GL2411V1-A

Wireless LAN PCMCIA Card

USER MANUAL

Version 1.1, Nov. 08, 2001

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

This device may not cause harmful interference.

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 equipment generates, uses and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the manufacturer's instructions, it 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 during the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment to 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.

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Manufacturer's Disclaimer Statement

The information in this document is subject to change without notice and does not represent a commitment on the part of the vendor. No warranty or representation, either expressed or implied, is made with respect to the quality, accuracy or fitness for any particular purpose of this document. The manufacturer reserves the right to make changes to the content of this document and/or the products associated with it at any time without obligation to notify any person or organization of such changes. In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages. This document contains materials protected by copyright. All rights are reserved. No part of this manual may be reproduced or transmitted in any form, by any means or for any purpose without expressed written consent of its authors. Product names appearing in this document are mentioned for identification purchases only. All trademarks, product names or brand names appearing in this document are registered property of their respective owners

FCC RF Radiation Exposure Statement

The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled

Environment This equipment should be installed and operated with a minimum distance of 20

Centimetres between the radiator and your body

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Contents

Chapter 1 About the GL2411V1-A PCMCIA Card

The GL2411V1-A IEEE 802.11b PCMCIA PC Card is compatible with any standard, notebook computer Type II or Type III PCMCIA slot. As a Plug-and-Play device, Windows 95/98/2000/ME will automatically recognize the GL2411V1-A PCMCIA card and initiate the installation process. Upon successful installation, the GL2411V1-A PCMCIA card will communicate seamlessly with other GL2411V1-A wireless home and office networking products.

1-1 FEATURES

1. Supports up to 11 Mbps data rate: T-1 line alternative/replacement that dramatically cuts costs.

2. Working range up to 800 ft. in an open environment enhances mobility.

3. Supports point-to-point and point-to-multipoint access provides increased flexibility.

4. Seamless connectivity to wired Ethernet and PC network LAN's offers quick, trouble-free integration with existing networks.

5. Robust Direct Sequence Spread Spectrum (DSSS) technology provides secure, interference-resistant wireless connection.

6. Wireless connections eliminate the hassle and cost of cabling.

7. Supports a wide range of LAN (Local Area Network) Network Operating Systems (NOS) including Windows ® 95/98/2000/ME and Windows NT™ as well as Linux.

8. Easy Plug and Play installation

9. Omni - directional antenna included

10. Greater flexibility to locate or move networked PC's

1-2 APPLICATIONS

GL2411V1-A products offer a fast, reliable, cost-effective solution for wireless client access to the network the following applications and environments:

- Remote access to corporate network information

- E-mail, file transfer and terminal emulation

- Difficult-to-wire environments

- Historic or older buildings

- Buildings with asbestos insulation

- Open areas where wiring is difficult to employ

- Frequently changing environments

- Retailers, manufacturers or other organizations that frequently rearrange the workplace or relocate

- Temporary LANs for special projects or peak time usage

- Trade shows, exhibitions and construction sites that employ temporary networks. Retailers, airline and shipping companies that need additional workstations for a peak period and Auditors that require workgroups at customer sites.

- Access to database for mobile workers

- Medical, Technical and Retail specialists that require roaming access to a database or other network resources.

- SOHO (Small Office and Home Office) users

- Perfect for users that need a small, easy-to-install network that deploys rapidly.

- Inter-building connection

- Wireless building-to-building networks are quickly and easily installed, require no monthly lease fees, and provide the flexibility to reconfigure easily.

1-3 PRODUCT KIT

The GL2411V1-A product kit includes the following items. Ensure that the items in the following list have been included. If any of the listed items are missing, please contact your local dealer.

- 1 X GL2411V1-A PCMCIA Type II Adapter

- 1 X Driver

- 1 X User Manual & Utility CD pack

Chapter 2 Network Configuration and Planning

The GL2411V1-A supports legacy Ethernet LAN network configuration options as defined by the IEEE 802 standards committee.

The GL2411V1-A can be configured as:

- Ad-Hoc for departmental or SOHO LANs

- Infrastructure for enterprise LANs

- LAN-Interconnection for point-to-point link as a campus backbone
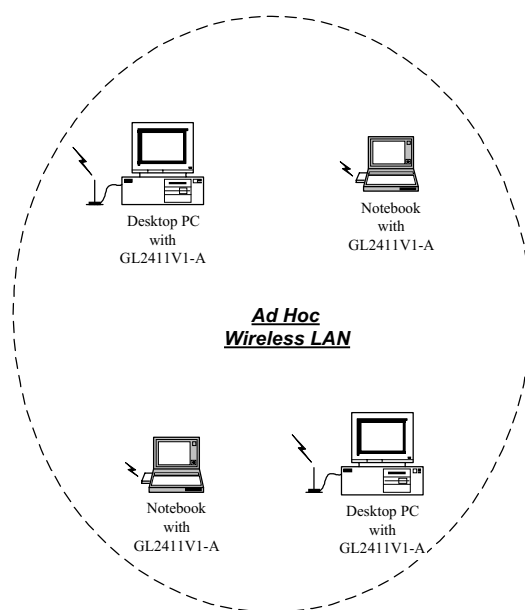
2-1 NETWORK TOPOLOGY

Fig. 1 - Ad-Hoc Wireless LAN

An Ad-Hoc wireless LAN is a group of computers, each equipped with one GL2411V1-A PC Card, connected as an independent wireless LAN. Computers in a specific Ad-Hoc wireless LAN must be configured to share the same radio channel.

Ad-Hoc wireless LAN configurations are appropriate for branch level departments or SOHO operations
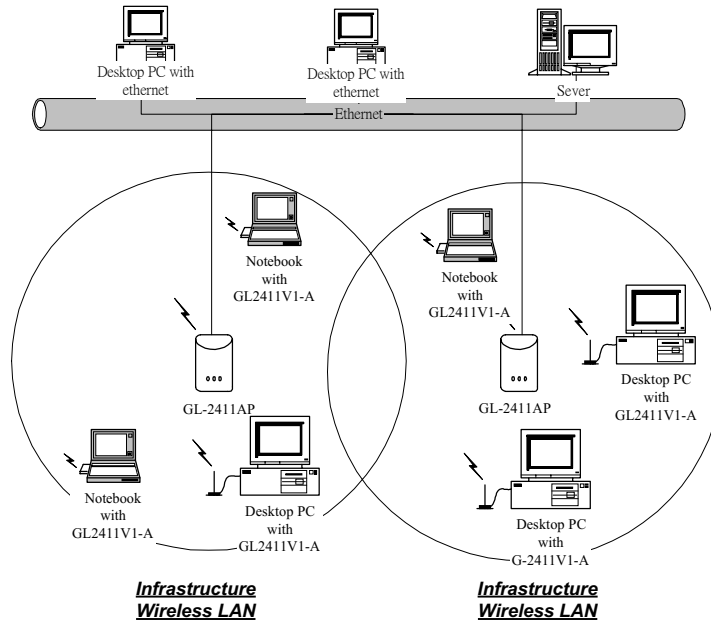
Fig. 2 - Infrastructure Wireless LAN Configuration

The GL2411V1-A provides access to a wired LAN for wireless workstations. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of GL2411V1-A PC users and an Access Point compose a Basic Service Set (BSS). Each GL2411V1-A PC in a BSS can talk to any computer in the wired LAN infrastructure via the Access Point.

An Infrastructure configuration extends the accessibility of a GL2411V1-A equipped PC to a wired LAN, and doubles the effective wireless transmission range for 2 GL2411V1-A PCs. Since the Access Point is able to forward data within its BSS, the effective transmission range in an infrastructure LAN is **doubled**.
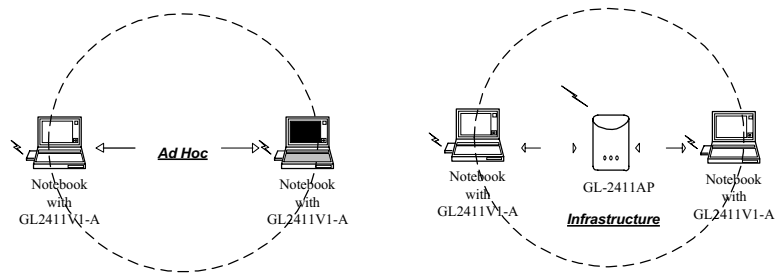

Fig. 3 - The effective Transmission Range

The use of a unique ID in a BSS is essential. All GL2411V1-A equipped PCs configured without roaming options in an independent BSS must be configured with a BSS ID corresponding to the GL-2411AP used in the BSS. Check your GL-2411AP for its BSS ID or use the Access Point Browser Utility program to determine the BSS ID.

