

# WMP-A12

# 5GHz Wireless LAN mini PCI Card

User's Manual

First Edition (May, 2002)

6WMPA12...01

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#### Wichtige Sicherheitshinweise

- 1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
- 2. Heben Sie diese Anleitung für den spätern Gebr uch uf.
- 3. Vor jedem Reinigen ist d s Gerät vom Stromnetz zu trennen. Vervenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein ngefeuchtetes Tuch zur Reinigung.
- 4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugel ssen sind.
- 5. D s Gerät is vor Feuchtigkeit zu schützen.
- 6. Bei der Aufstellung des Gerätes ist uf sichern St nd zu chten. Ein Kippen oder F llen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere St ndorte und be chten Sie die Aufstellhinweise des Herstellers.
- Die Belüftungsöffnungen dienen zur Luftzirkul tion die d s Gerät vor Überhitzung schützt. Sorgen Sie d für, d ß diese Öffnungen nicht bgedeckt werden.
- 8. Be chten Sie beim Anschluß n d s Stromnetz die Anschlußwerte.
- 9. Die Netz nschlußsteckdose muß us Gründen der elektrischen Sicherheit einen Schutzleiterkont kt h ben.
- Verlegen Sie die Netz nschlußleitung so, d ß niem nd d rüber f llen k nn. Es sollete uch nichts uf der Leitung bgestellt werden.
- 11. Alle Hinweise und W rnungen die sich m Geräten befinden sind zu be chten.
- 12. Wird d s Gerät über einen längeren Zeitr um nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im F lle einer Übersp nnung eine Beschädigung vermieden.
- 13. Durch die Lüftungsöffnungen dürfen niem Is Gegenstände oder Flüssigkeiten in d s Gerät gel ngen. Dies könnte einen Br nd bzw. Elektrischen Schl g uslösen.
- 14. Öffnen Sie niem ls d s Gerät. D s Gerät d rf us Gründen der elektrischen Sicherheit nur von uthorisiertem Serviceperson 1 geöffnet werden.
- 15. Wenn folgende Situ tionen uftreten ist d s Gerät vom Stromnetz zu trennen und von einer qu lifizierten Servicestelle zu überprüfen:
  - Netzk bel oder Netzstecker sint beschädigt.
- b Flüssigkeit ist in d s Gerät eingedrungen.
- c D s Gerät w r Feuchtigkeit usgesetzt.
- d Wenn d s Gerät nicht der Bedienungs nleitung ensprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
- e D s Gerät ist gef llen und/oder d s Gehäuse ist beschädigt.
- f Wenn d s Gerät deutliche Anzeichen eines Defektes ufweist.
- 16. Bei Rep r turen dürfen nur rgin lers tzteile bzw. den rgin lteilen entsprechende Teile verwendet werden. Der Eins tz von ungeeigneten Ers tzteilen k nn eine weitere Beschädigung hervorrufen.
- Wenden Sie sich mit llen Fr gen die Service und Rep rtur betreffen n Ihren Servicep rtner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.

18. Zum Netz nschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden, Für einen Nennstrom bis 6A und einem Gerätegewicht großer 3kg ist eine Leitung nicht leichter Is H05VV-F, 3G, 0.75mm2 einzusetzen

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#### Hardware:

D-LINK WARRANTS EACH FITS HARDWARE PR DUCTS T BE FREE FR M DEFECTS IN W RKMANSHIP AND MATERIALS UNDER N RMAL USE AND SERVICE F R A PERI D C MMENCING N THE DATE F PURCHASE FR M D-LINK R ITS AUTH RIZED RESELLER AND EXTENDING F R THE LENGTH F TIME STIPULATED BY THE AUTH RIZED RESELLER R D-LINK BRANCH FFICE NEAREST T THE PLACE F PURCHASE. THIS WARRANTY APPLIES N THE C NDITI N THAT THE PR DUCT REGISTRATI N CARD IS FILLED UT AND RETURNED T A D-LINK FFICE WITHIN NINETY (90) DAYS F PURCHASE. A LIST F D-LINK FFICES IS PR VIDED AT THE BACK F THIS MANUAL, T GETHER WITH A C PY F THE REGISTRATI N CARD. IF THE PR DUCT PR VES DEFECTIVE WITHIN THE APPLICABLE WARRANTY PERI D, D-LINK WILL PR VIDE REPAIR R REPLACEMENT F THE PR DUCT. D-LINK SHALL HAVE THE S LE DISCRETI N WHETHER T REPAIR

R REPLACE, AND REPLACEMENT PR DUCT MAY BE NEW R REC NDITI NED. REPLACEMENT PR DUCT SHALL BE FEQUIVALENT R BETTER SPECIFICATI NS, RELATIVE T THE DEFECTIVE PR DUCT, BUT NEED N T BE IDENTICAL. ANY PR DUCT R PART REPAIRED BY D-LINK PURSUANT T THIS WARRANTY SHALL HAVE A WARRANTY PERI D F N T LESS THAN 90 DAYS, FR M DATE F SUCH REPAIR, IRRESPECTIVE F ANY EARLIER EXPIRATI N F RIGINAL WARRANTY PERI D. WHEN D-LINK PR VIDES REPLACEMENT, THEN THE DEFECTIVE PR DUCT BEC MES THE PR PERTY F D-LINK.

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ANY PACKAGE RETURNED T D-LINK WITH UT AN RMA NUMBER WILL BE REJECTED AND SHIPPED BACK T PURCHASER AT PURCHASER'S EXPENSE, AND D-LINK RESERVES THE RIGHT IN SUCH A CASE T LEVY A REAS NABLE HANDLING CHARGE IN ADDITI N MAILING R SHIPPING C STS.

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#### FCC Warning

This device complies with 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with 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 can be determined by turning 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 and receiver.
- → Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- → Consult the dealer or an experienced radio/TV technician for help.

#### **RF Exposure Requirements**

To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in this user guide.

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the 2 conditions above are met, further <u>transmitter</u> testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

**IMPORTANT NOTE:** In the event that these conditions <u>can not be met</u> (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID <u>can not</u> be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and Obtaining a separate FCC authorization.

This product limit antenna type to use KWF-144-120 ,KWF-613C-120 and KN-813A-120-1

#### End Product Labelling

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ASDL modems, and similar equipment). The final end product must be labeled in a visible area with the following: " Contains TX FCC ID: KA22002020012-1 ".

#### Manual Information That Must be Included

The users manual for end users must include the following information in a prominent location " IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

#### **CE Mark Warning**

This is a Class B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

#### VCCI Class B Warning

この装置は、情報処理装置等電波障害自主規制協議会(VCCI) の基準に基づくクラスB 情報技術装置です。この装置は、家庭 環境で使用することを目的としていますが、この装置がラジオ やテレビジョン受信機に近接して使用されると、受信障害を引 き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

#### Remark :

The module has been passed the module approval testing by FCC. It's can only used with the antenna that we tested in other system. The host system should have a label on the outside that shows the module's FCC ID.

#### Notices

**NOTE:** This message denotes neutral or positive information that calls out important points to the text. A note provides information that may apply only in special cases.

**CAUTION:** Cautions call special attention to hazards that can cause system damage or data corruption, to a lesser degree than warnings.

**WARNING:** Warnings call special attention to hazards that can cause system damage, data corruption, personal injury, or death.

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# Preface

This user's guide provides the necessary information for first-time users to successfully install the D-Link Network Driver Interface Specification (NDIS) driver, for the purpose of evaluating and/or operating the D-Link WMP-A12 Station Reference Design in a Microsoft Windows environment. This guide also provides information for users who wish to upgrade the D-Link NDIS driver from previous releases.

This guide describes the steps required to install NDIS drivers for the D-Link WMP-A12 Wireless Network mini PCI Card in Windows 2000, Windows Millennium Edition, Windows 98 Second Edition, Windows XP, and Windows NT 4.0. This guide also includes detailed instructions for configuring the PC Card device, or IEEE 802.11a station (STA), to interact with an access point (AP) in infrastructure mode and with other STAs in ad hoc mode. Instructions for installing or upgrading the diagnostic utility LinkMon are also included. You should also read this before proceeding to install the D-Link WMP-A12 Wireless Network mini PCI Card and NDIS driver in the targeted operating system (OS) environment.

## **About this Document**

The document consists of the following chapters and appendixes:

Chapter 1	Introduction—Hardware, Software, and System Requirements needed to setup D-Link WMP-A12 Station Reference Design.
Chapter 2	<b>Windows 2000</b> —Installation/Uninstallation Procedures and Device/Network Configurations for Windows 2000.
Chapter 3	<b>Windows Millennium Edition</b> —Installation/Uninstallation Procedures and Device/Network Configurations for Windows Millennium Edition.
Chapter 4	Windows 98 Second Edition—Installation/Uninstallation Procedures and Device/Network Configurations for Windows 98 Second Edition.
Chapter 5	<b>Windows XP</b> —Installation/Uninstallation Procedures and Device/Network Configurations for Windows XP.

Chapter 6	<b>Windows NT 4.0</b> —Installation/Uninstallation Procedures and Device/Network Configurations for Windows NT 4.0.
Chapter 7	<b>LinkMon</b> —Graphical User Interface for Operational Status and Statistics of D-Link WMP-A12 Station Reference Design.
Chapter 8	<b>RFSilent</b> —RFSilent application that allows you to enable or disable the RF Signal (radio) on all D-Link STA Reference Designs.
Chapter 9	<b>Country Code Selector</b> —Utility for selecting countries' regulatory domains, FCC (USA and Canada) and TELEC (Japan).
Chapter 10	<b>Troubleshooting</b> —Hints on fixing common Installation/Uninstallation and Device/Network Configurations issues.

## **Audience**

This document is intended for D-Link customers who wish to install and evaluate the D-Link WMP-A12 Station Reference Design in the supported Microsoft Windows environments.

## **Additional Resources**

D-Link STA Reference Design hardware, software, and documentation contain proprietary information of D-Link Communications, Inc., and are provided under a license agreement containing restrictions on use and disclosure, and are also protected by copyright law. Reverse engineering of this hardware, software, or documentation is prohibited.

The following resources should be referenced regarding topics that are not addressed in this document:

- AR5111 Radio-on-a-Chip for 5-GHz Wireless LANs data sheet
- AR5211 MAC/Baseband Processor for IEEE 802.11a 5-GHz Wireless LAN data sheet
- AP User's Guide
- STA Reference Design Functional Specification

# 1 Introduction

The D-Link WMP-A12 Wireless Network mini PCI Card is an IEEE 802.11a twochip solution reference design based on the Atheros AR5111 and AR5211 chipset. This reference design implements a half-duplex, Orthogonal Frequency Division Multiplexing (OFDM) baseband processor supporting all IEEE 802.11a data rates (6 to 54 Mbps). It also supports the D-Link Turbo Mode<sup>™</sup> supporting data rates up to 108 Mbps. The host interface is compatible with the PC Card 7.1 standard. You can find information regarding the D-Link Station Reference Designs in the detailed *D-Link STA Reference Design Functional Specification*.

### **Package Contents**

Make sure the following materials are available before you begin:

- One 802.11a PCI Card
- One Installation CD-ROM containing software and utilities and this user's guide
- One 802.11a PCI Card Quick Start Guide
- One warranty registration card

## **System Requirements**

• A computer that meets the following specifications:

-Windows 2000, Windows ME, or Windows 98SE

- PCI expansion slot
- At least 64 MB of memory
- A 300 MHz processor or higher
- At least one other IEEE 802.11a-compliant device

### **Hardware Installation**

Follow these steps to install the 802.11a PCI Card in a computer's PCI slot:

- 1. Turn off your computer and unplug its power cord from the wall outlet for safety purposes.
- 2. Remove the computer cover.
- Locate an unused PCI slot and refer to your PC 's manual for instructions on how to remove the plate that covers the slot (if applicable).
- 4. Align the Harmony 802.11a PCI Card over the empty slot.
- 5. Firmly insert the card into the slot, as illustrated below.
- 6. Secure the card's metal bracket to the computer following the directions provided in your PC's manual.
- 7. Replace the computer cover.
- 8. Plug the computer's power cord back into the wall outlet.
- 9. Place the antenna with the longer cable on top of your desk, computer, or monitor.

10. Turn on the computer.

# 2 Windows 2000

## **Driver Installation (First-time Install)**

Insert the D-Link WMP-A12 Wireless Network mini PCI Card into a 32-bit CardBus slot and follow these steps to install the NDIS driver:

1. Wait for	or the f	ollowing	dialog	box to	o display,	and	click	Next to	continue.
-------------	----------	----------	--------	--------	------------	-----	-------	---------	-----------

Found New Hardware Wizard	
	Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device.
	< Beck Cancel

2. Choose "Search for a suitable driver for my device (recommended)," and click Next.

Found New Hardware Wizard
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next. What do you want the wizard to do?
<ul> <li>Search for a suitable driver for my device (recommended)</li> <li>Display a list of the known drivers for this device so that I can choose a specific driver</li> </ul>
< Back Next > Cancel

3. Insert the installation CD in your CD-ROM drive. Choose "Specify a location" under "Optional search locations," and click Next to continue.



4. Browse to the location where the NDIS driver is located (assuming D is the CD-ROM drive), the default folder is D:\ndis\bin\production\ndis5. Click OK to continue.

