn Standby mode on or off, press the Standby button on the front panel of the Powerline HD Plus Ethernet Adapter.
- **Automatic Standby mode.** The Powerline HD Plus Ethernet Adapter has to be up and running for at least 15 minutes before it can automatically enter standby mode.




Note: The first Powerline HD Plus Ethernet Adapter that you plug in automatically works as a master. It will not automatically enter standby mode if there are other active Powerline HD Plus Ethernet Adapters on the same Powerline network.

Chapter 2

HDX111 Configuration Utility

This chapter describes how to install the HDX111 configuration utility, and how to use it to configure your Powerline devices. The utility allows you to do the following:

- Specify the Powerline network ID. The default network ID is **PowerlineHD**.

	<p>Note: You can use the Security button on the Powerline HD Ethernet adapter to automatically customize the network ID and the network encryption key. See “Securing Your Powerline Network” on page 1-7.</p>
---	---

- Prioritize traffic passing through the Powerline network.
- Reset the unit to its factory default settings.

Installing the HDX111 Configuration Utility

Before beginning, make sure that your Internet connection is working. During installation you may be prompted to access the Internet to install WinPcap.

To install the HDX111 configuration utility on your computer:

1. Insert the *Resource CD* into a CD drive on the computer that is connected to your router. The CD automatically displays the following screen:



Figure 2-1

If the CD does not start automatically, do one of the following:

- Go to My Computer on the Windows Start menu, and double-click the drive that where the *Resource CD* is located.
- Select the CD drive, and then click the Autorun.exe executable file.

2. Click **Install NETGEAR HDX111 Configuration Utility**.

If your computer does not include WinPcap, the InstallShield Wizard displays this message:



Figure 2-2

Click **OK** to install WinPCap and follow the onscreen instructions until the HDX111 Welcome screen is displayed.

The HDX111 Welcome screen displays:



Figure 2-3

3. Click **Next** to display a screen that allows you to choose the installation location.

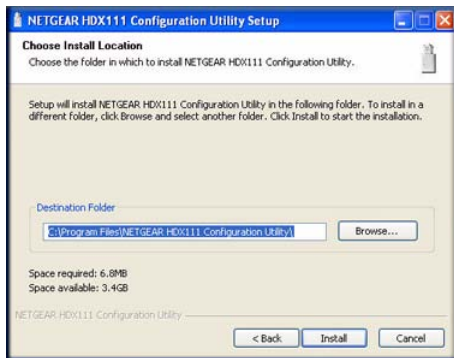


Figure 2-4

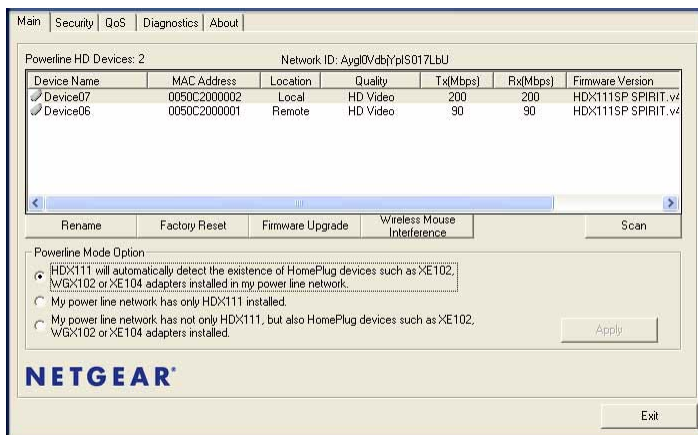
4. If you want to specify the location where files will be saved on your hard drive, use the **Browse** button.
5. Click **Install** to accept the Destination Folder.
6. The following screen displays:



Figure 2-5

7. Make sure that the **Run NETGEAR HDX111 Configuration Utility** check box is selected. Click **Finish** to complete the installation.

An HDX111 configuration utility icon appears on your desktop. If the **Run NETGEAR HDX111 Configuration Utility check box** was selected, the HDX111 configuration utility displays its Main tab, and the utility is shown in the Windows taskbar.