The Infrastructure Wireless LAN configuration is appropriate for enterprise-scale wireless access to a central database, or as a wireless application for mobile users.

A point-to-point LAN configuration is possible when two access points are linked with an optional directional antenna (the directional antenna is an optional accessory, please contact your dealer for information). The optional directional antenna makes LAN-Interconnection to a wireless backbone between buildings possible.

2-2 ROAMING

Infrastructure mode also supports roaming capabilities for mobile users. More than one BSS can be configured as an Extended Service Set (ESS). The continuous network allows users to roam freely within an ESS. All GL2411V1-A PCs and GL-2411APs within one ESS must be configured with the same ESS ID and use the same radio channel.
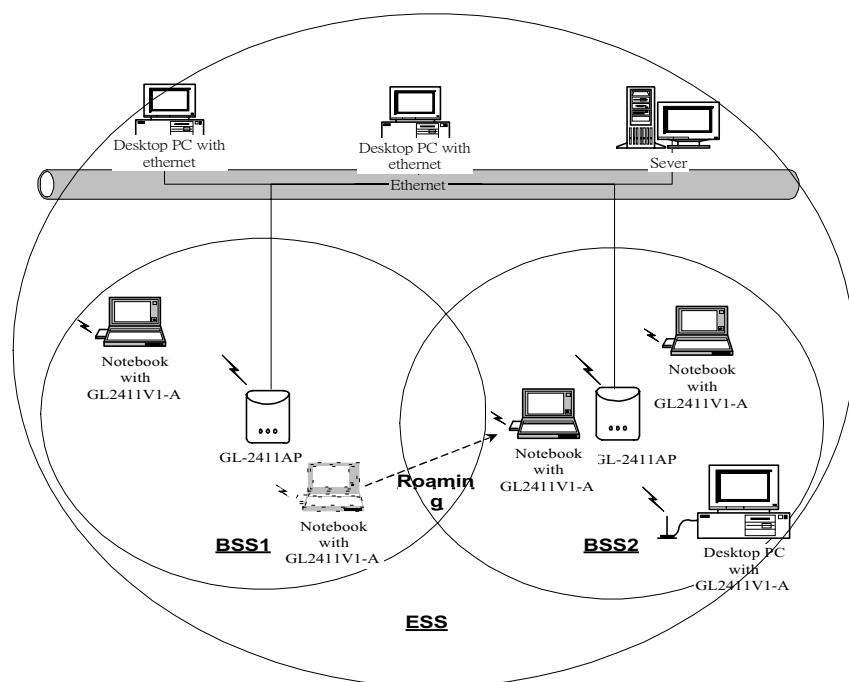
Fig. 4 - Roaming in an Extended Service Set (ESS)

Before enabling an ESS with roaming capability, choosing a feasible radio channel and optimum Access Point position is recommended. Proper Access Point positioning combined with a clear radio signal will greatly enhance performance.

Chapter 3 Adapter Installation and Configuration

3-1 SYSTEM REQUIREMENTS

In order to install and use the GL2411V1-A PCMCIA card your PC system must meet the following requirements:

- A PCMCIA Type II or Type III slot

- PCMCIA revision 2.10 compliant card and socket services

- Windows® 95,98,ME.2000 or NT (with the Windows® CD, for use during installation)

- 500 Kbytes free disk space for utility and driver installation

3-2 INSERTING THE GL2411V1-A PC CARD

To insert the GL2411V1-A Network Adapter into a notebook computer, do the following:

1. Locate an available Type II or Type III PCMCIA slot.

2. With the PCMCIA Card's 68-pin connector facing the PCMCIA slot and the GL2411V1-A PCMCIA label facing up slide the PCMCIA Card completely into the PCMCIA slot.
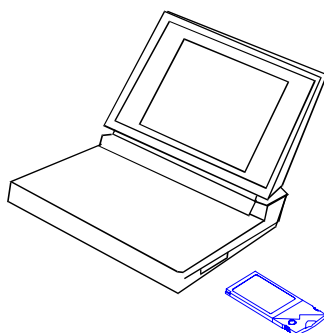
Fig. 5 Insert the GL2411V1-A into Notebook

After properly inserting the Network Adapter into your notebook, continue with the GL2411V1-A driver and PRISM Configuration Utility installation.

NOTE: The PCMCIA slot allows "hot swap" of PCMCIA Card. You may insert or remove the GL2411V1-A / PCMCIA Card from the slot anytime, even when the power of your computer is on.

NOTE: Windows® requires that the Network card and socket services must be compliant with the PCMCIA revision 2.10 specification. Please check the documentation of the PCMCIA driver before installing the GL2411V1-A PCMCIA Card.

NOTE: To comply with FCC RF exposure requirements, this device should be operated in lap-top computer configurations with a separation distance of 20 cm or more between the antenna and persons. The antenna should not be operated next to a person's body.

3-3 GL2411V1-A DRIVER INSTALLATION -WINDOWS® 95

Note: Before proceeding, have the Windows® 95 CD ready, as it will be required during the software installation process.

1. Insert the GL2411V1-A Card into a standard Type II or Type III PCMCIA card slot, as described in the preceding section.

2. Windows® 95 will automatically detect the GL2411V1-A and prompt you to install the necessary driver. Click "Next" to begin the installation.
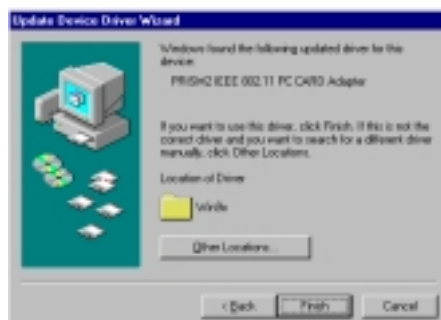

3. Check "Other Locations…" and click "Next".

4. Check "CD-ROM Driver" click "Browse". Double-click the "d:\pc-oem\driver\Win9x" folder icon from the list. Windows® will automatically enter the path click "Next". (where "D" represents the CD-ROM drive)
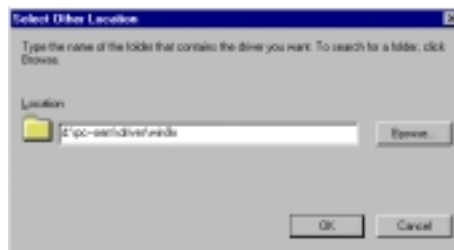
5. Windows® will then acknowledge that it has found the appropriate driver, click "Next"

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6. As the driver files are being copied to the appropriate location, Windows® 95 may want you to relocate the driver. Then you browse the "D:\pc-oem\driver\\win9x" location and click "OK" to continue. (where "D" represents the CD-ROM drive)

7. Windows® will now install the driver. As the driver files are being copied to the appropriate location, you will be prompted to insert the Windows® 95 CD. Insert the Windows® 95 CD. Select "C:\win95" from the drop down list (where "C" represents the Windows® 95 set up source), click "OK"

8. You will be prompted to restart your computer and click "Yes" to complete the installation.

9. After successful installation of the GL2411V1-A and its driver, continue the installation process by configuring the GL2411V1-A PC Card properties. From the Control Panel, double-click the "Network" icon.

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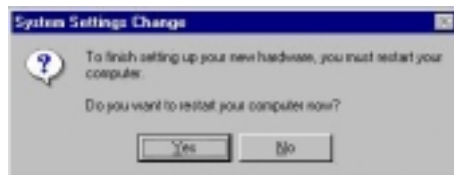
10. Select "PRISM25 IEEE 802.11 PC Card Adapter" from the list and press the "Properties" button.