Found Net	# Hardware Wizard	×	1
Ţ	Insert the manufacturer's installation disk into the drive selected, and then click DK.	OK Cancel	
	Copy manufacturer's files from: D:\ndis\bin\production\ndis5	Biowse	

5. When you find the D-Link driver installation file (net5210b.inf), click Next to continue.



6. The D-Link NDIS evaluation driver currently does not have a digital signature from Microsoft. Therefore, Windows 2000 shows a warning message. Click Yes to proceed with driver installation.

Digital Signature Not For	ind	×
•	The Microsoft digital signature affirms that software has been tested with Windows and that the software has no been altered since it was tested.	R
	The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.	1
	Atheros AR5000 Wireless Network Adapter	
	If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.	
	Do you want to continue the installation?	
	Yes No More Info	

7. Click Finish to complete the driver installation. See Section "Device Configuration" for the device configuration.

Found New Hardware Wizard	
	Completing the Found New Hardware Wizard Atheros AR5000 Wireless Network Adapter Windows has finished installing the software for this device. To close this wized, click Finish.
	< Back Finish Centrel

## **Driver Installation (Previous Driver Installed)**

If the system already has a previous release of the D-Link NDIS installed, Windows does not prompt for the device driver when the WLAN Card is inserted. Follow the steps below to update the NDIS driver:

1. Start System Properties from Control Panel. Under Hardware tab, click Device Manager.

System Properties	×		
General Network Identification Hardware User Profiles Advanced			
Hardware Wizard			
unplug, eject, and configure your hardware.			
Hardware Wicard			
Device Manager			
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.			
Driver Signing Device Manager	I		
Hardware Profiles	I		
Handware profiles provide a way for you to set up and store different hardware configurations.			
Hardware Ptofiles			
DK Cancel Apply	j		

2. Within Device Manager, right-click "D-Link WMP-A12 Wireless Network mini PCI Card" under "Network adapters" device node, and click Properties.



3. Click "Update Driver..." from the Driver tab. Note the Driver Version that you are updating from. You may need to verify this field again after driver update completes to make sure Release 1.3 driver has been updated correctly.

Atheros A	R5000 Wireless	Network Adapter Properties 🔹 🙎	×	
General	General Advanced Settings Driver Resources			
<b>#</b>	Atheros AR5000	Wineless Network Adapter		
	Driver Provider:	Afhetos		
	Driver Date:	Not available		
	Driver Version:	1.2.0.3		
	Digital Signer:	Not digitally signed		
To view Details. the driv	v details about the d To uninstall the driv ar files for this devic Driver Details	triver files loaded for this device, click Driver ver files for this device, click Uninstall. To update a. click Update Driver.		
		Close Canod		

4. Click Next to continue.



5. Choose "Display a list of the known drivers for this device so that I can choose a specific driver," and click Next to continue.

Upgrade Device Driver Wizard			
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.			
This wizard upgrades drivers for the following hardware device:			
Atheros AR5000 Wireless Network Adapter			
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.			
What do you want the wizard to do?			
Search for a suitable driver for my device (recommended)			
<ul> <li>Display a list of the known drivers for this device so that I can choose a specific driver</li> </ul>			
< <u>B</u> ack <u>N</u> ext > Cancel			

6. Insert the Release 1.3 CD into your CD-ROM drive. Click "Have Disk..." to continue.

Upgrade Device Driver Wizard	
Select Network Adapter Which network adapter do you want to in	stal?
Click the Network Adapter that matche installation disk for this component, click	s your hardware, then click DK. If you have an & Have Disk.
Network Adapter: Afneros AR5000 Wireless Network Adapter	
Show competible hardware     Show all hardware of this device class	Have Disk,
	< <u>B</u> ack Newt> Cancel

 Browse to the location where the NDIS driver is located (assuming D is the CD-ROM drive), the default folder is "D:\ndis\bin\production\ndis5". Click OK to continue.

Install Fro	m Disk	×
2	Insert the manufacturer's installation disk into the drive selected, and then click DK.	OK Cancel
	Copy manufacturer's files from: D:\ndis\bin\production\ndis5	Blowse

8. Select "D-Link WMP-A12 Wireless Network mini PCI Card" from the list and click Next to continue.

Upgrade	Device Driver Wizard			
Sele	ct Network Adapter Which network adapter do you want to ins	all?		
HR)	Click the Network Adapter that matches installation disk for this component, click	your hardware, th Have Disk,	en click OK. If y	ou have an
Network Atheno	: Adepter: :: AR5000 Wireless Network Adapter			
				Have Disk
		< <u>B</u> ack	<u>N</u> ext >	Cancel

9. Click Yes to continue when Windows displays the warning message.



10. Click Next to proceed with installation.



11. The D-Link NDIS evaluation driver currently does not have a digital signature from Microsoft. Therefore, Windows 2000 shows a warning message. Click Yes to proceed with driver installation.



#### 12. Click Finish.



13. Note that Driver Version should display 1.3 as the major revision number. Click OK to continue.

Atheros A	R5000 Wireless	Network Adapter Properties 🛛 🙎 🗙	
General Advanced Settings Driver Resources			
<b>H</b>	Atheros AR5000 Wireless Network Adapter		
	Driver Provider:	Atheros	
	Driver Date:	Not available	
	Driver Version:	1.3.0.0	
	Digital Signer:	Not digitally signed	
To view Details the driv	v details about the d To uninstall the driver ar files for this device Driver Details	tiver files loaded for this device, click Driver ren files for this device, click Uninstall. To update e, click Update Driver.	
		0K Cancel	
14. Click Yes to restart system.



15. After system restarts, the "D-Link WMP-A12 Wireless Network mini PCI Card" now displays under "Network adapters" in the Device Manager. Proceed to Section "Device Configuration" for device configuration information.



## **Driver Uninstallation**

This section provides information about uninstallation procedures required for upgrading the NDIS driver from previous D-Link software releases. If the system does not have previously installed versions of the NDIS driver and you wish to remove the newly installed driver from the system, proceed to Step 4.

The NDIS driver since Release 1.0 no longer leverages the Transport Driver Interface (TDI) protocol to provide the LinkMon programming interface. The TDI protocol should be uninstalled. Follow these steps to uninstall the TDI protocol:

1. To remove the NDIS driver from the OS, go to Device Manager, rightclick "D-Link WMP-A12 Wireless Network mini PCI Card," and choose Uninstall.



2. Click OK to uninstall the device.



3. When the device is uninstalled from Device Manager, search for and delete the driver files that reside in the system. To do so, go to the Start menu and choose Search For Files or Folders..., enter "oem\*.inf" in the "Search for files or folders named:" field, and enter "D-Link" in the "Containing text:" field. Click Search Now. A few files matching these criteria are possible, if previous drivers have not been removed properly. Choose the files that have been found and delete them from the system.

A beart levels			_ D X
Pho Dill own Riccolve Unit 1	State of the second second		12
Addess () Search Res.As	Fallers Gestary & Q X 27 []-		कर्ष 🖭
ann e	* Second and Second an	61	
(a) Search for Files and Folders Search for files or hilden named	Search Results Notive State 12/2001 6:48	. gan	
peer' int	Same To Patter	Labora	Sea Terra
Contering Hell Artance	Buedler CINTERTON	a contract of	1318 Setup Deformation
Look in	Candlere File Delate	×	
Sound New Trapilitions	The life beneficial' is a result with file, doe you to it to the Decycle Ber	are you want to have	
Leady to offset kenz Braux Soldton Clegariest Finade	he	<b>_</b>	
kowat			
	14		<u>.</u>
Type: Setup Triumation Spec 12.5 KD			

4. To complete the uninstallation, "ar5210b.sys" should also be removed from the "\WINNT\system32\drivers" folder.

🔁 drivers				_ <b>_ _ _</b> ×
File Edit Wew Favorites T	ools Help			1
l d= Back + ⇒ + 🖬 🔞 Searc	h 🗄 Folders 🎯 Histo	ry l≌ ≌ X	2) II-	
Address 🗋 drivers				• @@
	Name 7	Size	Туре	M
	🚞 disdn		File Folder	8,
Baseline of the second s	etc		File Folder	8,
drivers	🔊 acpi.sys	160 KB	System file	7.
	acpiec.sys	12 KB	System file	7,
ar5210b.sys	🔊 afd.sys	120 KB	System file	7,
System file	AGP440.SY5	21 KB	System file	9,
Modified: 11/2/2001 6:48 AM	📤 ar5210b.sys	193 KB	System file	1
	asyncmac.sys	17 KB	System file	7,
Size: 192 KB	🔊 atapi.sys	84 KB	System file	7,
Attributes: Read-only	🔊 atmarpc.sys	57 KB	System file	7,
	N atmiane.svs	48 KB	System file	7,
Confirm File Delete			×	7,
The file 'ar52 move it to th	210b.sys' is a read-only file le Recycle Bin?	. Are you sure you v	vank to	9, 7, 7, 7, 7,
	inemst2.sys	<u>ў</u> ея 267 КВ	No System file	4, 4, 7, 7,
Type: System file Size: 192 KB	<u> </u>	192 KB	Ry Compub	8

## **Device Configuration**

Configuration of the D-Link WMP-A12 Wireless Network mini PCI Card can be done through the Network Control Panel (NCP) in adapter properties. You can set the Wireless Network mini PCI Card to work in one of two modes, either infrastructure mode (which leverages an AP) or ad hoc mode (which consists of a group of stations participating in the WLAN).

In infrastructure mode, the Wireless Network mini PCI Card participates in a basic service set (BSS) as a station, and communicates with the other stations through an AP, as illustrated in Figure 2-1.



Figure 2-1. Infrastructure Mode

In ad hoc mode, a Wireless Network mini PCI Card works within an independent basic service set (IBSS), as illustrated in Figure 2-2. All stations communicate directly with other stations without an AP.



Figure 2-2. Ad Hoc Mode

To configure the WMP-A12 Wireless Network mini PCI Card:

1. In the Device Manager, right-click "D-Link WMP-A12 Wireless Network mini PCI Card," and click Properties to access the properties of the adapter.



 Configuration additions, modifications, and deletions are made under the "Settings" tab of the "D-Link WMP-A12 Wireless Network mini PCI Card" properties.

Atheros AR5000 Wireless Network Adapter Properties	? ×
General Advanced Settings Driver Resources	-
Configuration List           Default         New           Modify         Modify	
Delete           Selected Configuration Details           Network Name (SSID): cemptyo           Network Connection: AP (Infrastructure)           Turbo Mode :         Disabled           Power Saving:         Normal           Locally Admin. Address:         Not Used           Data Security:         Disabled	
OK Cano	e

- 3. Select one of the configurations under the configuration list, and click Modify to show the "Network Configuration Settings" screen. This property sheet has two pages: General and Security. The General page has the following fields:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
  - Network Name (SSID): This is the name of the IEEE 802.11a wireless network, for example, "D-Link 802.11a Wireless Network." This field has a maximum limit of 32 characters.
  - Network Connection: This field defines whether the STA is configured for an ad hoc or infrastructure network.

- Power Saving: This field allows the configuration of power management options. The options are Off, Normal, and Maximum. Power management is disabled when ad hoc mode is selected in the Network Connection field. When the Power Saving setting is Off, the adapter receives full power from the PC. When the Power Saving setting is Normal, the driver turns off power to the adapter for brief periods over briefly-spaced time intervals. When the Power Saving setting is Maximum, the driver turns off power to the adapter for longer periods over more widely-spaced time intervals.
- Turbo Mode: This field enables or disables D-Link turbo mode.
- Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected. Typically, an LAA is not required, because the driver automatically loads a unique, globally administered address from the EEPROM.

Network Configuration Settings	<u>? ×</u>
General Security	
Configuration Name: Home	
Network Name (SSID): My Home Network	
Network Connection: AP (Infrastructure)	
Power Saving: Normal	
Turbo Mode: Disable	
Locally Administered Address: [Hex 0-9 A-F]	
ОК С	incel

- 4. The next tab on this property sheet allows for the selection of security features. The fields on this page are as follows:
  - Enable Security: This field completely enables or disables the IEEE 802.11 wired equivalent privacy (WEP) security feature.
  - Default Encryption Key: This field defines the type of encryption key to use (either Unique Key or Shared Keys). This field allows you to select only a key (Unique, First, Second, Third, or Fourth) whose corresponding field has been completed.

- Unique Key: This field defines the unique encryption key for security for the current network configuration. In ad hoc mode, this encryption key type is not used. To enable security using a Unique Key, this field must be populated.
- Shared Keys: These fields define a set of shared encryption keys. To enable security using Shared Keys, at least one Shared Key field must be populated.
- Key Length: This field defines the length for each encryption key. As the Key Length is changed, the number of available characters in the field is changed automatically. If after a key is entered the length is adjusted to a smaller number, the key is automatically truncated to fit. If the length is increased again, the field is not automatically updated to its previous value.

Network Configu	ration Settings		? ×
General Securi	v		
🔽 Enable Secu	nity Default Encryption Key:	First	
Encryption Key	ns (Hex 0-9 A-F)	Key Length (bits):	
Unique Key:		64 (40+24) 10 hex digits	3
Shared Keys:			
Fint	EXCELORIZATION CONTRACTOR OF C	64 (40+24) 10 hex digits	3
Second		152 (128+24) 32 hex digits	3
Third:		128 (104+24) 26 hex digits	3
Fourth:	EXCENSIONEX	64 (40+24) 10 hex digits	3
		OK Cano	el

All encryption key fields are displayed only when initially entered. On subsequent entry into the security property page, the fields are masked. The keys must be entered as hexadecimal digits.