Configuration utility Main tab



Desktop icon



Taskbar

Figure 2-6

Running the HDX111 Configuration Utility

When installation is complete, you can run the utility by clicking the icon on your desktop or from the Windows Program Menu. The configuration utility displays its Main tab, as shown in the following figure:

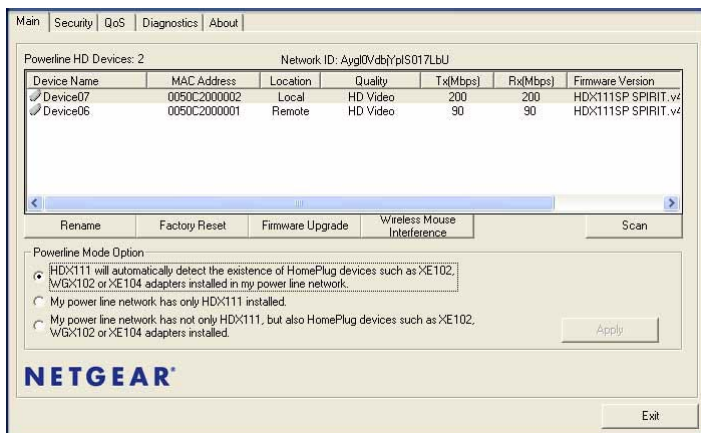


Figure 2-7

The following table describes the items on the Main tab.

Table 2-1. Main Tab Fields and Settings

Item	Description
Powerline HD Devices	The number of Powerline devices discovered.
Network ID	The network ID of the local Powerline device. All devices shown in the device table (3) share the same network ID.
Device Name	The device name is initially set by the utility. You can use the Rename button to change it.
MAC Address	The physical address of the Powerline device.
Location	Indicates whether the device is local or remote. The local device is the one connected, via an Ethernet cable, to the PC running this utility.
Quality	Indicates the type of traffic that can be handled smoothly: HD Video, DVD Video, or Data. <ul style="list-style-type: none"> • HD Video. The device can handle high-definition video traffic smoothly. This status will be shown if the transmit and receive link speed is greater than 80 Mbps. • DVD Video. The transmit and receive link speed is greater than 50 Mbps. • Data. The device cannot handle video data smoothly. This status will be shown if the transmit or receive link speed is less than 50 Mbps.
Rx (Mbps)	Maximum receive link speed of the device.
Tx (Mbps)	Maximum transmit link speed of the device.
Firmware Version	The firmware level of the device.
Control Buttons	Rename. Click a device name, and type a new name. Factory Reset. See “Resetting to Factory Defaults” on page 2-7. Firmware Upgrade. See “Upgrading Firmware” on page 2-6. Wireless Mouse Interference. See “Wireless Mouse Interference” on page 2-8.
Powerline Mode Options	Configure how the utility scans for Powerline network devices, and how network coexists with HomePlug devices. See “Specifying Your Powerline Network ID” on page 2-9.

Upgrading Firmware

The Powerline HD Ethernet adapter must be connected with an Ethernet cable to the router, or to the computer running the HDX111 configuration utility.

To upgrade the firmware:

1. Download the firmware.

To check for new firmware, go to the HDX111 Powerline HD Plus Ethernet Adapter support page at <http://www.netgear.com/support>. If you see a recent firmware image to download, follow the download instructions on the support site, and take note of where you save the downloaded file on your PC. If the file you downloaded is a .zip file, extract the encapsulated firmware file and note its name and location on your PC.

2. Click **Firmware Upgrade** on the configuration utility Main tab. The following screen displays:

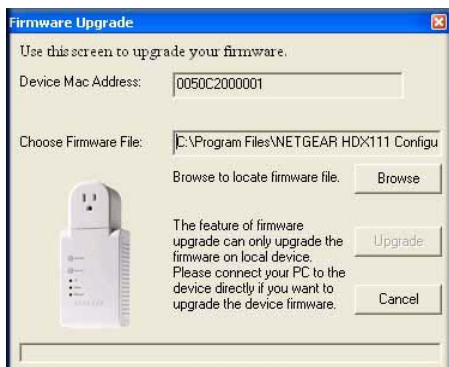


Figure 2-8

3. Browse to locate the downloaded firmware file with an extension of .ftp, .img, or .nvm.
4. Click **Upgrade**. On successful completion of the upgrade, the following message is displayed:



Figure 2-9


5. One by one, connect the other Powerline HD Plus Ethernet Adapters with an Ethernet cable to the router or to the computer running the utility, and repeat the upgrade process.