11. From the "Properties" menu, please select the "Advanced" tab.

12. Select "Adhoc STA – ATIM Windows" and set up the default value 0 from a range between 0 and 100 (See Appendix B Glossary).

13. Select "Authentication Algorithm" and set up the default value: WECA Compliant (See Appendix B Glossary).

14. Select "Channel" from the list, and choose a "Value" from the drop down list. FCC regulations require a "Value" between 1 and 11 and ETSI between 1 and 13.
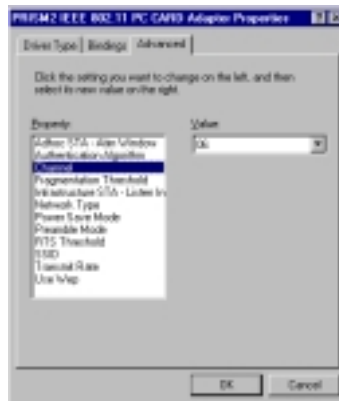
15. Select "Fragmentation Threshold" and set up the default value: 2432 (See Appendix B Glossary).

16. Select "Infrastructure STA – Listen Interval" and set up default value: 3 (See Appendix B Glossary).

17. Select "Network Type", and choose "Infrastructure", "Ad-Hoc" or "802.11b Ad-Hoc" as the "Value".

NOTE: "Infrastructure" mode allows a wireless adapter to communicate with a wired network, while "Ad-Hoc" and "802.11b Ad-Hoc" mode allow wireless-to-wireless communication. Consult your System Administrator for information about your network communication type. For more information about Infrastructure and Ad-Hoc networks, see Chapter 2 of this manual

18. Select "Power Save Mode" and choose a "Value" for "Enabled" or "Disabled".

NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.

19. Select "Preamble Mode" and set up the default value: Long Tx Preamble (See Appendix B Glossary).

20. Select "RTS Threshold" and set up default value: 2432 (See Appendix B Glossary).

21. The SSID can have any value, but should have the same value as the Access Point (AP). In Ad-Hoc mode, all clients should share the same SSID.

22. Select "Transmit Rate", and choose a default value as "Fully Auto".

NOTE: Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

23. Select "Use Wep", and choose a "Value" for "128 bit", "64 bit" or "Disabled". (See Chapter 4-2 and Appendix B Glossary).

24. After the configuring the "Properties", click "OK" and continue with the Protocol Installation.

25. Please check your protocol. If it lacks TCP/IP, click "Add" to install the protocol.

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NOTE: Before installing any protocol, please make sure that the protocol has been installed. Never install the same protocol twice.

26. Select "Protocol" and click "Add" button.

27. Select "Microsoft" from the list of "Manufacturers" and "TCP-IP" from the list of "Network Protocols", then click "OK"
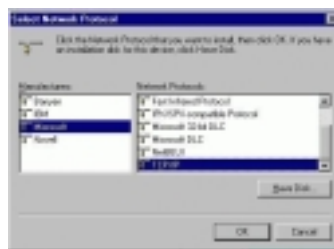
28. Select "TCP/IP " and click "Properties".

29. Please select the "IP Address" tab. If you are using a DHCP server, you can click "Obtain an IP address automatically" to get IP from the DHCP sever. Otherwise, you must click "Specify an IP address" and key in your IP address and subnet mask.

30. If you use DHCP sever, please click "OK" and jump to step 31. If you do not use a DHCP server and must manually enter the IP address and DNS number. Please select the "Gateway" tab and key in your gateway. Then select the "DNS Configuration" tab and key in the DNS sever IP address which is near your PC. Then click "OK".

31. From the "Network" menu, please select the "Advanced" tab. Enter a "Computer name", "Workgroup" and "Computer Description", then click "OK".

32. You will be prompted to restart your computer, click "Yes" to complete the installation.

NOTE: Please see the trouble shooting if you encounter some problem while installing the PC-Card or your PC-Card is non-functional.

3-4 GL2411V1-A DRIVER INSTALLATION -WINDOWS® 98

Note: Before proceeding, have the Windows® 98 CD ready, as it will be required during the software installation process.

1. Insert the GL2411V1-A Card into a standard Type II or Type III PCMCIA card slot, as described in the preceding section.

2. Windows® 98 will automatically detect the GL2411V1-A and prompt you to install the necessary driver. Click "Next" to begin the installation.
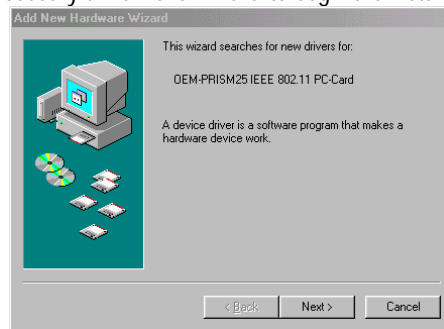
3. Check "Search for the best driver… " and click "Next".

4. Check "Specify a locationr" and click "Browse". Double-click the "A:\Driver" folder icon from the list. Windows® will automatically enter the path click "Next".

5. Windows® will then acknowledge that it has found the appropriate driver, click "Next"
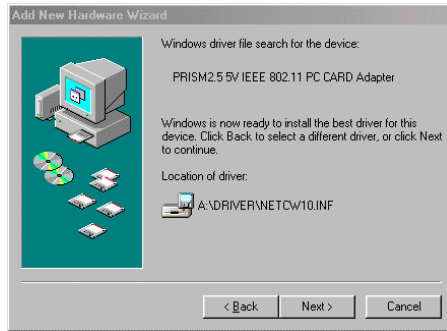
Windows® will now install the driver

As the driver files are being copied to the appropriate location, you will be prompted to
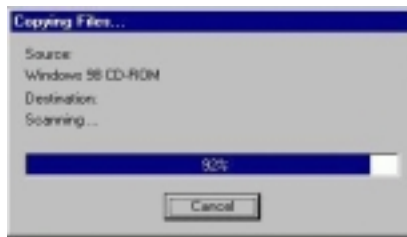
insert the Windows® 98 CD.

6. Insert the Windows® 98 CD. Select "D:\win98" from the drop down list (where "D" represents the CD-ROM drive), click "OK".
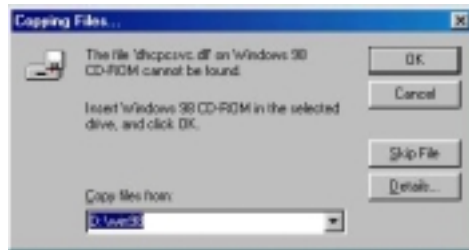
NOTE: You must insert the Windows 98®CD as the driver installation requires special files that will not be available even if you have stored a copy of Windows® 98 on your hard drive.

7. After Windows® has finished installing the appropriate files click "Finish"

8. You will be prompted to restart your computer and click "Yes" to complete the installation.
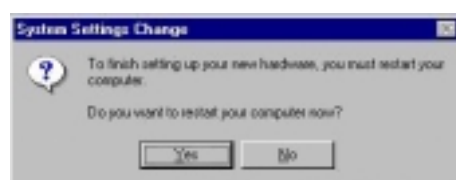
9. After successful installation of the GL2411V1-A and its driver, continue the installation process by configuring the GL2411V1-A PC Card properties. From the Control Panel, double-click the "Network" icon.
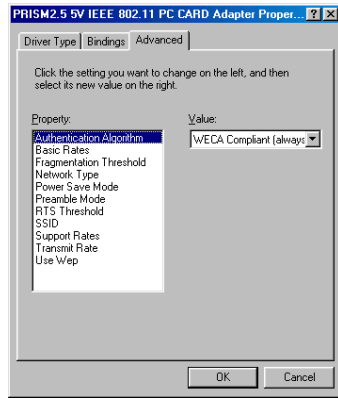