### Infrastructure Mode

To configure an D-Link WMP-A12 Wireless Network mini PCI Card in infrastructure mode:

1. Ensure that the "Locally Administered Address" checkbox is unchecked.

Network Configuration Settings	? ×
General Security	
Configuration Name: OFFICE	
Network Name (SSID): NET1	
Network Connection: AP (Infrastructure)	
Power Saving	
Tutbo Mode: Disable	
Locally Administered Address: [Hex 0-9 A-F]	
ОК С	ancel

- 2. Choose the following settings:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
  - Network Name (SSID): This is the name of the IEEE 802.11a wireless network, for example, "D-Link 802.11a Wireless Network." This field has a maximum limit of 32 characters. If this field is left blank, the STA connects to the AP with the best signal strength.
  - Network Connection: AP (infrastructure).
  - Power Saving: This field allows the configuration of power management options. The options are Off, Normal, and Maximum.
  - Turbo Mode: This field enables or disables D-Link turbo mode.
  - Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected.

Usually infrastructure mode is used in an enterprise environment where APs are installed and maintained by corporate IT staff. Much of the data in the enterprise network is confidential. It is important to configure security to make sure only stations with appropriate keys can receive sensitive data. The D-Link WMP-A12 Wireless Network mini PCI Card and NDIS driver support key lengths of 40 bits, 104 bits, and 128 bits. Typically, the appropriate encryption and decryption keys are supplied by the corporate IT staff.

#### Ad Hoc Mode

An ad hoc network usually is a short-lived network with a small number of stations. The network is usually created for a special purpose such as exchanging data between friends, or between customer and client. Because the duration of the ad hoc network tends to be limited, Power Saving and Security features are not typically a requirement. For ad hoc network activity, the Power Saving and Security features can be disabled. Currently, shared key security is supported in ad hoc mode. Future D-Link software implementations will provide unique key support.

In ad hoc mode, a station scans the air for an existing BSS. If no BSS is found, the station establishes a BSS for other stations to join. When other stations scan the air and find an established BSS in place, they join that BSS to form an ad hoc network. If a specific set of stations requires ad hoc network connectivity, it is recommended to have one station establish a BSS first before configuring the remaining stations. This prevents the scenario of several stations trying to form a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple stations.

- Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
- Network Name (SSID): A Network Name is <u>mandatory</u> for ad hoc mode. The SSID for all stations in a single ad hoc network <u>must</u> be the same.
- Network Connection: Ad Hoc.
- Power Saving: Power saving mode is not currently supported in an ad hoc network.
- Turbo Mode: All stations participating in the ad hoc network must have the same rate setting.
- Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected.

Network Configuration Settings	<u>? ×</u>
General Security	
Configuration Name: AD-HDC	_
Network Name (SSID): FRIEND	_
Network Connection: Ad Hoe	
Power Saving:	<u>×</u>
Turbo Mode: Disable	-
Locally Administered Address: (Hex 0-9 A-F)	
[	OK Cancel

### **TCP/IP Setup**

After configuring the D-Link WMP-A12 Wireless Network mini PCI Card through the Network Control Panel, the TCP/IP address for the network device must be configured.

- 1. Open the "Control Panel" and click "Network and Dial-up Connections."
- 2. Find the "Local Area Connection" that is associated with the D-Link WMP-A12 Wireless Network mini PCI Card. Right-click that connection, and click Properties.

🔁 Network and Dial-up (	onnections			
File Edit View Fav	orites Tools Advanced Hel	p		19
$] \in Back + \Rightarrow + \boxed{\bullet}$	@Search ≧Folders (@He	tory 喧喧X x9 [		
Address 😰 Network and	Dial-up Connections			• 🗟
Name	T Status	Device Name	Owner	
Make New Connection Local Area Connection Local Area Connection Z	LAN Enabled I AN Network cable implugged Disable Status Create Shortcut Distate Rename Properties	Intel(R) PRO/100 SP Mo Atheros AR5000 Wireles	System System	
•				
🛃 Displays the properties of	f the selected connection.			

3. Select "Internet Protocol (TCP/IP)" and click Properties.

Local Area Connection 2 Properties	? ×
General Sharing	
Connect using:	
Atheros AR5000 Wireless Network Adapter	
Configure	וב
Components checked are used by this connection:	- 1
Elient for Microsoft Networks     Softwark Enhancer     Softwark Enhancer     Softwark Enhancer     Softwark Printer Sharing for Microsoft Networks     Softwark Protocol (TCP/IP)	
Instal Uninstall Properties	
Description	- I
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Show icon in taskbar when connected	
OK. Cance	el 🛛

- 4. Click "Use the following IP address" and input an IP address and Subnet mask. Assigning an IP address and Subnet mask allows stations to operate in infrastructure mode and to have Internet access. "Default gateway" and "DNS server" information is also required. IP configuration information (DHCP or assigned IP address, Gateway and DNS server IP addresses) is usually obtained from the corporate IT staff.
- 5. After obtaining IP configuration information from the appropriate IT staff, click OK in both "Internet Protocol (TCP/IP) Properties" and "Local Area Connection Properties" to complete the IP configuration.

Internet Protocol (TCP/IP) Prope	rties 🙎 🕺
General	
You can get IP settings assigned a this capability. Otherwise, you need the appropriate IP settings.	utomatically if your network supports to ask your network administrator for
Use the following IP address:	n.ay
JP address:	192.168.1.21
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	
C Obtain DNS server address a	utomatically
Use the following DNS server	addresses:
Eneferred DNS server:	
Alternate DNS server:	
	Adyanced
	OK Cancel

6. Choose Start > Programs > Accessories > Command Prompt to open the DOS command prompt window. Type "ipconfig" at the C:\> prompt to determine if the TCP/IP configuration has taken effect. To test IP connectivity in ad hoc or infrastructure mode, use the "ping <ipaddress>" command. When a TCP/IP connection is established, the LinkMon utility (See Chapter 7) can be used to monitor the D-Link WMP-A12 Wireless Network mini PCI Card operating status.

C-W0901/System32/conduse	2012
C:>>ipconfiy	-
Vindous 2000 1P Configuration	
Ethernet adapter Local Area Connection 2:	
Connection-specific IME Suffix . : IP Redrezz	
C:\)ping 192.168.1.28	
Pinging 192.168.1.20 with 32 bytes of data:	
Reply from 192,158,1.20: bytes-32 time(10ms TTL-128 Reply from 192,158,1.20: bytes-32 time(10ms TTL-128 Reply from 192,158,1.20: bytes-32 time(10ms TTL-128 Reply from 192,158,1.20: bytes-32 time(10ms TTL-128	
Ping statistics Far 192.168.1.20: Packets: Sent = 4, Received = 4, Lost = 8 (8x loss), Approximate round trip times in milli-occonds: Minimum = Buz, Maximum = Dmz, Average = Ums	
C:-\)_	

7. To map the drive on another machine to your computer, right-click "My Computer" and click "Map Network Drive...."

My Docum	ents Hummingbird Microsoft Outlook Connectivity V7.0
	N 🔊
My Comp	Open Explore Search Manage
My Netv Place	Map Network Drive Insuexe Disconnect Network Drive
6	Create Shortcut Rename
Recycle	Properties
Internet Ex	plorer Adobe Photoshop a-ftp.exe

8. After mapping the drive, you can perform file transfers, use video streaming applications, and all other network data transfers that are normally performed with wired 10/100 Ethernet connections.



# **3** Windows Millennium Edition

## **Driver Installation**

D-Link recommends that you remove any existing D-Link NDIS driver on the PC system before installing new Version of the NDIS driver. See Section "Driver Uninstallation" on page 3-5 for the instructions on how to remove previous driver releases. When the system no longer has the D-Link NDIS driver installed, insert the WMP-A12 Wireless Network mini PCI Card into a 32-bit CardBus slot, and follow these steps to install the NDIS driver:

1. Wait for the following dialog box to appear. Choose "Specify the location of the driver (Advanced)," and click Next to continue.

Add New Hardware Wiz	ard
	Windows has found the following new hardware: PCI Ethemet Controller Windows can automatically search for and install software that supports your hardware. If your hardware came with installation media, insert it now and click Next. What would you like to do? Automatic search for a better driver [Recommended] C Specify the location of the driver [Advanced]
	<⊞etk Next> Cancel

 Choose "Search for the best driver for your device. (Recommended)" and select "Specify a location." Click Browse to locate the NDIS driver. The default folder is "E:\ndis\bin\production\ndis5" (assuming E: is the CD-ROM drive). Click Next to continue.



3. When the D-Link driver installation file (NET5210B.INF) has been found, click Next to continue.



4. Click Finish to continue, and restart the system to complete driver installation. Refer to Section "Device Configuration" on page 3-7 for device configuration.



## **Driver Uninstallation**

This section provides uninstallation procedures for removing the D-Link NDIS driver from the system. Uninstallation is recommended for upgrading the NDIS driver from previous D-Link driver releases.

 To remove the NDIS driver from the OS, go to Start > Search > For Files or Folders..., and search for the INF file containing the "D-Link" text string under the \WINDOWS\INF folder. Be sure to include subfolders in the search criteria. When "D-Linknet5210b.inf" has been found, delete it by right-clicking the file and choose Delete.

Steen D Standy Parate	foton (jinaoy -	a-axin Dr		2.00
ant (per @ ). Search for Files and Folders	Search Br	Athenesed In Filter (1) Size (1)420 Methed 7/2	2104 M VINCONS WEIGHTER VINCONS WEIGHTER VINCONS SCATTON	
nach ta lles a blains saged af				
training lost	Barri	in Date:	Ten I Type	Huffer
Ten:	- Charles	C/WIEGE/SIMP/G	THEN 1718 Sena Internation	7/5/2001 5:04 9
A A	() and	A. 10 - 10 - 10		
t'waterial	E++			
and the Designed	Point of Concession			
	Tran In			
C. U.Ma	(Case)			
E Type				
E Sp	Dade Dods	A		
E gan E Tige E Sige E Advanced gaters	Date Posts	*		

2. From Control Panel, launch the System Properties window. Select "D-Link WMP-A12 Wireless Network mini PCI Card" from Device Manager, and click Remove to uninstall the device.

System Properties	? ×
General Device Manager Hardware Profiles Performance	
- Inserved reconstruction	- 1
View devices by type View devices by gonnection	
Computer  CDROM  CDROM  Disk drives  Hard disk controllers  Hard disk controllers  Keyboard  Ke	-
Modem     Monitors     Monitors     Mouse	
Properties Refresh Remove Prigt.	
OK C	Cancel

3. Click OK to confirm the removal of the device. Restart the system to complete un-installation.



## **Device Configuration**

Configuration of the D-Link WMP-A12 Wireless Network mini PCI Card can be done through the D-Link NIC Configuration utility found in the Windows Control Panel. Similar to Windows 2000, the device can be set to work in one of two modes: infrastructure mode or ad hoc mode. Please refer to Section "Device Configuration" beginning on page 2-17 for more details on these network connection types.

To launch the configuration utility, go to Control Panel and double-click on the D-Link NIC Configuration icon.



The configuration utility allows addition, modification, and deletion of the configuration profiles. Select one of the existing configuration profiles under the configuration list to modify, or click New to add a new configuration profile. Follow Section "Infrastructure Mode" on page 3-9 and Section "Ad Hoc Mode" on page 3-10 to set up the station to work in infrastructure mode and ad hoc mode.

Atheros NIC Configur	ation		î×
Network Card:	[0003]Afreios AR5000	Wireless Network Adapte	
Selected Configuration:	Default		
Configuration List			
Detaut			New
		M	odify
			Delete
-Selected Configuration	n Details		
Network Name (SSI Network Connection	D): <empty> χ AP (Infrastructure)</empty>		
Turbo Mode : Power Management	Disabled Normal		
Locally Admin. Addr Data Security:	ess: NotUsed Disabled		
		OK	Cancel

#### Infrastructure Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in infrastructure mode. See Section "Device Configuration" beginning on page 2-17 for detailed descriptions of each option in the Network Configuration Settings.

- 1. Under the "General" tab, make sure the "Locally Administered Address" checkbox is unchecked. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
  - Network Name (SSID): This is the name of the IEEE 802.11a wireless network. This field has a maximum limit of 32 characters. If this field is left blank, the STA connects to the AP with the best signal strength.
  - Network Connection: AP (Infrastructure)
  - Power Saving: This field allows the configuration of power management options. The options are Off, Normal, and Maximum.
  - Turbo Mode: This field enables or disables D-Link turbo mode.

Network Configuration Settings			<u>? x</u>
General Security			
Configuration Name:	ALPHA_1		_
Network Name (SSID)	ALPHA1		_
Network Connection:	AP (Infrastructure)		
Power Saving:	Normal		•
Turbo Mode:	Disable		•
Locally Administered Address: (Hex 0-9 A-F)			
		0	K Cancel

2. Usually, infrastructure mode is used in an enterprise environment where APs are installed and maintained by corporate IT staff. Much of the data in the enterprise network is confidential. It is important to configure security to make sure only stations with appropriate keys can receive sensitive data. The D-Link WMP-A12 Wireless Network mini PCI Card and NDIS driver support key lengths of 40 bits, 104 bits and 128 bits. Typically, the appropriate encryption and decryption keys are supplied by the corporate IT staff.