Resetting to Factory Defaults

There are two ways to return the Powerline HD Plus Ethernet Adapter to its factory default settings.

- Press the Security button on the Powerline HD Plus Ethernet Adapter for 12 seconds until its Status light goes off.
- Use the HDX111 configuration utility to reset devices on the Powerline network one by one.

To use the HDX111 configuration utility to reset to factory defaults:



Note: If you use a custom network ID, as each device is reset it will be disconnected from the Powerline network. To avoid losing access to the Powerline network in this situation, first reset all remote devices and then reset the local device.

1. For a remote device in your network, click the device name to highlight it in the Main tab.

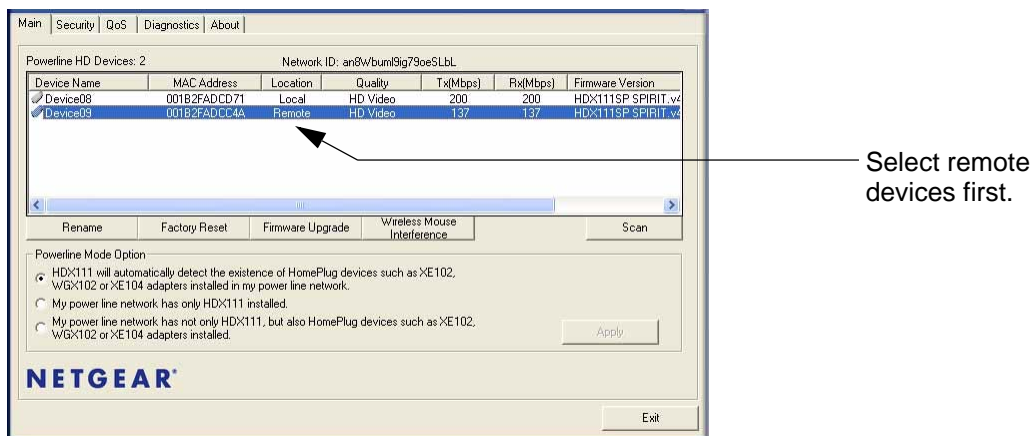


Figure 2-10

- a. Click **Factory Reset**. The software will display a message similar to the following:

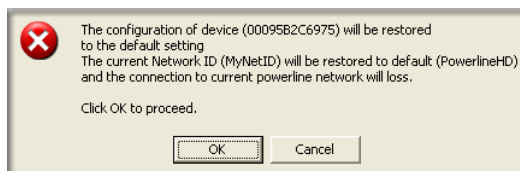


Figure 2-11

Specifying Your Powerline Network ID

The default Powerline network ID and encryption key are both **PowerlineHD**. You can use the HDX111 configuration utility to specify the Powerline network ID.



Note: You can also use the Security button on the Powerline HD Ethernet adapter to automatically generate a network ID and encryption key. See [“Powerline Network Security”](#) on page 1-7.

The fastest and most reliable way to set the network ID with the configuration utility is to set it for all devices at the same time.

To specify the Powerline network ID:

1. Make sure that all Powerline devices are plugged into AC power outlets.
2. Start the HDX111 configuration utility and select the Main tab.
3. Wait for the utility to detect the HDX111 Powerline HD Plus Ethernet Adapters on the Powerline network.
4. Select the Security tab.