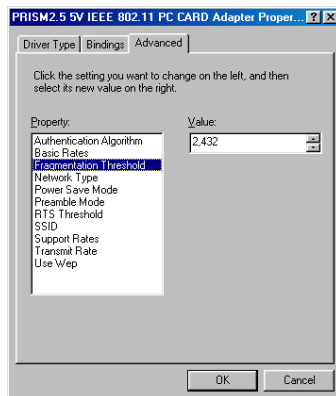10. Select "PRISM25 IEEE 802.11 PC Card Adapter" from the list and press the "Properties" button.
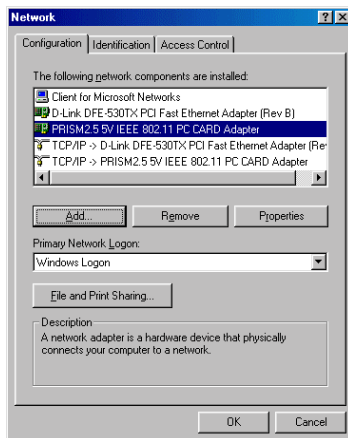
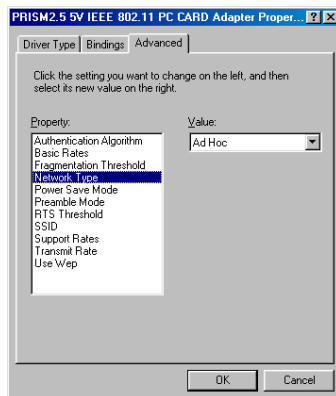11. From the "Properties" menu, please select the "Advanced" tab.
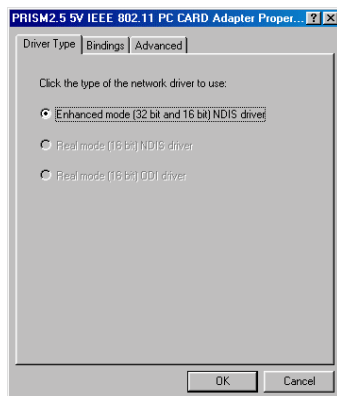
12. Select "Authentication Algorithm" and set up a default value: WECA Compliant (See Appendix B Glossary).

13. Select "Fragmentation Threshold" and set up a default value: 2432 (See Appendix B
    Glossary).

14. Select "Network Type", and choose "Infrastructure", "Ad-Hoc" or "802.11b Ad-Hoc" as the
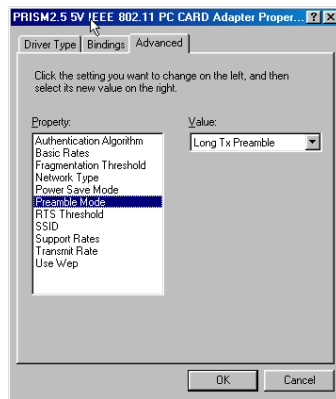   "Value".

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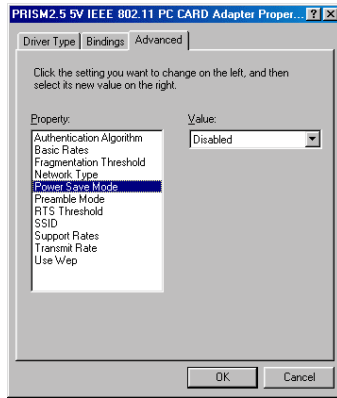
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NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.
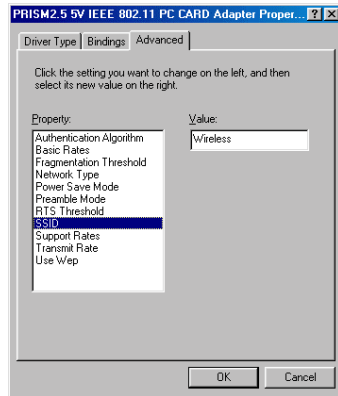
16. Select "Preamble Mode" and set up a default value: Long Tx Preamble (See Appendix B Glossary).
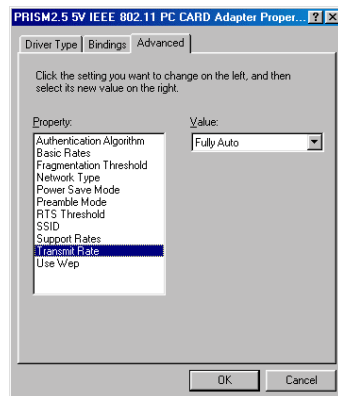

17. Select "RTS Threshold" and set up a default value: 2432 (See Appendix B Glossary).
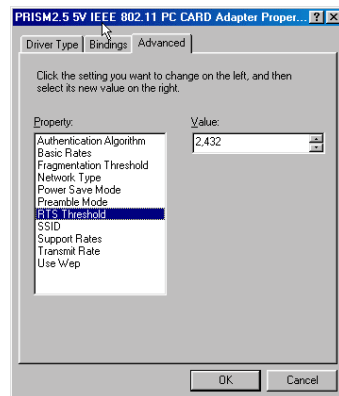
18. The SSID can have any value, but should have the same value as the Access Point (AP). In Ad-Hoc mode, all clients should share the same SSID.

19. Select "Transmit Rate", and choose a default value as "Fully Auto".

NOTE: Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

20. Select "Use Wep", and choose a "Value" for "128 bit", "64 bit" or "Disabled". (See Chapter 4-2 and Appendix B Glossary).
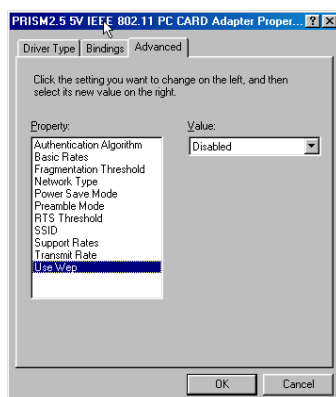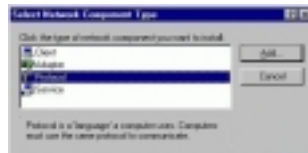

21. After the configuring the "Properties", click "OK" and continue with the Protocol Installation.

22. Please check your protocol. If it lacks TCP/IP, click "Add" to install the protocol.
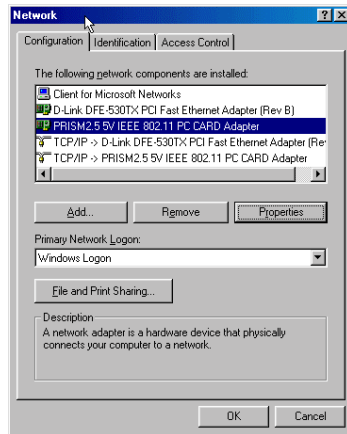
NOTE: *Before installing any protocol, please make sure that the protocol has been installed. Never install the same protocol twice.*
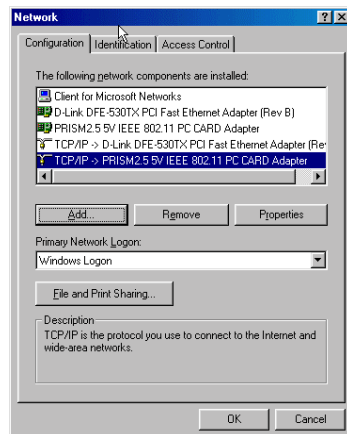
23. Select "Protocol" and click "Add" button.

24. Select "Microsoft" from the list of "Manufacturers" and "TCP-IP" from the list of "Network Protocols", then click "OK"

25. Select "TCP/IP " and click "Properties".

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26. Please select the "IP Address" tab. If you are using a DHCP server, you can click "Obtain an IP address automatically" to get IP from the DHCP sever. Otherwise, you must click "Specify an IP address" and key in your IP address and subnet mask.


27. If you use DHCP sever, please click "OK" and jump to step 31. If you do not use a DHCP server and must manually enter the IP address and DNS number. Please select the "Gateway" tab and key in your gateway. Then select the "DNS Configuration" tab and key in the DNS sever IP address which is near your PC. Then click "OK".

28. From the "Network" menu, please select the "Advanced" tab. Enter a "Computer name", "Workgroup" and "Computer Description", then click "OK".

29. You will be prompted to restart your computer, click "Yes" to complete the installation.
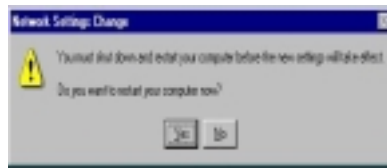
Note: *Please see the trouble shooting if you encounter some problem while installing the PC-Card or your PCI-Card is non-functional.*

## 3-5 GL2411V1-A DRIVER INSTALLATION -WINDOWS® 2000

1. Insert the GL2411V1-A PC Card into a standard Type II or Type III PCMCIA card slot, as described in the preceding section. Then insert the driver CD into the CD-ROM.