Network Configu	ration Settings	<u>? ×</u>
General Securit	V	
Enable Secu	Default Encryption Key:	Unique
an any power may	·	Key Length (bits):
Unique Key:	61 10 10 10 10 10 10 10 10 10 10 10 10 10	54 (40+24) 10 hex digits 💌
Shared Keys:		
First	EXCENDARX	64 (40+24) 10 hex digits 💌
Second	A	152 (128+24) 32 hex digits 💌
Third:		128 (104+24) 26 hex digits 💌
Fourth:	EXEMPTION CONTRACTOR	64 (40+24) 10 hex digits 💌
		OK Cancel

#### Ad Hoc Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in ad hoc or IBSS mode. See Section "Ad Hoc Mode" on page 2-23 for descriptions of ad hoc operation.

- Similar to the set-up of AP Infrastructure mode described in the previous section, ad hoc mode is also configured by changing the options in the Network Configuration Settings of the D-Link NIC Configuration utility. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
  - Network Name (SSID): A Network Name is mandatory for ad hoc mode. The SSID for all stations in a single ad hoc network must be the same.
  - Network Connection: Ad Hoc.

- Power Saving: Power saving mode is not currently supported in an ad hoc network.
- Turbo Mode: All stations participating in the ad hoc network must have the same rate setting.
- Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected.

Network Configuration Settings	<u>? ×</u>
General Security	
Configuration Name: ALPHA_2	
Network Name (SSID): ALPHA2	
Network Connection: Ad Hoc	
Power Saving: 🛛	
Turbo Mode: Disable	
Localy Administered Address: (Hex 0-9 A-F)	
OK Ca	ncel

- 2. You can optionally set up other properties, but because the duration of the ad hoc network tends to be limited, Power Saving and Security features are not typically a requirement. For ad hoc network activity, the Power Saving and Security features can be disabled. Currently, shared key security is supported in ad hoc mode. Future D-Link software implementations will provide unique key support.
- 3. Click OK when the properties are set correctly. The system needs to reboot in order for the changes to take effect.

Note that in ad hoc mode, a station scans the air for an existing BSS. If no BSS is found, the station establishes a BSS for other stations to join. When other stations scan the air and find an established BSS in place, they join that BSS to form an ad hoc network. If a specific set of stations requires ad hoc network connectivity, it is recommended to have one station establish a BSS first before configuring the remaining stations. This prevents the scenario of several stations trying to form a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple stations.

### **TCP/IP Configuration**

After configuring the D-Link WMP-A12 Wireless Network mini PCI Card network adapter properties, the TCP/IP address for the network device needs to be configured.

 From Control Panel, launch the Network properties window. Select "TCP/IP → D-Link WMP-A12 Wireless Network mini PCI Card" and click Properties. Depending on the type of network the station connects to, Gateway and DNS Configuration information can also be required. IP configuration information (DHCP or assigned IP address, Gateway and DNS server IP addresses) is usually obtained from the corporate IT staff. For a simple demonstration, the station is assigned a static IP address. From "TCP/IP Properties," choose "IP Address" and select "Specify an IP address." Input an IP address and subnet mask. Assigning an IP address and subnet mask allows the station to interact with the AP or other stations in the same IP subnet. Click OK to complete the TCP/IP configuration, and restart the system for the changes to take effect.

Network	TCP/IP Properties	<u>१</u> ×
Contiguration       Identification       Access Control         The following getwork components are installed:       Image: Control of the state of the st	Binding:       Advanced         DNS Configuration       Gateway       WINS Configuration         An IP address can be automatically assigned to If your network does not automatically assign IP your network administrator for an address, and B the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of the space below.       Image: Configuration of the space below.         Image: Optimized configuration of th	NetBIOS pion IP Address this computer. addresses, ask hen type it in 22 0 Cancel

2. Choose Start > Programs > Accessories > Command Prompt to open the DOS command prompt window. Type "ipconfig" to determine if the TCP/IP configuration has taken effect. To test IP connectivity in ad hoc or infrastructure mode, use the "ping <ipaddress>" command. When a TCP/IP connection is established, the LinkMon utility (see Chapter 7) can be used to monitor the D-Link WMP-A12 Wireless Network mini PCI Card operating status.

MS-DOS Prompt
8 x 12 🗸 🛄 🖻 🔂 🚰 📇 🗛
C:\WINDOWS\Desktop>ipconfig
Windows IP Configuration
0 Ethernet adapter :
IP Address
C:\WINDOWS\Desktop>ping 192.168.1.21
Pinging 192.168.1.21 with 32 bytes of data:
Reply from 192.168.1.21: bytes=32 time<10ms TTL=128 Reply from 192.168.1.21: bytes=32 time<10ms TTL=128 Reply from 192.168.1.21: bytes=32 time<10ms TTL=128 Reply from 192.168.1.21: bytes=32 time<10ms TTL=128
Ping statistics for 192.168.1.21: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms
C:\WINDOWS\Desktop>

3. To map the drive on another machine to your computer, right-click "My Computer" and click "Map Network Drive...." Specify the path of a network-shared folder.

U Computer			
	Open Explore Sgarch		
	Map Network Drive Djsconnect Network Drive		
	Create <u>S</u> horicut Rena <u>m</u> e		
Map Netw	Properties		<u>? X</u>
Drive		•	OK.
<u>P</u> ath:	\\192.168.1.21\C\$	•	Cancel
	Reconnect at logon		

4. After mapping the drive, you can perform file transfers, video streaming, and all other network data transfers that are normally performed with wired 10/100 Ethernet connections.

# **4** Windows 98 Second Edition

## **Driver Installation**

D-Link recommends that you remove any existing D-Link NDIS driver on the PC system before installing Version 1.3 release of the NDIS driver. See Section "Driver Uninstallation" on page 4-5 for the instructions on how to remove previous driver releases. When the system no longer has the D-Link NDIS driver installed, insert the WMP-A12 Wireless Network mini PCI Card into a 32-bit CardBus slot, and follow these steps to install the NDIS driver:

1. Wait for the following dialog box to appear, and click Next to continue.



2. Choose "Search for the best driver for your device. (Recommended)," and click Next.



3. Insert the D-Link Software Release CD in your CD-ROM drive. Choose "Specify a location" and browse to the location where the NDIS driver is located. The default folder is D:\ndis\bin\production\ndis5 (assuming D: is the CD-ROM drive). Click Next to continue.

Add New Hardware Wiz	ard
	Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Elick Next to start the search.
	<back next=""> Cancel</back>

4. When the D-Link driver installation file (NET5210B.INF) has been found, click Next to continue.



5. Click Finish to continue.



6. Click Yes to restart the system and complete driver installation. See Section "Device Configuration" on page 4-8 for device configuration.



# **Driver Uninstallation**

This section provides uninstallation procedures for removing the D-Link NDIS driver from the system. Uninstallation is recommended for upgrading the NDIS driver from previous D-Link driver releases.

 To remove the NDIS driver from the OS, go to Start > Search > For Files or Folders..., and search for the INF file containing the "D-Link" text string under the \WINDOWS\INF folder. Be sure to include subfolders in the search criteria.

Find: All Files	- 0
Gle Edit View Options Help	
Name & Location Date Advanced	
Named I'm	Find Now
Containing test: Atheros	New Search
Look in:	
Include gubfolders	owe

2. When "D-Linknet5210b.inf" has been found, delete it by right-clicking the file and choose "Delete."

Elle Ed	Files nan R. View J	ed ".inf containing t Options Help	ext Atheros		
Name	& Location	Date Advanced			First Naw
Nam	ved	tinf		•	Stop
<u>C</u> or/	taining text:	Atheros			Ne <u>w</u> Search
Looi	k inc	c:\windows\inf		•	
Include gubfoldersBrowse					
_					
Name		In Folder		Size	Туре
999	Deen Print Jostall Quick View Trend PC-c Add to Zip Add to Athe Zip and E-ł Send I o Cuj Dopy Create Sho	ilin 98 rosnet5210b.zip feji Atherosnet5210b.zip ricut	•		
	Delete Rename				
Deleter	Properties	denne			1
3. From Control Panel, launch the Network properties window. Select "D-Link WMP-A12 Wireless Network mini PCI Card" from the list, and click Remove to uninstall the device.

Configuration Identification Access Control
The following getwork components are installed:
Client for Microsoft Networks
Real Adveros AR5000 Wireless Network Adapter
Dial-Up Adapter
Printer 6250krbased PCI Ethemet Adapter (10/100)
Add Remove Pjoperties
Pámary Network Logon:
Client for Microsoft Networks
File and Print Sharing
- Description
A network adapter is a hardware device that physically connects your computer to a network.
OK Cancel

4. Click OK to confirm the removal of the device. Restart the system to complete uninstallation.



# **Device Configuration**

Configuration of the D-Link WMP-A12 Wireless Network mini PCI Card can be done through the D-Link NIC Configuration utility found in the Windows Control Panel. Similar to Windows 2000 the device can be set to work in one of two modes: infrastructure mode or ad hoc mode. Please refer to Section "Device Configuration" beginning on page 2-17 for more details on these network connection types.

To launch the configuration utility, go to Control Panel and double-click on the D-Link NIC Configuration icon.



The configuration utility allows addition, modification, and deletion of the configuration profiles. Select one of the existing configuration profiles under the configuration list to modify, or click New to add a new configuration profile. Follow Section "Infrastructure Mode" on page 4-9 and Section "Ad Hoc Mode" on page 4-11 to set up the station to work in infrastructure mode and ad hoc mode.

Atheros NIC Configura	tion		<u> १</u> ×
Network Card	(0003)Athenos AR5000	Wireless Network A	Adapter 💌
Selected Configuration:	Default		
Configuration List			
Delaut			New
			Modify
			Delete
1			
Selected Configuration	Details		
Network Connection	AP (Infrastructure)		
Power Saving:	Nomai		
Data Security:	Disabled		
		OK	Cancel

## **Infrastructure Mode**

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in infrastructure mode. See Section "Device Configuration" beginning on page 2-17 for detailed descriptions of each option in the Network Configuration Settings.

- 1. Under the "General" tab, make sure the "Locally Administered Address" checkbox is unchecked. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
  - Network Name (SSID): This is the name of the IEEE 802.11a wireless network. This field has a maximum limit of 32 characters. If this field is left blank, the STA connects to the AP with the best signal strength.
  - Network Connection: AP (Infrastructure)
  - Power Saving: This field allows the configuration of power management options. The options are Off, Normal, and Maximum.
  - Turbo Mode: This field enables or disables D-Link turbo mode.

Network Configuration Settings		<u>?×</u>
General Security		
Configuration Name:	ALPHA	-
Network Name (SSID)	ALPHA_1	-
Network Connection:	AP (Infrastructure)	•
Power Saving:	D¥	•
Tuto Mode:	Disable	•
Locally Administered Address: (Hex 0-9 A-F)		
	<u>ОК</u>	Cancel

2. Usually, infrastructure mode is used in an enterprise environment where APs are installed and maintained by corporate IT staff. Much of the data in the enterprise network is confidential. It is important to configure security to make sure only stations with appropriate keys can receive sensitive data. The D-Link WMP-A12 Wireless Network mini PCI Card and NDIS driver support key lengths of 40 bits, 104 bits, and 128 bits. Typically, the appropriate encryption and decryption keys are supplied by the corporate IT staff.

Network Configuration Sett	ings	? ×
General Security		
F Enable Security	Default Encryption Key: Unique	
Encryption Keys (Hex 0-9 A	F) Key Length (bits):	
Unique Key:	54 (40+24) 10 hex d	figit: 💌
Shared Keys:		
First management	64 (40+24) 10 hex d	igh 💌
Second:	128 (104+24) 26 hes	dgi: 💌
Third:	128 (104+24) 26 hex	dgh 💌
Fourth:	152 (128+24) 32 her	dgh: 💌
	OK	Cancel

#### Ad Hoc Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in ad hoc or IBSS mode. See Section "Ad Hoc Mode" on page 2-23 for descriptions of ad hoc operation.

- Similar to the setup of the AP infrastructure mode described in the previous section, ad hoc mode is also configured by changing the Network Configuration Settings of the D-Link NIC Configuration utility. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive.
  - Network Name (SSID): A Network Name is mandatory for ad hoc mode. The SSID for all stations in a single ad hoc network must be the same.
  - Network Connection: Ad Hoc.
  - Power Saving: Power saving mode is not currently supported in an ad hoc network.
  - Turbo Mode: All stations participating in the ad hoc network must have the same rate setting.
  - Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected.

Network Configuration Settings		2 X
General Security		
Configuration Name:	ALPHA2	
Network Name (SSID)	ALPHA_2	
Network Connection:	Ad Hoc	
Power Saving:	D# ¥	
Turbo Mode:	Disable 💌	
Locally Administered Address: (Hex 0-9 A-F)		
	ОК	Cancel

- 2. You can optionally set up other properties, but because the duration of the ad hoc network tends to be limited, Power Saving and Security features are not typically a requirement. For ad hoc network activity, the Power Saving and Security features can be disabled. Currently, shared key security is supported in ad hoc mode. Future D-Link software implementations will provide unique key support.
- 3. Click OK when the properties are set correctly. The system needs to reboot in order for the changes to take effect.

Note that in ad hoc mode, a station scans the air for an existing BSS. If no BSS is found, the station establishes a BSS for other stations to join. When other stations scan the air and find an established BSS in place, they join that BSS to form an ad hoc network. If a specific set of stations requires ad hoc network connectivity, it is recommended to have one station establish a BSS first before configuring the remaining stations. This prevents the scenario of several stations trying to form a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple stations.