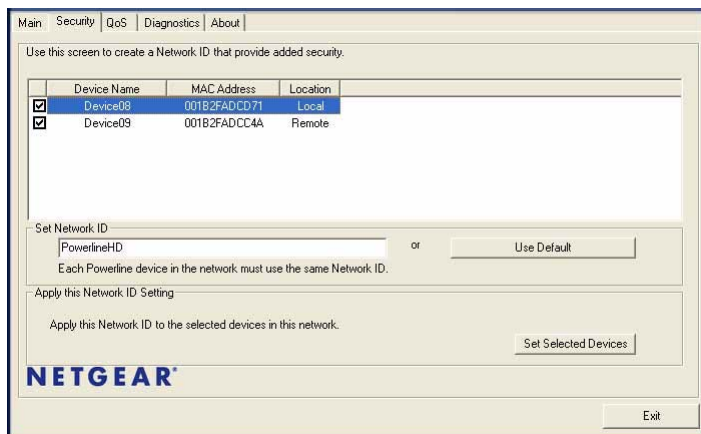


Figure 2-13

5. Select the check box for each device.
6. Type a network ID in the **Network ID** field, and then click **Set Selected Devices**.

A message displays indicating that the operation was successful.

7. Select the Main tab and click **Scan**. Check that the utility detects all the Powerline HD Plus Ethernet Adapters in your Powerline network and that your network ID is displayed.

Specifying the Network ID for a New Powerline HD Ethernet Adapter

To add a new Powerline HD Ethernet Adapter to an existing Powerline network, it must use the same network ID as the other Powerline devices. How you specify the network ID depends on whether or not the Powerline HD Ethernet Adapter is connected locally (via Ethernet) to the PC that is running the HDX111 configuration utility.

- To specify the network ID for a locally connected Powerline HD Ethernet Adapter, follow the instructions in [“Specifying Your Powerline Network ID” on page 2-9](#).
- To specify the network ID for a remote Powerline HD Ethernet Adapter, follow the instructions in the following section [“Adding a New Device from a Remotely Connected Computer.”](#)

Adding a New Device from a Remotely Connected Computer

Follow these steps:

1. Plug the new device into an AC power outlet.
2. Start the HDX111 Configuration Utility and wait for the utility to detect the Powerline HD Ethernet adapters in your Powerline network. Check that all the Powerline HD Ethernet adapters in the established network are displayed in the Main tab.
3. Select the Security tab and select each device.
4. Click **Use Default**. The **Network ID** field changes to the default setting, **PowerlineHD**.
5. Click **Set All Devices**.
6. Select the Main tab, and then click **Scan**. Wait for the new Powerline HD Ethernet adapter to be listed. The new device can be identified by its MAC address.
7. If you want to change the device name, select the device, click **Rename**, and type a new name.
8. Select the Security tab.
9. Re-enter your network ID in the **Network ID** field.
10. Click **Set All Devices**. The utility displays a message indicating that the operation was successful.
11. Select the Main tab and click **Scan**. Check that all devices are detected with your network ID.

Prioritizing Traffic on the Powerline Network

By default, the Powerline HD Ethernet adapter QoS (Quality of Service) rules give priority to multimedia network traffic. This is so that multimedia playback is smooth, even if document files are being transferred over the network.



Note: QoS settings are applied to every detected device shown on the Main tab.

In general, multimedia applications use UDP (User Datagram Protocol) for data transfer. For such applications, the on-time arrival of the data is more important than the data itself. If a packet cannot be transferred in time, it will be dropped. For applications where the integrity of the data takes precedence over the data timing, such as database applications, TCP (Transmission Control Protocol) is used for data transfer.

To view or change the QoS rule settings:

1. Start the HDX111 configuration utility from the PC and wait for the utility to detect the Powerline HD Ethernet adapters on the network.
2. Select the QoS (Quality of Service) tab.

The default settings in the **Rule** fields are **UDP priority** and **UDP high priority**. These settings give priority to give priority to multimedia transfers.

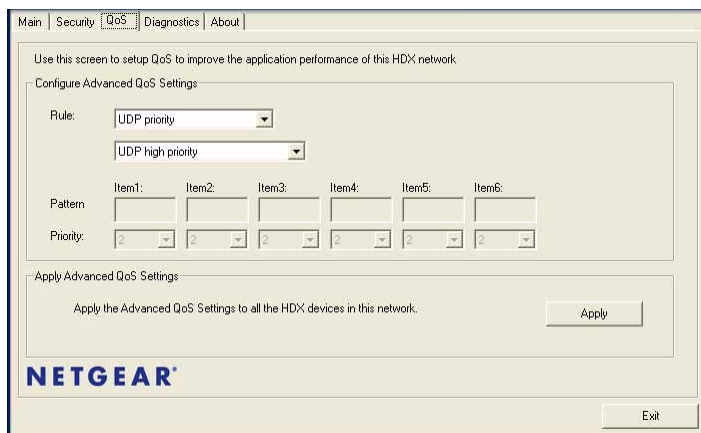


Figure 2-14

The Powerline HD Ethernet adapter offers the following QoS rule options:

- No prioritization. Do not use QoS prioritization.
 - UDP priority. Give priority to multimedia applications.
 - TCP priority. Give priority to database or document transfers.
 - 802.1p prioritization. For QoS-configured business networks prioritize bits in Layer-2 frames.
 - TOS or DSCP. For QoS-configured business networks, use prioritization bits in Layer-3 IP packets. DSCP (Differential Services Code Point) values range from 0 to 63; the deprecated TOS (Type Of Service) values range from 0 to 7.
3. To make a change, select a rule, and set the priority in the Rule fields. Click **Apply** so that your changes take effect.

Prioritizing a Specific Application

If you want to prioritize network traffic for a specific application, you must know the source or destination ports used, in addition to the protocol. If you do not know the protocol and ports used, use a network protocol analyzer program¹ to monitor your network traffic while running the application that you want to prioritize.

Scenario: A Storage Central SC101 is connected to one Powerline HD Plus Ethernet Adapter and a PC is connected to another. An HDTV file is stored in the SC101, and Media Player on the PC is used to play the HDTV file.

While the video file is being played, the PC user copies a large data file from the PC to the SC101 and from the SC101 to the PC. Without traffic prioritization, video playback could be delayed or interrupted.



Note: The SC101 uses UDP port 20001 for multimedia data transfers.

To adjust traffic prioritization for smooth playback for the application in the scenario:

1. Start the HDX111 configuration utility from the PC and wait for the utility to detect the Powerline HD Ethernet adapters connected to the computer.
2. Select the QoS tab.

1. Not included with the HDX111 Powerline HD Plus Ethernet Adapter.

- For this scenario, the SC101 provides the source port for the data transfer, and the media player provides the destination port. For this application, select the following options:
 - Select **UDP priority** and **UDP source port priority** in the Rule fields.
 - In the UDP Port **Item 1** field, type the SC101 UDP port number, **20001**.
 - If necessary, change the priority. The highest priority that you can assign is **6**, and the lowest is **1**.

The screenshot shows the 'QoS' configuration page in the Netgear HDX111 Configuration Utility. The page has a navigation bar with 'Main', 'Security', 'QoS', 'Diagnostics', and 'About'. Below the navigation bar is a heading 'Use this screen to setup QoS to improve the application performance of this HDX network.' The main content area is divided into two sections: 'Configure Advanced QoS Settings' and 'Apply Advanced QoS Settings'. In the 'Configure' section, the 'Rule' is set to 'UDP priority' and 'UDP source port priority'. Below this, there are six 'Item' fields for 'UDP Port' and 'Priority'. 'Item 1' for 'UDP Port' is set to '20001', and 'Item 1' for 'Priority' is set to '6(high)'. The 'Apply' section contains the text 'Apply the Advanced QoS Settings to all the HDX devices in this network.' and an 'Apply' button. The 'NETGEAR' logo is at the bottom left, and an 'Exit' button is at the bottom right.

Figure 2-15

- Click **Apply** so that your changes take effect for all Powerline HD Ethernet adapter devices.

Chapter 3

Troubleshooting

This chapter gives information about troubleshooting your HDX111 Powerline HD Plus Ethernet Adapter. After each problem description, instructions are provided to help you diagnose and solve the problem.

NETGEAR Product Registration, Support, and Documentation

Register your product at <http://www.netgear.com/register>. Registration is required before you can use our telephone support service.

When connected to the Internet, you can click the links on the *Resource CD* Welcome screen to view support information or and online documentation. Product updates and Web support are always available at: <http://www.netgear.com/support>.

Troubleshooting Tips

The following table provides troubleshooting tips.