2. Windows® 2000 will automatically detect the GL2411V1-A and prompt you to install the necessary driver. Click "Next" to begin the installation.
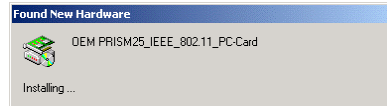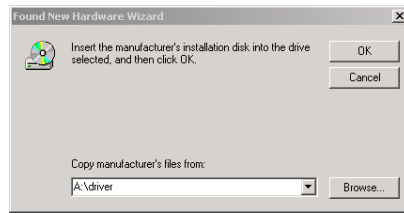

3. Select "Search for a suitable driver…" and click "Next" to find the GL2411V1-A driver.

5. Select "Specify a location" and click "Next".
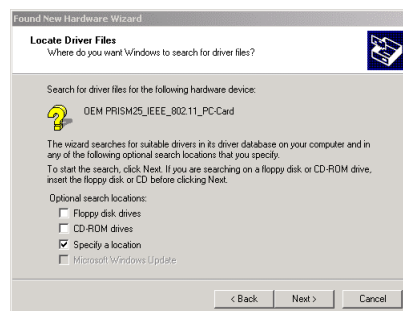
6. Insert the driver disk into the floppy. Then key in "A:\driver" and click "OK".

7. Windows® 2000 will automatically scan the driver. After acknowledge of Windows® 2000, please click "Next".
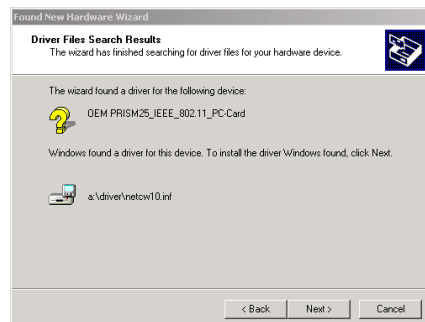
8. Windows® 2000 will show a windows information dialog. Click "Yes".
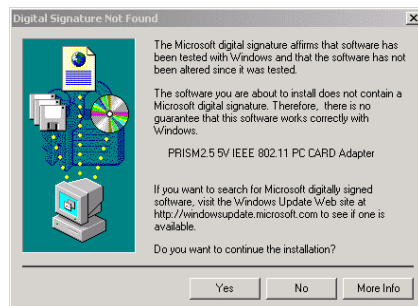
9. Windows® 2000 will install the driver. As the driver files are being copied to the appropriate location, you will be prompted to insert the Windows® 2000 CD. Then Windows® 2000 will show a windows information dialog. Click "Finish".

10. After the successful installation of the GL2411V1-A, continue the installation process by configuring the GL2411V1-A adapter properties. First, from the Control Panel, double-click the "Network and Dial-up Connections" icon.

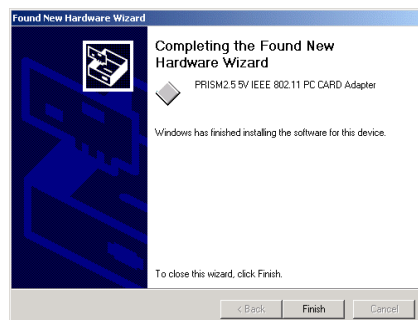11. Move the mouse to the local area connection which the GL2411V1-A generates and right-click the mouse. Then click the "Properties".
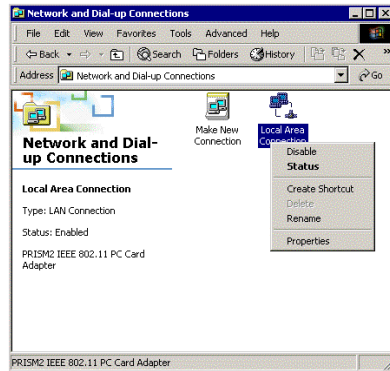
12. Click "Install…" and "Add" to add protocols.
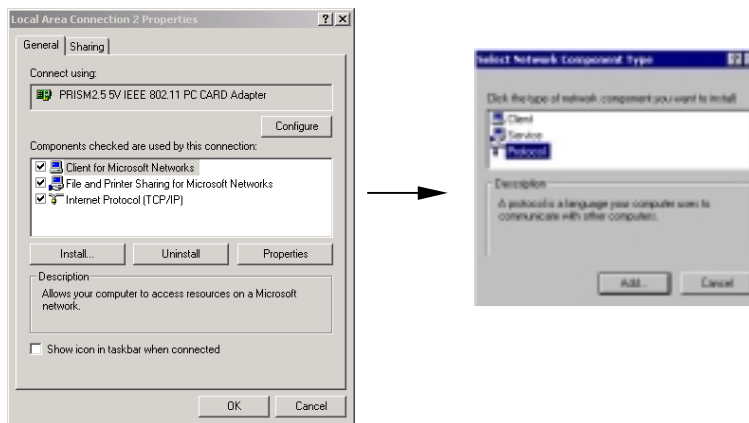
NOTE: Before installing any protocol, please make sure that the protocol has been installed. Never install the same protocol twice.

13. Click "NetBEUI Protocol" and "OK" to install the protocol.

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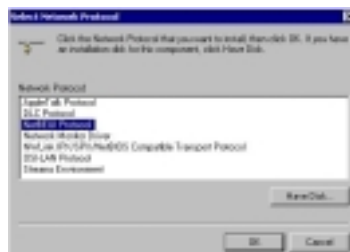
14. The system will show a windows information dialog. Click "No" to skip.
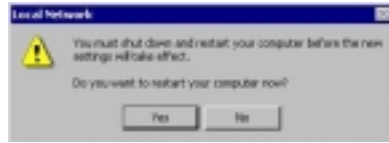
15. Repeat step 11. Then click "NWLink IPX/SPX/NetBIOS Compatible Protocol" and "OK" to install the protocol.

16. The system will also show the windows information dialog above. Click "No" to skip.

17. Click "Configure" to configure the adapter.
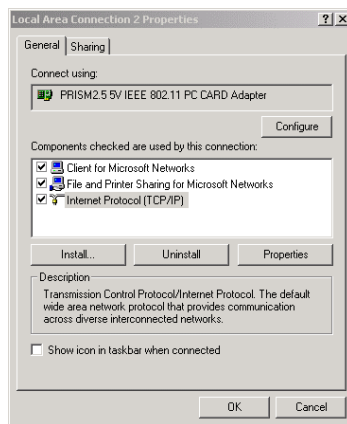
18. Select "Authentication Algorithm" and set up a default value: WECA Compliant (See Appendix B Glossary).
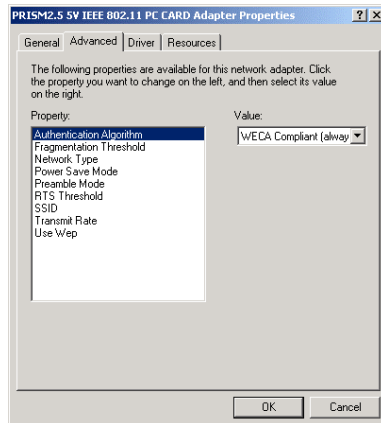
19. Select "Fragmentation Threshold" and set up a default value: 2432 (See Appendix B Glossary).
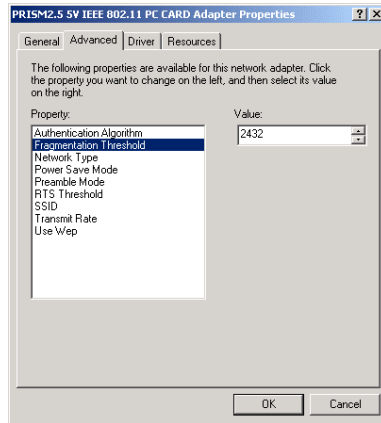
20. Select "Network Type", and choose "Infrastructure", "Ad-Hoc" or "802.11b Ad-Hoc" as the "Value".
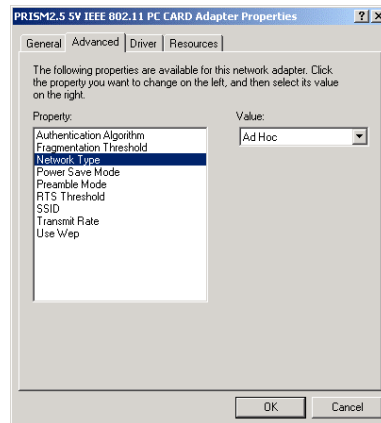
Note: "Infrastructure" mode allows a wireless adapter to communicate with a wired network, while "Ad-Hoc" and "802.11b Ad-Hoc" mode allow wireless-to-wireless communication. Consult your System Administrator for information about your network communication type. For more information about Infrastructure and Ad-Hoc networks, see Chapter 2 of this manual