## **TCP/IP Setup**

After configuring the D-Link WMP-A12 Wireless Network mini PCI Card network adapter properties, the TCP/IP address for the network device needs to be configured.

 From Control Panel, launch the Network properties window. Select "TCP/IP → D-Link WMP-A12 Wireless Network mini PCI Card" and click Properties. Depending on the type of network the station connects to, Gateway and DNS Configuration information can also be required. IP configuration information (DHCP or assigned IP address, Gateway and DNS server IP addresses) is usually obtained from the corporate IT staff. For a simple demonstration, the station is assigned a static IP address. From "TCP/IP Properties," choose "IP Address" and select "Specify an IP address." Input an IP address and subnet mask. Assigning an IP address and subnet mask allows the station to interact with the AP or other stations in the same IP subnet. Click OK to complete the TCP/IP configuration, and restart the system for the changes to take effect.

Network ?X	TCP/IP Properties	? ×
Network       ? ×         Configuration       Identification       Access Control         The following petwork components are installed:       Image: Control of the components are installed:         Image: NetBEUL > DiaFUp Adapter       Image: Control of the control of t	TCP/IP Properties         Bindings       Advanced         DNS Configuration       Gateway       WINS Configuration         An IP address can be automatically assigned to If your network does not automatically assign IP your network administrator for an address, and If the space below.         C @btain an IP address automatically         IP Address:       192.168.1.2         Sybnet Mask:       255.255.255.0	NetBIDS       kion       IP Address       this computer.       addresses, ask       hen type it in
TCP/IP is the protocol you use to connect to the Internet and wide-area networks.	OK	Cancel

2. Choose Start > Programs > Accessories > Command Prompt to open the DOS command prompt window. Type "ipconfig" to determine if the TCP/IP configuration has taken effect. To test IP connectivity in ad hoc or infrastructure mode, use the "ping <ipaddress>" command. When a TCP/IP connection is established, the LinkMon utility (see Chapter 7) can be used to monitor the D-Link WMP-A12 Wireless Network mini PCI Card operating status.

MS-DOS Prompt	- 🗆 🗵
Auto 💽 🛄 🖻 🔁 🚰 🗛	
C:\WINDOWS>ipconfig	
Windows 98 IP Configuration	
0 Ethernet adapter :	
IP Address : 192.168.1.22 Subnet Mask : 255.255.255.0 Default Gateway :	
C:\WINDOWS≻ping 192.168.1.21	
Pinging 192.168.1.21 with 32 bytes of data:	
Reply from 192.168.1.21: bytes=32 time=1ms TTL=128 Reply from 192.168.1.21: bytes=32 time<10ms TTL=128 Reply from 192.168.1.21: bytes=32 time=1ms TTL=128 Reply from 192.168.1.21: bytes=32 time=1ms TTL=128	
Ping statistics for 192.168.1.21: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = 1ms, Average = Oms	
C:\WINDOWS>	

3. To map the drive on another machine to your computer, right-click "My Computer" and click "Map Network Drive...." Specify the path of a network-shared folder.

My Compu	Den Explore End		
	Map <u>N</u> etwork Drive <u>D</u> isconnect Network Drive		
	Create ≦hortcut Rena <u>m</u> e		
	Propertie:		
Map Netv	vork Drive		<u>? ×</u>
<u>D</u> rive:		•	OK
<u>P</u> ath:	\\192.168.1.21\C\$	•	Cancel
	P Reconnect at logon		

4. After mapping the drive, you can perform file transfers, video streaming, and all other network data transfers that are normally performed with wired 10/100 Ethernet connections.

# 5 Windows XP

# **Driver Installation (First-time Install)**

D-Link recommends that you remove any existing D-Link drivers on the PC system before installing Version 錯誤! 找不到參照來源。 release of the NDIS driver. See Section "Driver Uninstallation" on page 5-6 for the instructions on how to remove previous driver releases. With no existing D-Link NDIS driver installed, insert the D-Link WMP-A12 Wireless Network mini PCI Card into a 32-bit CardBus slot, and follow these steps to install the NDIS driver:

1. Wait for the following dialog box to appear. Choose "Install from a list or specific location (Advanced)," and click Next to continue.



2. Under "Search for the best driver in these locations," choose "Include this location in the search" and click Browse to find the location of the NDIS driver. When the driver location has been identified, click Next to continue.

Found New Hardware Wizard		
Please choose your search and installation options.		
Search for the best driver in these locations.		
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.		
Search removable media (floppy, CD-ROM)		
✓ Include this location in the search:		
D:\ndis\bin\production\ndis5		
O Don't search. I will choose the driver to install.		
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.		
< <u>B</u> ack <u>N</u> ext > Cancel		

3. The D-Link NDIS evaluation driver currently does not have a digital signature from Microsoft. Therefore, Windows XP shows a warning message. Click Continue Anyway to proceed with driver installation.

Hardwa	re Installation
1	The software you are installing for this hardware: Atheros AR5000 Wireless Network Adapter has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway

4. Click Finish to complete driver installation, and refer to Section "Device Configuration" on page 5-10 for device configuration.

Found New Hardware Wizard	
	Completing the Found New Hardware Wizard The wizard has finished installing the software for: Atheros AR5000 Wireless Network Adapter
	K Back Finish Cancel
	K gack Finish Cancel

# **Driver Uninstallation**

This section provides uninstallation procedures for removing the D-Link NDIS driver from the system. Uninstallation is recommended for upgrading the NDIS driver from previous D-Link driver releases.

1. To remove the NDIS driver from the OS, go to Device Manager, right click "D-Link WMP-A12 Wireless Network mini PCI Card," and choose Uninstall.



2. Click OK to uninstall the device.

Confirm	Device Removal 🔹 💽 🔀
<u>⊞</u> ∰	Atheros AR5000 Wireless Network Adapter
Warning	: You are about to uninstall this device from your system.
	OK Cancel

3. When the device is uninstalled from Device Manager, search for and delete the driver installation file that resides in the system. To do so, go to Start and choose Search > All files and folder, enter "oem\*.inf" in the "All or part of the file name" field, and enter "D-Link" in the "A word or phrase in the file" field. Enter "C:\WINNT\INF" in the "Look in" field, where C: is the drive letter of where Windows XP is installed. Click Search to find the driver installation file.



4. A file matching the search criteria is displayed. Choose this file and delete it from the system.



# **Device Configuration**

Windows XP zero-configuration functionality allows the user to select and join a wireless network without having to configure the device separately. You can decide to choose the default parameters and directly proceed to zero-configuration in Section "Windows XP Wireless Network Configuration" on page 5-20.

Similar to Windows 2000, configuration of the D-Link WMP-A12 Wireless Network mini PCI Card can be done through the Network Control Panel (NCP) in adapter properties. You can set the Wireless Network mini PCI Card to work in one of two modes: infrastructure mode or ad hoc mode. See Section "Device Configuration" beginning on page 2-17 for more details on these network connection types.

To launch NCP go to Device Manager, right-click "D-Link WMP-A12 Wireless Network mini PCI Card," and select Properties to access to the properties of the adapter.



Configuration additions, modifications, and deletions are made under the "Settings" tab of "D-Link WMP-A12 Wireless Network mini PCI Card Properties." Select one of the configurations under the configuration, click Modify or New and complete the steps in Section "Infrastructure Mode" on page 5-12 or Section "Ad Hoc Mode" on page 5-13 to set up the station to work in infrastructure mode or ad hoc mode, respectively.

, , , _	
General Advanced Settings Driver Resources	
Selected Configuration: Default	-
Configuration List	-
Default     New       Modify       Delete	
Selected Configuration Details Network Name (SSID): <empty> Network Connection: AP (Infrastructure) Turbo Mode : Disabled Power Saving: Off Locally Admin. Address: Not Used Data Security: Disabled</empty>	
OK Cance	

#### Infrastructure Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in infrastructure mode. See Section "Device Configuration" beginning on page 2-17 for detailed descriptions of each option in the Network Configuration Settings.

- 1. Under the "General" tab, make sure the "Locally Administered Address" checkbox is unchecked. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive, for example, "Infrastructure."
  - Network Name (SSID): This is the name of the IEEE 802.11a wireless network, for example, "AP\_Network." This field has a maximum limit of 32 characters. If this field is left blank, the STA connects to the AP with the best signal strength.
  - Network Connection: AP (Infrastructure).
  - Power Saving: This field allows the configuration of power management options. The options are Off, Normal, and Maximum.
  - Turbo Mode: This field enables or disables D-Link turbo mode.

Network Configuration Settings		? 🛛
General Security		
Conligutation Name:	Infrastructure	
Network Name (SSID):	AP_Network	
Network Connection:	AP (Initiastructure)	
Power Saving:	Normal	
Turbo Mode:	Disable 💌	
Locally Administered Address: [Hex 0-9 A-F]		
	ОК С	Cancel

2. Usually, infrastructure mode is used in an enterprise environment where APs are installed and maintained by corporate IT staff. Much of the data in the enterprise network is confidential. It is important to configure security to make sure only stations with appropriate keys can receive sensitive data. The D-Link WMP-A12 Wireless Network mini PCI Card and NDIS driver support key lengths of 40 bits, 104 bits and 128 bits. Typically, the appropriate encryption and decryption keys are supplied by the corporate IT staff.

Enable Secur	Default Encryption Key.	Unique
Encryption Key	s (Hex 0-9 A-F)	Key Length (bits):
Unique Key.	and the second	64 (40+24) 10 hex digits 💌
Shared Keys:		
First		64 (40+24) 10 hex digits 💌
Second		152 (128+24) 32 hex digits 💌
Third		128 (104+24) 26 hex digits 💌
Fourth:		64 (40+24) 10 hex digits 💌

#### Ad Hoc Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in ad hoc or IBSS mode. See Section "Ad Hoc Mode" on page 2-23 for descriptions of ad hoc operation.

- Similar to the setup of AP Infrastructure mode described in the previous section, ad hoc mode is also configured by changing the options in the "Network Configuration Settings" window. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive, for example, "Ad Hoc."

- Network Name (SSID): A Network Name is mandatory for ad hoc mode. The SSID for all stations in a single ad hoc network must be the same.
- Network Connection: Ad Hoc.
- Power Saving: Power saving mode is not currently supported in an ad hoc network.
- Turbo Mode: All stations participating in the ad hoc network must have the same rate setting.
- Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected.

Network Configuration Settings		? 🗙
General Security		
Configuration Name:	Ad Hoo	
Network Name (SSID)	Adhoc_Network	
Network Connection:	Ad Hoc	
Power Saving:	0ff 💌	
Turbo Mode:	Disable 💌	
Locally Administered Address: (Hex 0-9 A-F)		
	OK C	ancel

 You can optionally set up security features, but it is not typically a requirement because the duration of the ad hoc network tends to be limited. Currently, shared key security is supported in ad hoc mode. Future D-Link software implementations will provide unique key support. 3. In ad hoc mode, a station scans the air for an existing BSS. If no BSS is found, the station establishes a BSS for other stations to join. When other stations scan the air and find an established BSS in place, they join that BSS to form an ad hoc network. If a specific set of stations requires ad hoc network connectivity, it is recommended to have one station establish a BSS first before configuring the remaining stations. This prevents the scenario of several stations trying to form a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple stations.

### **TCP/IP Setup**

After configuring the D-Link WMP-A12 Wireless Network mini PCI Card through the Network Control Panel, the TCP/IP address for the network device needs to be configured.

 From the Start menu, choose Programs > Accessories > Communications > Network Connections. Find the "Local Area Connection" that is associated with the D-Link WMP-A12 Wireless Network mini PCI Card. Right-click that connection and click Properties.



2. Select "Internet Protocol (TCP/IP)" and click Properties. Click "Use the following IP address" and input an IP address and Subnet mask. Depending on the type of network the station connects to, Gateway and DNS Configuration information can also be required. IP configuration information (DHCP or assigned IP address, Gateway and DNS server IP addresses) is usually obtained from the corporate IT staff. For a simple demonstration, the station is assigned a static IP address. Click OK in both "Internet Protocol (TCP/IP) Properties" and "Local Area Connection Properties" to complete the IP configuration.

👍 Wireless Network Connection 4 Properties 💦 🛛 🔀	Internet Protocol (TCP/IP) Properties 🛛 🔹 🛛
General Witeless Networks Authentication Advanced	General
Connect using: Althero: AR5000 Wireles:: Network Adapter #4	You can get IP settings assigned automatically if your network supports this capability. Dtherwise, you need to ask your network administrator for the appropriate IP settings.
This connection uses the following items:	Dotain an IP address automatically
Client for Microsoft Networks  Client for Microsoft Networks  Client for Microsoft Networks  Client Protocol (TCP/IP)	JP address:         192.168.1.20           Sybnet mask:         255.255.255.0           Default gateway:
Instal Uninstal Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.  Show icon in notification area when connected	O Dytain DNS server address automatically O Use the following DNS server addresses: Preferred DNS server:
OK Cancel	DK Cancel

 Choose Start > Programs > Accessories > Command Prompt to open a command prompt window. Type "ipconfig" to determine if the TCP/IP configuration has taken effect. To test IP connectivity in ad hoc or infrastructure mode, use the "ping <IP address>" command. When a TCP/IP connection is established, the LinkMon utility (see Chapter 7) can be used to monitor the operating status of D-Link WMP-A12 Wireless Network mini PCI Card.