Table 3-1. Troubleshooting Tips

Problem	Recommended Action
All lights on the Powerline HD Ethernet adapter are off.	Make sure that power is supplied to the electrical outlet, and that the Powerline device is not plugged into an extension cord, power strip, or surge protector.
The Ethernet light is not blinking.	There is no data traffic. Make sure that your router and modem are switched on, and that the blue Ethernet cable that came in the box is connected between the HDX111 port and a router LAN port. Verify whether a computer connected directly to the router can access the Internet.
The Status light is blinking red.	The devices cannot find each other. Make sure that all Powerline devices are plugged into outlets with power and that they use the same Powerline network ID (see " Securing Your Powerline Network " on page 1-7).

Table 3-1. Troubleshooting Tips (continued)

Problem	Recommended Action
After security is set up, the network does not work.	Replug all Powerline HD Plus Ethernet Adapters, and redo the steps in “Securing Your Powerline Network” on page 1-7 .
An appliance plugged in near the Powerline HD Plus Ethernet Adapter is affecting network performance.	Plug the appliance into the pass-through AC outlet of the Powerline HD Plus Ethernet Adapter if the power consumption of the appliance is 15A or less. The pass-through outlet filters out most of the noise that can impact Powerline performance.
The wireless mouse or wireless keyboard does not work correctly after installing the Powerline HD Plus Ethernet Adapter.	Use the HDX111 configuration utility to fix the problem. See “Wireless Mouse Interference” on page 2-8 .

Problems after Changing Network ID

If your Powerline devices stopped communicating after using the NETGEAR HDX111 Configuration Utility to change the network ID, proceed as follows:

1. Open the NETGEAR HDX111 Configuration Utility and select the **Security** tab.
2. Click each empty check box to select every device.
3. Click the **Use Default** button and then the **Set Selected Devices** button.
4. Select the **Main** tab, and check that the utility detects all the HDX111 devices in your Powerline network.
5. If the utility detected all your Powerline devices in step 4, examine the status of the check boxes on the Security tab.
 - a. Click each empty check box until a check mark is displayed for every device.
 - b. On the Security tab, type the Network ID you want to assign in the “Set Network ID” text box and click the **Set Selected Devices** button.
 - c. Select the Main tab, and click the Scan button. Check that the utility detects all your Powerline devices. If all devices are displayed, your network is ready to use. If the utility fails to detect all the devices, proceed with step 6.
6. If the utility does not detect all the devices, you will need to connect your computer to each Powerline device and set up the network ID one at a time, as follows:
 - a. Select the Security tab in the window displayed by the NETGEAR HDX111 Configuration Utility.

- b.** Click the check box to select the device.
- c.** Type the network ID that you want to assign in the **Set Network ID** field, and then click the **Set Selected Device** button.
- d.** Select the Main tab and click the **Scan** button. Check that the utility detects all the devices that have been individually set to the same network ID.

Appendix A

Technical Specifications

This appendix provides technical specifications for the HDX111 Powerline HD Plus Ethernet Adapter.

Network Protocol and Standards Compatibility

Data and routing protocols: IEEE 802.3 (10BASE-T), IEEE 802.3u (100BASE-Tx)

Power

Power consumption: 7 W

Physical Specifications

Dimensions: Height: 165.1mm
Width: 71.5 mm
Depth: 44.8 mm

Weight: 0.66 lbs. (0.3 kg)

Environmental Specifications

Operating temperature: 0° to 40° C (32° to 104° F)

Operating humidity: 10-90% maximum relative humidity, noncondensing

Storage humidity 5-95% maximum relative humidity, noncondensing

Security

Encryption type: DES/3DES

Bridge Performance

MAC addresses: 32

Bandwidth 200 Mbps

Powerline Performance

Compatibility: Not HomePlug v1.0 or HomePlug v1.0 Turbo compatible

Data transfer rate: Up to 200 Mbps with real throughput greater than 80 Mbps

Frequency band: 2-32 Mbps

Modulation type: OFDM symbol modulation

Electromagnetic Emissions

Meets requirements of: FCC Part 15 Class B; CE-EMC Class B; 3-home FCC Certificate

Safety Agency Approvals

Meets requirements of: UL Listed (UL 1950) /cUL IEC950