21. Select "Power Save Mode" and choose a "Value" for "Enabled" or "Disabled".
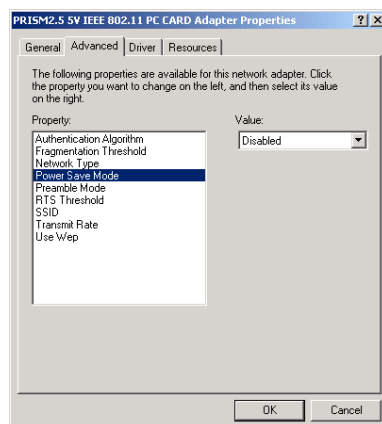
NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your

network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.

22. Select "Preamble Mode" and set up a default value: Long Tx Preamble (See Appendix B Glossary).
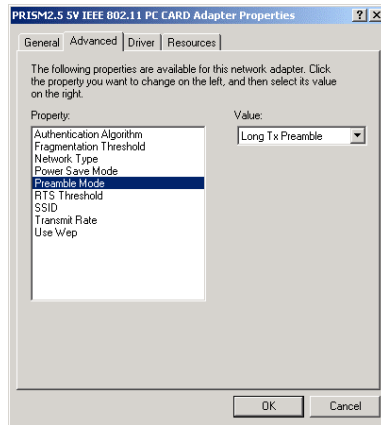
23. Select "RTS Threshold" and set up a default value: 2432 (See Appendix B Glossary)
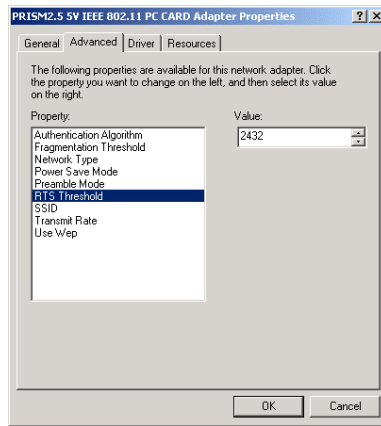
24. The SSID can have any value, but should have the same value as the Access Point (AP). In Ad-Hoc mode, all clients should share the same SSID.
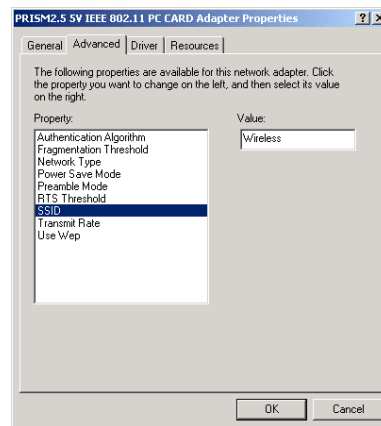
25. Select "Transmit Rate", and choose a default value as "Fully Auto".
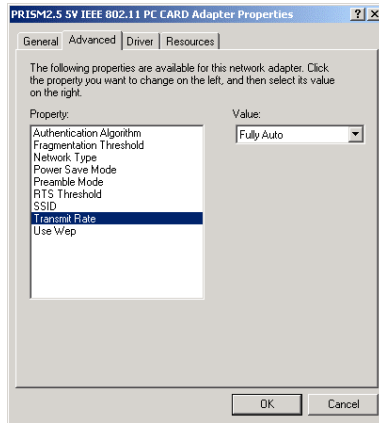
NOTE: Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

26. Select "Use Wep", and choose a "Value" for "128 bit", "64 bit" or "Disabled". (See Chapter 4-2 and Appendix B Glossary).
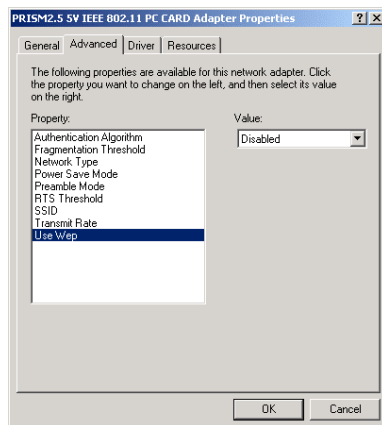
27. After configuration, please click "OK".

28. Click "Internet Protocol (TCP/IP)" and "Properties" to initialize the TCP/IP Protocol.
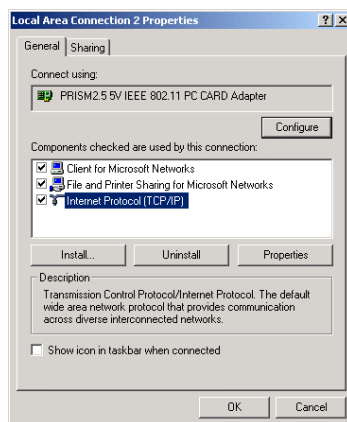
29. If you are using a DHCP server, you can click "Obtain an IP address automatically" to get IP from the DHCP sever. Otherwise, you must click "Use the following IP address" and key

in your IP address, subnet mask and default gateway. Then you may also key in the DNS sever IP address which is near your PC. After keying in all IPs, click "OK"

30. Click "Close".

31. Windows® 2000 will show a windows information dialog. You will be prompted to restart your computer. Click "Yes" to complete the installation.
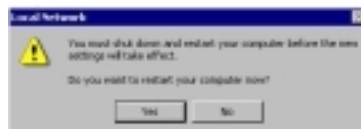
3-6 GL2411V1-A DRIVER INSTALLATION -WINDOWS® ME

NOTE: Before proceeding, have the Windows® Me CD ready, as it will be required during the software installation process.

1. After inserting the GL2411V1-A PCMCIA card into a standard type II or type III PCMCIA card slot and powering on the PC under Windows® Me, Windows® Me will automatically detect the GL2411V1-A and prompt you to install the necessary driver. Check "Specify the location of the driver (Advanced)" and click "Next" to begin the installation.

2. Insert the driver disk. Check "Specify a location" and browse "D:\pc-oem\driver\WIN9x" folder. Then click "Next". (where "D" represents the CD-ROM drive)

3. Windows® Me will install the driver. As the driver files are being copied to the appropriate location, you will be prompted to insert the Windows® ME CD.

4. After installation, please click "Finish"
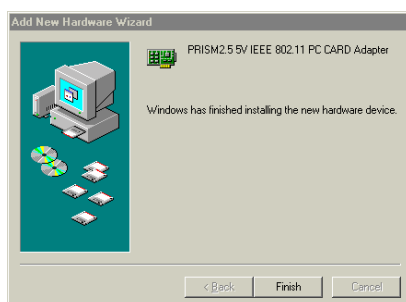
5. After successful installation of the GL2411V1-A and its driver, continue the installation process by configuring the GL2411V1-A adapter properties. To configure the GL-24110P Adapter completes the following steps.

6. From the desktop, move the mouse to "My Network Places". Click-right the button and select "Properties"
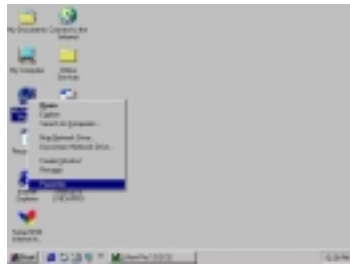
7. Click "Add" to add complete protocols.
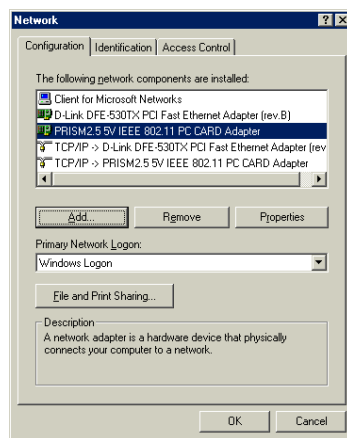
NOTE: Before installing any protocol, please make sure that the protocol has been installed. Never install the same protocol twice.