Select C:\WINNT/System32\cmd.exe	- 🗆 🗙
Ethernet adapter Vireless Network Connection 4: Connection-specific DNS Suffix .: IF Address	1
C:\Documents and Settings\FAE>ping 192.168.1.21 Pinging 192.168.1.21 with 32 bytes of data: Reply from 192.168.1.21: bytes=32 time(1ms TTL=128 Reply from 192.168.1.21: bytes=32 time(1ms TTL=128 Reply from 192.168.1.21: bytes=32 time(1ms TTL=128	
Reply from 192.168.1.21: bytes-32 time(ims TTL-128 Ping statistics for 192.168.1.21: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms C:\Documents and Settings\FAE>	-

4. To map the drive on another machine to your computer, from the Start menu, choose My Computer and right-click to select "Map Network Drive...."

FAE	
Internet Internet Explorer E-mail Outlook Express	
Command Prompt	My Music My Computer Open
A Shortcut to Linkmon	Explore Search Manage
MSN Explorer	Map Network Drive Disconnect Network Drive
Windows Media Player	Properties
All Programs 📡	Run
	Log Off 🧿 Turn Off Computer

5. Assign the drive letter that maps to the network-shared folder and specify the shared folder information. Click Finish to map the drive.

Map Network Drive			
	Windows and assig access th Specify t that you	can help you connect to a sh on a drive letter to the connec he folder using My Computer. he drive letter for the connec want to connect to:	nared network folder ction so that you can ction and the folder
	<u>D</u> rive:	Y:	<b>~</b>
	F <u>o</u> lder:	\\192.168.1.21\C\$	Browse
		Example: \\server\share	
		Reconnect at logon	
		Connect using a <u>different us</u>	er name,
		Sign up for online storage or network server.	<u>connect to a</u>
		< <u>B</u> ack Finish	Cancel

6. After mapping the drive, you can perform file transfers, video streaming, and all other network data transfers that are normally performed with wired 10/100 Ethernet connections.

# Windows XP Wireless Network Configuration

Aside from using the Network Control Panel (NCP) to configure the D-Link WMP-A12 Wireless Network mini PCI Card, Windows XP provides zeroconfiguration functionality that automatically tries to connect the STA to available wireless networks in the following order:

- a. Infrastructure mode with valid WEP keys
- b. Infrastructure mode with unauthenticated access for stations without WEP keys
- c. Ad hoc mode

To configure wireless network settings through the Windows XP user interface, open Network Connections from Control Panel. Right-click the Local Area Network Connection icon (pertinent to D-Link WMP-A12 Wireless Network mini PCI Card), click Enable to enable the device first, and then click Properties. On the Wireless Networks tab, select the "Use Windows to configure my wireless network settings" check box to enable automatic wireless network configuration. Follow Section "Infrastructure Mode" on page 5-12 or Section "Ad Hoc Mode" on page 5-13 to set up the station to connect to an infrastructure or ad hoc network.

If you want to use non-default settings for power saving and turbo mode, you should set those parameters through the NCP method described in Section "Device Configuration" on page 5-10. Then use Wireless Networks tabs to select network name, network type, and encryption keys.

Note that you can disable automatic wireless network configuration, and revert back to using D-Link NCP configuration settings, by clearing the "Use Windows to configure my wireless network settings" check box.

🕹 Wireless Network Connection 4 Prop	erties 💦 🛛 🔀
General Wireless Networks Authentication A	dvanced
Use <u>W</u> indows to configure my wireless netwo	ork settings
Available <u>n</u> etworks: To connect to an available network, click Con	figure.
∦ Test_Alpha	<u>C</u> onfigure
	R <u>e</u> fresh
Preferred networks: Automatically connect to available networks in below:	the order listed
	Move <u>up</u>
	Move <u>d</u> own
Add <u>R</u> emove Propertie	s
Learn about <u>setting up wireless network</u> <u>configuration.</u>	Advanced
ОК	Cancel

## **Infrastructure Mode**

To set up automatic wireless network configuration to connect to an existing Access Point (infrastructure network):

1. Click the network name under "Available networks" in the Wireless Networks tab, and click Configure. You can update the list of available networks that are within range of your computer by clicking Refresh under Available Networks.

🕹 Wireless Network Connection 4 Properties 👘 🕐 🔀
General Wireless Networks Authentication Advanced
Use Windows to configure my wireless network settings
Available getworks:
To connect to an available network, click Configure.
L'Test_Alpha Configure
Adhoc_Network Rgbesh
Elefered networks: Automatically connect to available networks in the order listed
below:
Move yp
Move gown
Add Remove Properties
Learn about setting up miteless network. Advanced
OK Cancel

2. If the network requires WEP, then the "Data encryption (WEP enabled)" check box is selected by default in Wireless Network Properties. Select the "The key is provided for me automatically" check box if the WEP key is automatically provided for you. The driver will then use the Default Encryption key from the current D-Link NCP configuration profile irrespective of the network name. You may choose to enter the WEP key by clearing this check box and manually entering the network key and key length. Note that the key format must be hexadecimal digits and the key length is limited to 104-bit in Windows XP, as opposed to 128-bit key supported by D-Link NDIS driver in the NCP configuration interface. If the network that you are connecting to requires 128-bit WEP key, then it is recommended that you disable Windows XP automatic wireless network configuration and use D-Link NCP configuration instead.

Wireless Network Prop	erties 🛛 🛛 🔀	
Network.pame (SSID):	Test_Alpha	
Wreless network key (WE	Pj	
This network requires a ke	y for the following:	
Data encryption (WEP enabled)		
Network Authentical	ion (Shared mode)	
Network <u>k</u> ey:		
Key (omat:	ASCII characters 💌	
Key (ength:	104 bits (13 characters) 💌	
Key indeg (advanced):	0	
The key is provided for me automatically		
This is a gomputer-to-computer (ad hoc) network; witeless access points are not used		
	OK. Cancel	

## Ad hoc mode

To connect to an existing computer-to-computer (ad hoc) network:

1. Click the ad hoc network name under "Available networks" in the Wireless Networks tab, and click Configure.

🕂 Wireless Network Connection 4 Properties 👘 💽 🔀
General Wireless Networks Authentication Advanced
Use Windows to configure my wireless network settings Available getworks: To connect to an available network, click Configure. Tot_Alpha Adhos_Network Rgtresh
Preferred networks: Automatically connect to available networks in the order listed below: Move up
Add Bemove Properties
Learn about <u>setting up wireless network</u> configuration. Advanced
OK Cancel

2. In Wireless Network Properties, the "This is a computer-to-computer (ad hoc) network; wireless access points are not used" check box is selected by default. You may choose to enable WEP by selecting the "Data encryption (WEP enabled)" check box and the "Network Authentication (Shared mode)" check box. Select the "The key is provided for me automatically" check box if the shared key is automatically provided for you. The driver will then use the Default Encryption key from the current D-Link NCP configuration profile irrespective of the network name. You may choose to enter the shared key by clearing this check box and enter the key and key length manually. Note that the key format must be hexadecimal digits and the key length is limited to 104-bit in Windows XP as opposed to 128-bit key supported by D-Link NDIS driver in the NCP configuration interface. If the network that you are connecting to requires 128-bit WEP key then it is recommended that you disable Windows XP automatic wireless network configuration and use D-Link NCP configuration instead.

Wireless Network Properties 🛛 🔹 🛛	
Network <u>n</u> ame (SSID):	Adhoc_Network
Wireless network key (WE	:P)
This network requires a key for the following:	
Data encryption (WEP enabled)	
Network <u>A</u> uthentication (Shared mode)	
Network <u>k</u> ey:	
Key <u>f</u> ormat:	ASCII characters
Key length:	104 bits (13 characters) 💌
Key inde <u>x</u> (advanced):	0
✓ The key is provided for me automatically	
<ul> <li>This is a <u>c</u>omputer-to-computer (ad hoc) network; wireless access points are not used</li> <li>OK</li> <li>Cancel</li> </ul>	

3. If you want to connect to an ad hoc network, but both ad hoc and infrastructure networks are within range of your computer, then click Advanced in the Wireless Networks tab and then select "Computer-tocomputer (ad hoc) networks only". Note that if you want the station to start its own ad hoc network, the "Computer-to-computer (ad hoc) networks only" option should be selected. There should be no network active from the preferred list and the "Automatically connect to nonpreferred networks" check box should be cleared.

Advanced ?X
Networks to access
O Any available network (access point preferred)
○ Access point (infrastructure) networks only
Computer-to-computer (ad hoc) networks only
Automatically connect to non-preferred networks

## **Connect to an Available Wireless Network**

When there is more than one available network detected by Windows XP, the OS will prompt the user to select and connect to a preferred network.



To connect to an available wireless network, right-click the network connection icon in the notification area, and then click "View Available Wireless Networks".


In Connect to Wireless Network, under "Available networks", select the wireless network that you want to connect to. If a network key is required and is automatically provided for you, then leave "Network key" blank. If the network key is not automatically provided for you, then type the key in "Network key". Click Connect to establish the network connection.

Connect to Wireless Network				
The following network(s) are available. To access a network, select it from the list, and then click Connect.				
Available networks:				
1 Test_Alpha Adhoc_Network				
This network requires the use of a network key (WEP). To access this network, type the key, and then click Connect.				
Network key:				
If you are having difficulty connecting to a network, click Advanced.				
Advanced Connect Cancel				

If you are either unable to make a connection to the wireless network that you selected or need to configure additional wireless network connection settings, click Advanced in Connect to Wireless Network, and the Wireless Networks tab will appear.

🕹 Wireless Network Connection 7 Pro	perties 🛛 <table-cell> 🔀</table-cell>			
General Wireless Networks Authentication	Advanced			
Use Windows to configure my wireless netw	vork settings			
Available getworks:				
To connect to an available network, click Co	on/igure.			
i Test_Alpha	Configure			
	Rghesh			
Automatically connect to available networks below:	Move up Move gown			
Add Remove Propert	ies			
Learn about <u>setting up wireless network</u> configuration.	Advanced			
OK. Cancel				

You can configure a new wireless network connection by clicking Add, and specifying the network name (SSID) in Wireless Network Properties, and the wireless network key settings, if needed. If the network connection that you are configuring is an ad hoc network, then select "This is a computer-tocomputer (ad hoc) network; wireless access points are not used" check box. The network will be added under "Preferred networks" in the Wireless Networks tab.

Wireless Network Properties					
Network <u>n</u> ame (SSID):	Test_Network				
Wireless network key (WEP)					
This network requires a key for the following:					
Data encryption (WE	P enabled)				
Network <u>A</u> uthenticat	ion (Shared mode)				
Network <u>k</u> ey:					
Key <u>f</u> ormat:	ASCII characters				
Key Jength:	104 bits (13 characters) 💌				
Key inde <u>x</u> (advanced): 0					
✓ The key is provided for me automatically					
This is a <u>c</u> omputer-to-computer (ad hoc) network; wireless access points are not used           OK         Cancel					

You can change the order of the preferred networks by selecting the wireless network that you want to reposition on the list, and then clicking Move up or Move down. You can change the wireless network connection settings of a preferred network by selecting the wireless network, clicking Properties, and then changing the settings as needed. To remove a wireless network from the list of preferred networks, select the wireless network that you want to remove, and then click Remove.

👍 Wireless Network Connection 7 Properties	?	×			
General Wireless Networks Authentication Advanced					
Use Windows to configure my wireless network settings					
Available getworks:		1			
To connect to an available network, click Configure.					
I Test_Alpha Config	pure				
Adhoc_Network Rgin	sh				
<u>Preferred networks:</u> Automatically connect to available networks in the order to     below:	listed	1			
K Test_Network. Move	цр				
Adhoc_Network.	jown				
Add Remove Properties					
Learn about setting up witeless network configuration. Adv	anced	J			
ОК	Cancel	5			

If a network is not defined in the preferred networks list, but you know it is available and you want to automatically connect to it, then click Advanced in the Wireless Networks tab, and select the "Automatically connect to nonpreferred networks" check box.

Advanced 🛛 💽 🔀
Networks to access         Image: Any available network (access point preferred)         Access point (infrastructure) networks only         Ecomputer-to-computer (ad hoc) networks only
Automatically connect to non-preferred networks

# **6** Windows NT 4.0

### **Driver Installation and TCP/IP Setup**

Windows NT 4.0 does not support Plug-and-plug. Therefore, the D-Link NDIS driver installation uses an approach that is different from the installation used in other Operating Systems. In order to install D-Link WMP-A12 Wireless Network mini PCI Card in Windows NT 4.0 with Service Pack 6, a PC Card utility called CardWizard is used. If your computer system does not have CardWizard utility pre-loaded, then you can purchase it from SystemSoft Corporation (www.systemsoft.com) or you can download a 14-day evaluation copy from ftp://www.systemsoft.com/pub/Wn51tren.exe. Note that CardWizard requires Windows NT 4.0 Build 1381 (Service Pack 6) installed in order to function correctly. Please install Service Pack 6 if your Windows NT 4.0 is not updated.

After CardWizard utility is loaded, insert the D-Link WMP-A12 Wireless Network mini PCI Card into a 32-bit CardBus slot, and follow these steps to install the NDIS driver:

1. CardWizard will detect the insertion of the D-Link CardBus card and show the following screen. Click Correct to continue.

Wizard	×
Wizard Information AR5BCB-01-01, Atheros Communications, Inc. Network PC Card Device	Correct
The inserted card has not yet been configured. This may mean that the driver has not been installed or configured. Select CORRECT in order to fix this problem.	Test
When you press the CORRECT button, you may be prompted to supply the system drivers needed. Please have the Windows NT setup disk and/or the card manufacturer's install disk readu in this case.	Help
	Exit
Er	nable AutoCorrection 🦵

2. Click OK to continue.



3. Windows NT 4.0 Network Properties windows displays. Click Add to continue.

Network.		7 ×
Identification Services Protoc	siz Adapterz Birde	922 J
Network Adapters:		
in the second second	1	
Add Jeanne	Expanse.	2000
Jurbita		
	05	
	UK.	Lancel

4. Click Have Disk.



5. Manually enter the location of where the D-Link NDIS 4.0 driver is located. For example, D:\NDIS\BIN\PRODUCTION\NDIS4. Click OK to continue.



6. Make sure D-Link WMP-A12 Wireless Network mini PCI Card is selected. Click OK to continue.

Select OEM Option	X				
Choose a software supported by this hardware manufacturer's disk.					
Alheros AR5000 Wireless Network Adapter					
OK. Cancel Help					

7. Set Map Registers, QoS, and Transmit Power Control to default values and click OK.

AR5000 Wireless Network /	Vdapter Setup V1.01	×
Map Registers:	256	
QoS (802.11e):	Disabled	×
Transmit Power Control:	Highest Power	<b>x</b>
	ОК	Cancel

8. Windows NT 4.0 binds TCP/IP protocol to D-Link WMP-A12 Wireless Network mini PCI Cards and TCP/IP properties have to be entered. Depending on the type of network the station connects to, Gateway and DNS Configuration information may also be required. IP configuration information (DHCP or assigned IP address, Gateway and DNS server IP addresses) is usually obtained from the corporate IT staff. For a simple demonstration, the station is assigned a static IP address. Choose "Specify an IP address" and enter an IP address and subnet mask. Assigning an IP address and subnet mask allows the station to interact with the AP or other stations in the same IP subnet. Click OK to complete the TCP/IP configuration.

Microsoft TCP/IP Properties ? 🗙				
IP Address DNS WINS Address Routing				
An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.				
Adagter:				
1 Atheros AR5000 Wireless Network Adapter				
Qbtain an IP address from a DHCP server     Specify an IP address				
JP Address: 192.168.1.93				
Sybriet Mask: 255 . 255 . 255 . 0				
Default Gateway:				
Advanced				
OK Cancel (cop)y				

9. Restart the system for the changes to take effect.



## **Device Configuration**

Configuration of the D-Link WMP-A12 Wireless Network mini PCI Card can be done through the D-Link NIC Configuration Control Panel applet provided by D-Link. Similar to Windows 2000, the device can be set to work in one of two modes, either infrastructure mode or ad hoc mode. See Section "Device Configuration" beginning on page 2-17 for more details on these network connection types.

Start D-Link NIC Configuration utility from the Control Panel.

Control Parent							Riel I
Ein Eck Ymu Go Pgentes	1940 Ala						8
* . * . 🖬	2 2	Pata	123 Unit	Delate Property	un Viewer	31	
Address M Control Parel							2
Control P	anel						
33	6	1	A		8	-	-
Atheros NIC Configuration	Accessibility Options	Add/Henove Program	Attensi NIC Centry anton	Console	Date/Teres	Deven	Deplay
Phonesell Hamp	41	100	6		201	0	頭
Technical Guagant	Forth	IntelEtt PROSet	Interact	Jana Plagen 1.20,01	Reteat	Mai	Nexasolt Ma Postoffice
	2	8	52	22	1	0	8
	Madema	Matan	Hutmode	Network	CCBC	PC Card (PDMDiA)	Para
	1	reat	۲	0	-5	-	-
	Penters	ReaPlayor	Regional Settings	SESI Adopteri	Strvet	Services	Sounds
	1		2	53			
	System	Tapa Devices	Telephony	UPS			
classified value that	Certown	Athens MC -			SHO	gulei -	

Select one of the configuration(s) under the configuration list and click Modify or click New, and follow the Section "Infrastructure Mode" on page 6-8 and Section "Ad Hoc Mode" on page 6-11 to set up the station to work in infrastructure mode and ad hoc mode.

Atheros NIC Configuration	? ×
Network Card ABU210N42	
Selected Configuration: Default	
Configuration List	
Delaut	<u>N</u> ew
	Modify
	Delete
Selected Configuration Details	
Network Name (SSID): <empty></empty>	
Turbo Mode : Disabled	
Power Management: Normal	
Data Security: Disabled	
	OK Cancel

#### Infrastructure Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in infrastructure mode. Refer to Section "Device Configuration" beginning on page 2-17 for detailed descriptions of each option in the Network Configuration Settings.

- 1. Under the "General" tab, make sure the "Locally Administered Address" checkbox is unchecked. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive. For example, "AP".

- Network Name (SSID): This is the name of the IEEE 802.11a wireless network. For example, "*D-Link\_AP*". This field has a maximum limit of 32 characters. If this field is left blank, the STA will connect to the AP with the best signal strength.
- Network Connection: AP (Infrastructure).
- Power Saving: This field allows the configuration of power management options. The options are Off, Normal, and Maximum.
- Turbo Mode: This field enables or disables D-Link Turbo mode.

Network Configuration Settings	?
General Security	
Configuration Name: AP	
Network Name (SSID): Atheros_AP	
Network Connection: AP (Infrastructure)	
Power Saving: Normal	×
Turbo Mode: Disable	
Locally Administered Address:     [Hex 0.9 A+F]	
	OK Cancel

Usually, infrastructure mode is used in an enterprise environment where APs are installed and maintained by corporate IT staff. Much of the data in the enterprise network is confidential. It is important to configure security to make sure only stations with appropriate keys can receive sensitive data. The D-Link WMP-A12 Wireless Network mini PCI Card and NDIS driver support key lengths of 40-bits, 104-bits and 128-bits. Typically, the appropriate encryption and decryption keys will be supplied by the corporate IT staff.

Network Configuration Settin	ngs	? ×
General Security		
Enable Security	Default Encryption Key:	Unique 💌
Encryption Keys [Hex 0-9 A-F	)	Key Length (bits):
Unique Key:		152 (128+24) 32 hex digits 💌
Shared Keys:		
First	ooneeneeneeneeneeneen er ooneeneen er ooneen er oon	152 (128+24) 32 hex digits 💌
Second		64 (40+24) 10 hex digits 💌
Third:		64 (40+24) 10 hex digits 💌
Fourth		64 (40+24) 10 hex digits 💌
		OK Cancel

#### Ad Hoc Mode

This section defines the process of configuring an D-Link WMP-A12 Wireless Network mini PCI Card in ad hoc or IBSS mode. Refer to Section "Ad Hoc Mode" on page 2-23 for detail descriptions of ad hoc operation.

- Similar to the set up of AP Infrastructure mode described in the previous section, ad hoc mode is also configured by changing the options in "Network Configuration Settings" window. Use the following information as a guideline to choose the values of each field in the configuration window:
  - Configuration Name: This field identifies the configuration. This name must be unique. Configuration names are case insensitive. For example, "Ad Hoc".
  - Network Name (SSID): A Network Name is mandatory for ad hoc mode. The SSID for all stations in a single ad hoc network must be the same.
  - Network Connection: Ad Hoc.
  - Power Saving: Power saving mode is not currently supported in an ad hoc network.
  - Turbo Mode: All stations participating in the ad hoc network must have the same rate setting.
  - Locally Administered Address: This field defines the locally administered MAC address (LAA). To enter a value in the address field, the check box needs to be selected.

Network Configuration Settings	? ×
General Security	
Configuration Name: Ad Hoc	_
Network Name (SSID) Achoc	_
Network Connection: Ad Hoc	
Power Saving Off	<u>×</u>
Tuibo Mode: Disable	*
Localy Administered Address: (Hex 0-9 A-F)	
	OK Cancel

2. You may optionally set up security features, but it is not typically a requirement, since the duration of the ad hoc network tends to be limited. Currently, only shared key security is supported in ad hoc mode. Future D-Link software implementations will provide unique key support.

Network Configuration Settin	gs	? ×
General Security		
-		
M Enable Security	Default Encryption Key:	First 💌
Encryption Keys (Hex 0-9 A-F)		Kaul math \$2.2
		Ney Length (pks):
Unique Key:		152 (128+24) 32 hex digit: 💌
Shared Keys:		
First	0.000.000	152 (128+24) 32 hex digits 💌
Second		64 (40+24) 10 hex digits 💌
Third:		64 (40+24) 10 hex digits 💌
Fourth:		54 (40+24) 10 hex digits 💌
		OK. Cancel

3. In ad hoc mode, a station will scan the air for an existing BSS. If no BSS is found, the station will establish a BSS for other stations to join. When other stations scan the air and find an established BSS in place, they join that BSS to form an ad hoc network. If a specific set of stations requires ad hoc network connectivity, it is recommended to have one station establish a BSS first before configuring the remaining stations. This will prevent the scenario of several stations trying to form a BSS at the same time, which may result in multiple singular BSSs being established rather than a single BSS with multiple stations.

#### **Verify Connection**

You may use LinkMon utility to monitor the operating status of D-Link WMP-A12 Wireless Network mini PCI Card once the STA is connected. Please refer to Chapter 7 for descriptions of LinkMon utility. If the STA is configured properly then you will be able to perform ping test as well as other network applications that a wired Ethernet device can perform.

 Choose Start > Programs > Accessories > Command Prompt to open the command prompt window. Type "ipconfig" to determine if the TCP/IP configuration has taken effect. To test IP connectivity in ad hoc or infrastructure mode, use the "ping <ipaddress>" command.

K C:\WINNT\System32\cmd.ese	_ D ×
Microsoft(R) Vindous NT(TM) (C) Copyright 1985-1996 Microsoft Corp.	
C:∖>ipconfig	
Window: WI IP Configuration	
Ethernet adapter AR5218N41:	
IP Address	
C:\>ping 192.168.1.98	
Pinging 192.168.1.90 with 32 bytes of data:	
Reply from 192.168.1.98: bytes=32 time(10ms TIL=128 Reply from 192.168.1.98: bytes=32 time(10ms TIL=128 Reply from 192.168.1.90: bytes=32 time(10ms TIL=128 Reply from 192.168.1.90: bytes=32 time(10ms TIL=128	
C:\>	

2. To map the drive on another machine to your computer, right-click "My Computer" and click "Map Network Drive...."



3. Specify the path of a network-shared folder.

Map Network	; Drive		×
Drive:	⊡ E	•	0K.
Path	M192168.1.90AC\$	•	Cancel
Connect As:			Help
	Eeconnect at Logon		
Shared Direct	ories:	Expan	nd by Delauit
- Microsol	t Windows Network.		
1			

4. After mapping the drive, you can perform file transfers, video streaming, and all other network data transfers that are normally performed with wired 10/100 Ethernet connections.

## **Driver Uninstallation**

This section provides uninstallation procedures for removing the D-Link NDIS driver from the system.

1. To remove the NDIS driver from the system, go to Control Panel and open Network properties.



2. Under the Adapters tab, choose D-Link WMP-A12 Wireless Network mini PCI Card and click Remove.

Network			? ×
Identification Ser	vices   Protocoli	Adapters Bir	ndings
Network Adapter	w.		
Alteros A	AR5000 Wineless	Network Adapter	
Add	Bemove	Properties	Update
Atheros AR5000	l Wireless Netwo	ik Adapter	
		0K	Cancel

3. Click OK to confirm the removal of the D-Link WMP-A12 Wireless Network mini PCI Card.



4. D-Link WMP-A12 Wireless Network mini PCI Card is no longer listed under the Adapters tab. Click Close to continue.

etwork.			? ×
Identification Ser	vices   Protocols	Adapters Bin	dinge
Network Adapter	£		
Add	<u>E</u> emove	Bopeties	<u>((pdøte</u>
Jam Notes:			
1			
			1 court
		Close	Ganod

5. Restart the system to complete the un-installation of D-Link NDIS 4.0 driver.



## 7 LinkMon

### Installation

LinkMon is a Graphical User Interface (GUI) program that provides detailed operational status and statistics for the D-Link WMP-A12 Wireless Network mini PCI Card. The LinkMon executable file, linkmon.exe, is included on the D-Link CD, and is in the folder \ndis\bin\production\. Copy this file from the CD to a local drive for execution.

Since Windows 98 SE does not have native support for WMI, which is required to make LinkMon work correctly, an upgrade from Microsoft is needed. Use the procedures described in the following section to acquire and install the necessary WMI module from Microsoft. This is only required for Windows 98 SE installations.

- 1. Download WMI installer from Microsoft (wmi9x.exe) and save it to your hard disk.
- 2. Execute WMI installer by double-clicking wmi9x.exe.

COMMI Install for Win38			8	
Elle Edit View Go Fgyni Ge		Fig. c/p Passe Undo De	K II III	•
WMI install for Win98	Rene ∰weia(D©)	Size Type 2.0294.0 Application	Modiled 7/11/01 8 00 AM	
Select as item to view Re description				
	2.9540	<b>3</b> 1	Conputer	11

3. Click Next to continue.



4. Click "I accept this agreement" and then click Next to continue.



5. Click Next to continue.



6. The installer now installs files to the SYSTEM directory.



7. The system must be rebooted for the WMI installation files to become effective. When the system completes the rebooting process, launch LinkMon.