8. Select "Protocol" and click "Add".

9. Select "Microsoft" from the list of "Manufacturers" and "IPX/SPX-compatible Protocol" from the list of "Network Protocols". Then click "OK".

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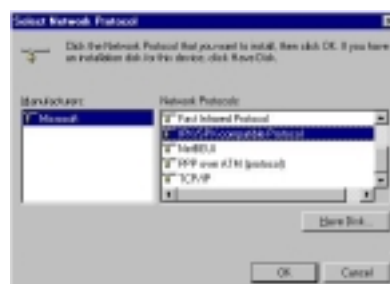
10. Repeat step 8 to 10. Select "Microsoft" from the list of "Manufacturers" and "NetBEUI" from the list of "Network Protocols". Then click "OK".

11. Select "PRISM25 IEEE 802.11 PC Card Adapter" from the list and press the "Properties" button.
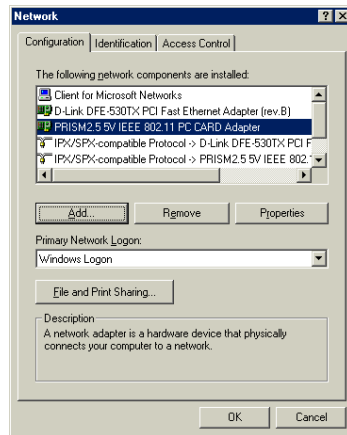
12. From the "Properties" menu, please select the "Advanced" tab.
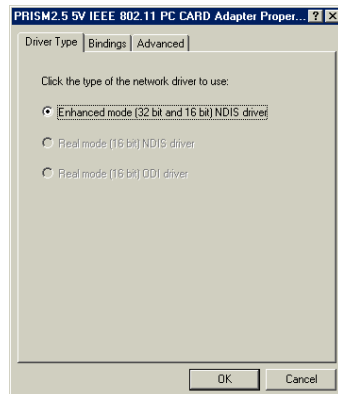
13. Select "Authentication Algorithm" and set up a default value: WECA Compliant (See Appendix B Glossary).
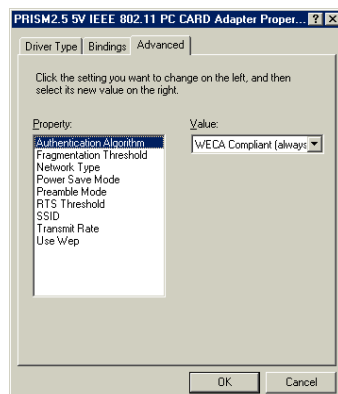
14. Select "Fragmentation Threshold" and set up a default value: 2432 (See Appendix B Glossary).
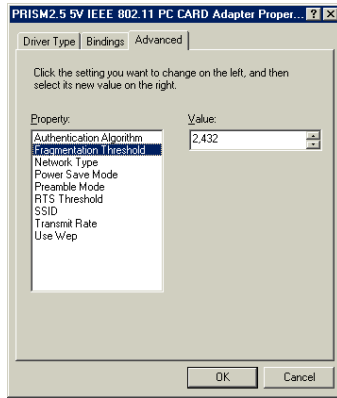
15. Select "Network Type", and choose "Infrastructure" , "Ad-Hoc" or "802.11b Ad-Hoc" as the "Value".
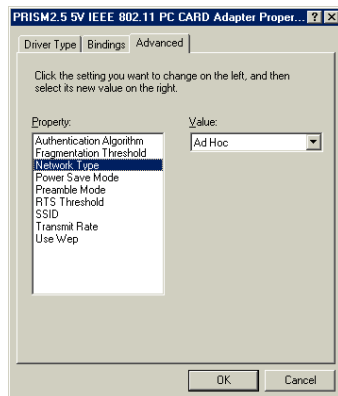
Note: "Infrastructure" mode allows a wireless adapter to communicate with a wired network, while "Ad-Hoc" and "802.11b Ad-Hoc" mode allow wireless-to-wireless communication. Consult your System Administrator for information about your network communication type. For more information about Infrastructure and Ad-Hoc networks, see Chapter 2 of this manual

16. Select "Power Save Mode" and choose a "Value" for "Enabled" or "Disabled".
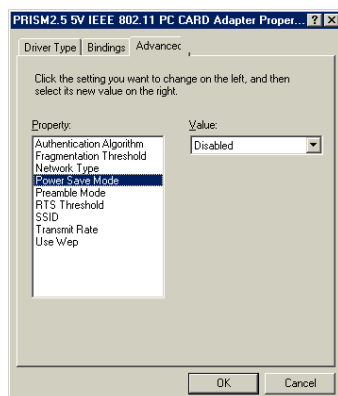
NOTE: To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your

network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.

17. Select "Preamble Mode" and set up a default value: Long Tx Preamble (See Appendix B Glossary).

18. Select "RTS Threshold" and set up a default value: 2432 (See Appendix B Glossary).
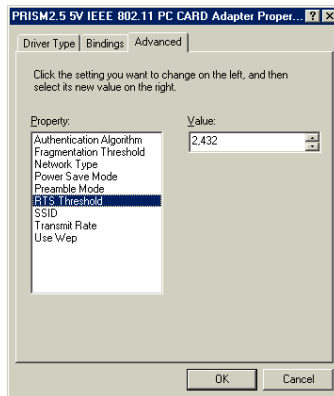
19. The SSID can have any value, but should have the same value as the Access Point (AP). In Ad-Hoc mode, all clients should share the same SSID.
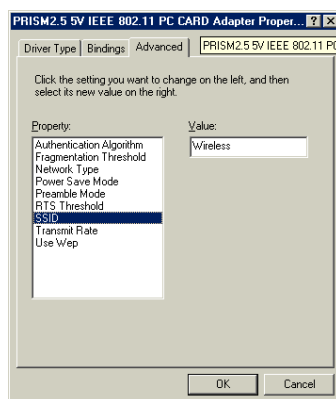
20. Select "Transmit Rate", and choose a default value as "Fully Auto".
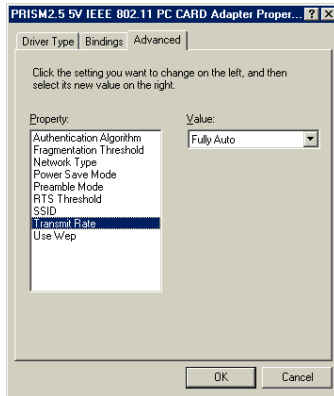
NOTE: Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

21. Select "Use Wep", and choose a "Value" for "128 bit", "64 bit" or "Disabled". (See Chapter 4-2 and Appendix B Glossary).
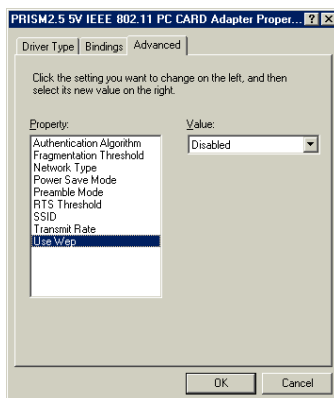
22. After the configuring the "Properties", click "OK".

23. Select "TCP/IP" and click "Properties".

24. From the "TCP/IP Properties" menu, please select the "IP Address" tab. If you are using a DHCP server, you can click "Obtain an IP address automatically" to get IP from the DHCP sever. Otherwise, you must click "Specify an IP address" and key in your IP address and subnet mask.

25. If you use DHCP sever, please click "OK" and jump to step 32. If you do not use a DHCP server and must manually enter the IP address and DNS number. Please select the "Gateway" tab and key in your gateway. Then select the "DNS Configuration" tab and key in the DNS sever IP address which is near your PC. Then click "OK".