#### **Features**

There are five tabs in LinkMon used to display STA information:

- General tab
- Frame Statistics tab
- Transmit Retries tab
- Station tab
- Driver tab

Under the General tab of the LinkMon program property sheet is general information about the program and its operations.

A LinkMon			_ 🗆 X
Action Options Help			
Atheros AR5000 Wireless Network Ad	lapter	-	
General Frame Statistics Transmit Retries	Station Driver		
Network Interface Card			
Card Name: Atheros AR5000 Wirele	iss Network Adapter		
Device Name: \DEVICE\/E04A72F34	37E-4722-9F56-084	B148F6E7}	
Device ID: 0007			
Class Subkey: 0013 Driver: C\\\/UNNT\Surface32\	DRIVERSU#52106 -		
Driver Version: 1.3.0.0		P*	
Driver Date: 02 Nov 2001 06:48:46			
Connection Information			
Turbo Mode: Off	Channel /	Frequency: 52 / 5.26	GHz
Network Type: Initiastructure		Link Status Connecte	ed be
WEP: Enabled	To	ansmit Rate: 24 Mbps	
Power Save State: Awake	Re	ceive Rate: 24 Mbps	
Ready	CONNECTED	Tx 24 Mbps	Rx 24 Mbps

Under the Frame Statistics tab is statistical information showing the number of frames being sent and received, retry count on frames sent, frame checksum error counts for received frames, and receive signal strength indicator (RSSI) information. These fields are described in the Station Programmer's Guide under Appendix A as OIDs. LinkMon supports most of the OIDs listed in that section.

LinkMon		
Action Options Help		
Atheros AR5000 Wireless Network	work Adapter	]
General Frame Statistics Transmit R	etries Station Driver	
- Transmit Statistics	Receive Statistics	
Frames Sent: 0	Frames Received	0
Dec Bater 0	Duplicate Frames:	0
Une nety: 0	Multiple Duplicates:	0
Excessive Retries: 0	Multicast Frames:	0
FIFO Underruns: 0	FIFD Overruns:	0
Hara County 0	Hw/ Reported FCS Enors	4
Hung Counc U	SW/Reported FCS Errors:	0
ADK Receive Enors: 0	WEP Decryption Errors:	2
Last ACK RSSE 23	Last Frames RSSI:	23
eady	CONNECTED Tx 24 Mbps	Rx 24 Mbps

Under the Transmit Retries tab is detailed transmit retry statistical information for transmitted frames.

A LinkMon				
Action Options Help				
Atheros AR50	00 Wireless Network Adap	ster	-	
General Frame Statist	ics Transmit Retries St	ation Driver		
Betry	Count	Transmit Info		
1	0	Frames Sent	0	
2 3	0	Excessive Retri	er: 0	
4	0	FIFO Underrun:	0	
6	ő	Hung Count	0	
7 8	0	ACK Receive E		
9	0	ALK Hebelve El	mans: U	
10	U	Last ACK RSSI:	23	
Ready		CONNECTED	Tx 24 Mbps	Rx 24 Mbps

Under the Station tab is detailed BSS information including SSID, BSSID, association status, operating channel frequency, and information about scanned APs.

∧ LinkMon			
Action Options Help			
Atheros AR5000 Wireles	s Network Adapter	•	
General Frame Statistics   Trans	mit Retries Station Driver		
Network Name (SSID); DemoAF	2_4	Station Status:	Associated
AP Address (B55ID): 00-03-77	-A0-01-10	Channel/Frequency:	64 / 5.32 GHz
Scan List:		Regulatory Domain:	0x10 FCC (US)
Channel RSSI BSS	ID Network Nar	ne (SSID)	
52 24 00-0 60 10 00-0 60 7 00-0 64 21 00-0 64 33 00-0 56 11 00-0	377-A0-00-95         Test_Alpha           13.77-A0-00-41         videosp           13.77-A0-01-13         Athence 802.           13.77-A0-00-22         Blue AP           13.77-A0-01-10         DemoAP_4           13.77-A0-00-78         Test_Alpha	11a WLAN 00:00:00	
Ready	CONNECTED	Tx 36 Mbps	Rx 24 Mbps

Under the Driver tab is statistical data pertaining to NDIS driver operation.

A LinkMon			_ 🗆 🗙
Action Options Help			
Atheros AR5000 Wireless Network	Adapter	•	
General Frame Statistics Transmit Retrie	s Station Driver		
NDIS Statistics			
NDIS Resets: 0			
Self Induced Resets: 0			
NDIS Send Requests: 0			
NDIS Send Request Denied: 0			
Driver Information			
Ndis Version: 5.0 Driver: C:\WINNT\System Driver Version: 1.3.0.0 Driver Date: 02 Nov 2001 06:48 INI File: <not used=""></not>	32\DRIVERS\ar5210b.a	9/6	
Ready	CONNECTED	Tx 36 Mbps	Rx 24 Mbps

The Action menu enables a NDIS driver unloading and reloading, and network interface card (NIC) reset. Note that driver unload option is not available in Windows Me, Windows 98SE, and Windows NT 4.0. NIC reset is also not available in Windows NT 4.0.

A LinkMon					
Action Options I	Help				
Stop	5000 Wireless	Network Ada	pter	-	
Unload Driver NDC Reset	Mistics   Transm	nit Retries   S	tation Driver		
Ext	NDIS Resets:	0			
Self I	nduced Resets:	0			
NDIS 5	Send Requests:	0			
NDIS Send R	equest Denied:	0			
- Driver Informal	ion				
Ndis Version: Driver: Driver Version Driver Date: INI File:	5.0 C:\W/INNT 1.3.0.0 02 Nov 20 cnot used	\System32\L 01 06:48:46	RIVERS\ar5210b.	the contract of the contract o	
Ready			CONNECTED	Tx 24 Mbps	Rx 24 Mbps

On the Options menu, choose Settings....

A LinkMon			
Action Options Help			
Settings Wireless Network Ada	pter	*	
General Frame Statistics Transmit Retries S	tation Driver		
NDIS Statistics			
NDIS Reset: 0			
Self Induced Resets: 0			
NDIS Send Requests: 0			
NDIS Send Request Denied: 0			
Driver Information			
Ndis Version: 5.0 Drivet: C. \\/INNT\System32\C Driver Version: 1.3.0.0 Drivet Date: 02 Nov 2001 06:48:46 INI File: <not used=""></not>	RIVERS \ad5210b.sy	<i>1</i> 2	
Ready	CONNECTED	Tx 24 Mbps	Rx 24 Mbps

Under the Display tab, you can select the data display modes of "Cumulative" or "Relative." "Cumulative" mode displays statistical LinkMon data collected from the beginning of driver load. "Relative" mode displays differences in the statistical data since the last update.

Settings			M
Craterity   Log File			
Data Display:	Cumulative	•	
Refresh Interval (ms):	3000	-	
			_
		OK	Cancel

Under the Log File tab, the logging function can be enabled to log to a file the statistical information collected by the LinkMon utility, for later reference or post processing by an application such as Microsoft Excel.

Settings	<u>×</u>
Display Log File	
F Enable Logging	
Log File Path: c:\test.log	Browse
	OK Cancel

## 8 RFSilent

This chapter describes the RFSilent application that allows you to enable or disable the RF Signal (radio) on all D-Link STA Reference Designs. The RFSilent is a Windows-based application that appears in the right-hand corner of your Windows taskbar.

### **System Requirements**

The RFSilent application communicates with most Windows applications using Windows Management Instrumentation (WMI). For Windows NT 4.0, RFSilent communicates through the Input and Output Control (IOCTL) mechanism.

If you are using Windows 98SE, WMI does not come pre-installed and you must install it prior to using RFSilent. Refer to the following procedure to acquire and install the required WMI module from Microsoft.

#### Windows 98SE Environment

If you want to use the RFSilent application in a Windows 98SE environment, you must install WMI.

Follow these steps to install WMI:

- 1. Download the WMI installer (wmi9x.exe) from Microsoft and save it to your hard disk.
- 2. Execute the WMI Installer by double-clicking wmi9x.exe.
- 3. Click Next to continue.

- 4. Click "I accept this agreement" and then click Next to continue.
- 5. Click Next to continue.

The installer now copies the necessary files to the SYSTEM directory.

6. Reboot the system.

#### **RFSilent Setup**

The RFSilent application allows you to enable or disable D-Link STA References Designs. You can enable or disable the RFSilent application through user-defined settings. Refer to a description of driver parameters in the *AP Programmer's Reference Guide*.

#### **Operation**

The RFSilent application is a Windows-based application that, once enabled, appears as an icon (RF) in the right-hand corner of your Windows taskbar (see Figure 8-1). You can automatically launch RFSilent at system boot-up by entering a shortcut statement in the Startup folder.

Ln 19, C	ol 45	REC COL	OVR	READ //
📙 Perforc		🏵 🔣 🚺 🖬	f 2	2:42 PM

Figure 8-1. RFSilent Icon

Position your cursor over the RF Icon in your toolbar and use your right or left mouse button to display the RFSilent application selections (see Figure 8-2). The radio button on the side of menu selections indicates the current state of the RFSilent application.

<ul> <li>Disable RF Signal</li> </ul>
Enable RF Signal
About
Exit

Figure 8-2. RFSilent Menu Selections

Refer to Table 8-1 for a description of the RFSilent menu selections.
	-	
<b>RFSilent Menu Item</b>	n Descriptions	
Disable RF Signal	Use this selection to disable D-Link STA Reference Design.	
Enable RF Signal	Use this selection to enable D-Link STA Reference Design.	
About	Displays copyright, version information, and the build date for the RFSilent application.	
Exit	Quits the RFSilent application.	

Table 8-1. RFSilent Menu Descriptions

# **9 Country Code Selector**

Starting with Release 1.1, the D-Link WMP-A12 Wireless Network mini PCI Card has EEPROM locations allocated to store country code information. Currently, there are three countries available to select from—United States, Canada, and Japan. These countries represent two regulatory domains, namely the FCC (USA and Canada) and TELEC (Japan). When the country code is changed, the NDIS driver scans only the legal frequency channels allowed in those countries.

The country code selection utility is provided as part of the NDIS driver package .to allow users to switch to different countries. This utility is located under \NDIS\BIN\PRODUCTION\ARCCSEL in the CD. Start Country Code Selector by running ARCCSEL.EXE and follow the steps below to change countries.

1. Make sure the D-Link WMP-A12 Wireless Network mini PCI Card is listed under Network Card field. From the Country pull-down menu, choose the country that you want to switch to.

Ecountry Code Selector - Atheros Wireless Network Cards		×	
	Network Card:	Athenos AR5000 Wireless Network Adapter	*
ATHEROS	Country:	UNITED STATES CANADA	-
	[	UNITED STATES OK Cancel	

2. Click Yes to continue.



3. The country selection takes effect immediately. You can use LinkMon to verify the country that you selected by looking at the Regulatory Domain field in the Station tab.

🔥 LinkMon			
Action Options Help			
Atheros AR5000 Wireless Network Adapte	r	*	
General   Frame Statistics   Transmit Retries State	on Driver		
Network Name (SSID):		Station Status: Not Joined Channel/Frequency: 42 / 5.21 GHz	Not Joined
			42 / 5.21 GHz
Scan List		Regulatory Domain:	0x40 MKK (Japan)
Channel RSSI BSSID	Network Na	ne (SSID)	
Ready D	SCONNECTED	Tx 6 Mbps	Rx 6 Mbps

# 10 Troubleshooting

This chapter provides solutions to common problems that usually occur during the installation and operation of the D-Link WMP-A12 Wireless Network mini PCI Card. Read the following descriptions if you are having problems. If you cannot find an answer here, please contact an D-Link field application engineer for assistance.

#### 1. My computer does not recognize the D-Link CardBus reference card.

Make sure the CardBus card is properly inserted into a 32-bit CardBus slot. If Windows does not detect the hardware upon insertion of the card, the system could have a previous D-Link NDIS driver installed. Remove the old driver and try again.

### 2. The D-Link WMP-A12 Wireless Network mini PCI Card does not work properly after the driver is installed.

Re-insert the CardBus card into the slot. A beep should be heard if the adapter is properly inserted. Go to Device Manager and make sure the D-Link WMP-A12 Wireless Network mini PCI Card exists under the network adapters device node. If you see the yellow exclamation mark then there are conflicting resources. In this case, make sure the computer system has a free IRQ and make sure you have installed the proper driver. Uninstall the driver, restart the system, and repeat the driver installation steps if necessary.

#### 3. Stations cannot associate in ad hoc mode.

Make sure the same service set identifier is specified for all stations that need to join the same ad hoc network. Set up one station to establish a BSS and wait briefly before setting up other stations. This prevents several stations from trying to establish a BSS at the same time, which can result in multiple singular BSSs being established, rather than a single BSS with multiple stations associated to it.

### 4. The station cannot access the Internet in the infrastructure configuration.

Make sure the station is associated and joined with the AP. If Wired Equivalent Privacy (WEP) security is enabled on the AP, the station must have the proper WEP keys specified. Also make sure TCP/IP properties are correctly configured.

## 5. ARCCSEL Country Code Selector shows the following error message: No configurable D-Link network cards were found in this system.

Make sure the D-Link WMP-A12 Wireless Network mini PCI Card has Release 1.1 EEPROM contents programmed. D-Link CardBus Reference Design boards that were released prior to Release 1.1 do not contain the regulatory domain information in the EEPROM. Therefore, the country code selection utility will not recognize the card.