26. From the "Network" menu, please select the "Identification" tab. Enter a "Computer name" "Workgroup" and "Computer Description". Click "OK".

27. You will be prompted to restart your computer. Click "Yes" to complete the installation.
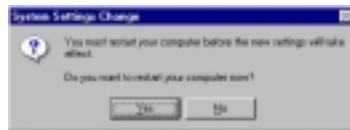
3-7 GL2411V1-A SETUP FOR WINDOWS® NT 4.0

Login as Administrator

1. Insert the GL2411V1-A Card into a standard Type II or Type III PCMCIA card slot, as described in the preceding section.

2. Power on the PC under Windows® NT4.0 and login as Administrator and double-click "Network" from Control Panel.

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3. From the Network menu, select "Adapters" tab and click "Add…".
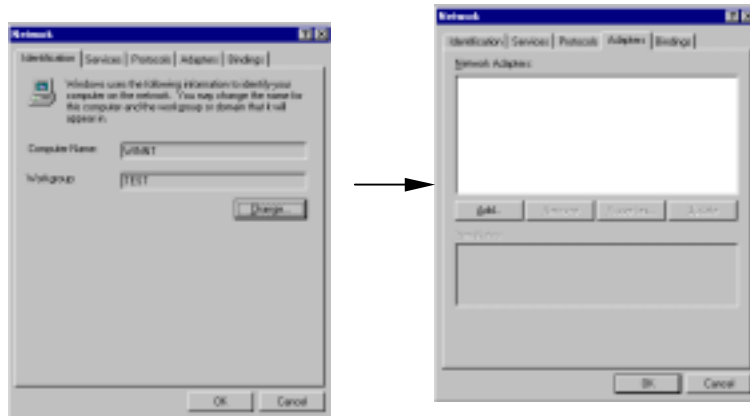
4. Click "Have Disk"

5. Insert the driver CD and key in the path of the driver. Then click "OK". (where "D" represents the CD-ROM drive)

6. Select "PRISM25 IEEE 802.11 PC Card Adapter" and click "OK".
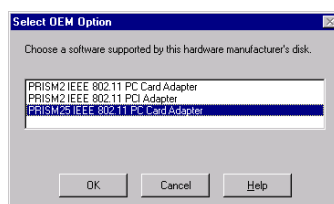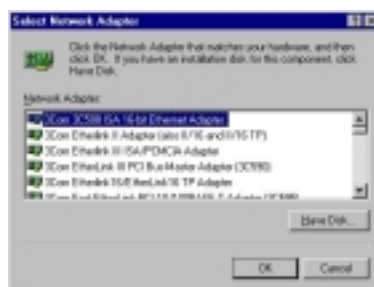
7. Windows® NT4.0 will show a configuration dialog and you may click "OK".
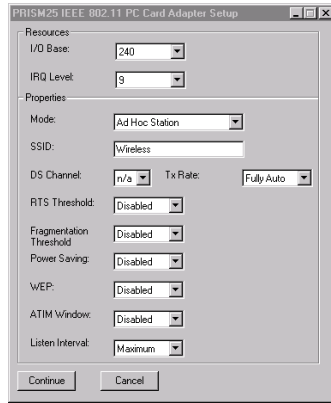
NOTE:

A. You many change the I/O Base and IRQ Level which setting should be unique and avoid any possible conflicts with other system devices.

B. Mode : "Infrastructure" mode allows a wireless adapter to communicate with a wired network by connecting with an Access Point, while "Ad-Hoc" and "802.11b Ad-Hoc" mode allows wireless-to-wireless communication. Consult your System Administrator for information about your network communication type. For more information about Infrastructure and Ad-Hoc networks, see Chapter 2 of this manual.
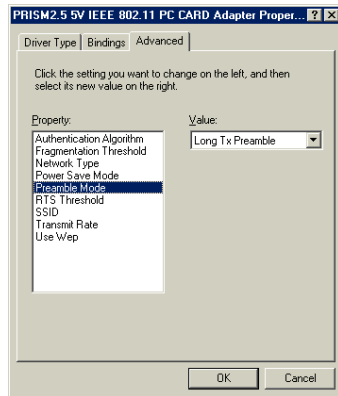
C. SSID : The SSID can have any value, but should have the same value as the Access Point (AP) in the "Infrastructure Mode". In Ad-Hoc mode, all clients should share the same SSID for communication.

D. DS Channel : Select "Channel" from the list and choose a "Value" from the drop down list. FCC regulations require a "Value" between 1 and 11 and ETSI between 1 and 13.

E : Tx Rate : Fixed 11 Mb/s is the preferred "Value" for environments where the client has line of sight access and is a short distance away from the AP. Fully Auto is the recommended setting for clients that are farther away from the AP and where there may be interference between the client and the AP.

F : RTS Threshold, Fragmentation Threshold, WEP, ATIM Windows and Listen Interval: See Appendix B Glossary

G . Power Saving : To allow uninterrupted data communication, choose "Disabled" as the "Value". Choosing "Enabled" allows your notebook to enter "sleep" mode, however, this will interrupt data communication. Consult your System Administrator to find out the best setting for your network type. For more information about Power Save Mode, see the chapter entitled "PRISM Configuration Utility" in this manual.

8. Click "Close" from the "Network" dialog, Windows NT will auto-bind the new adapter with any network protocols already installed on the system.
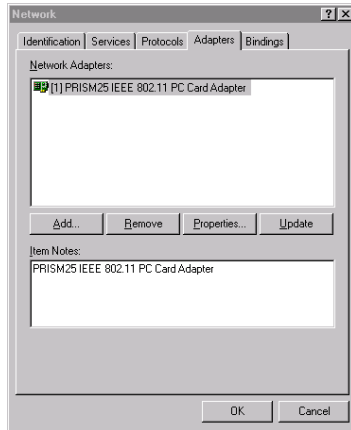
9. After the auto-binding procedure is complete, Windows® NT4.0 will show the "Microsoft TCP/IP Properties" dialog. If you are using a DHCP server, you can check "Obtain an IP address from a DHCP sever" to get IP from the DHCP sever. Otherwise, you must check "Specify an IP address" and key in your "IP Address", "Subnet Mask" and "Default Gateway". Then click "OK".


10. From the "Microsoft TCP/IP Properties" menu, please select the "Advanced" tab. Then please key in the DNS sever IP address which is near your PC. Click "OK".

11. Click "No".

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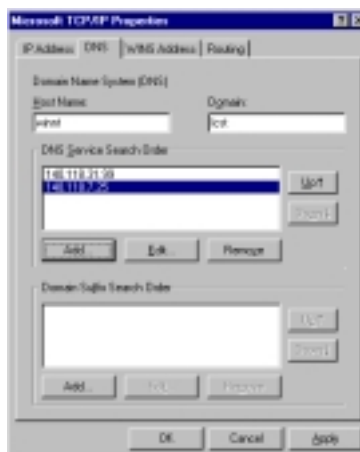
12. You will be prompted to restart your computer and click "Yes" to complete the installation.

13. Upon restart, open the "Devices" menu from the "Control Panel" to confirm that the driver installation was successful. Your adapter driver should now be listed in the "Devices" menu. Click "Start" to start the device.
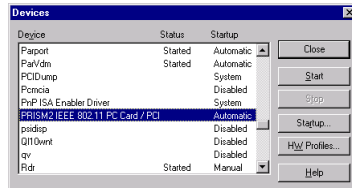
3-8 GL2411V1-A SETUP FOR LINUX

1. **Description**

The Linux-wlan-ng package is a Linux device driver and subsystem package that is designed to provide the full range of IEEE 802.11b MAC management capabilities for use in user-mode utilities and scripts. The package currently supports the Prism25 11Mb/s reference design PCMCIA wireless LAN (WLAN) card.

For a list of elements that are still undone, see the TODO file in this directory.

2. License

See the COPYING and LICENSE files.

Top level directory for Linux-wlan-ng:

./doc   - source distribution documentation

./man   - man pages

./etc   - scripts used at run-time

./src   - source code for various components

3. **Note**

Some of the subdirectories have empty README files. This means we haven't gotten to the contents of these directories. The empty README is just a trick to prevent CVS from pruning the directory.

4. **DISCLAIMER!!!**

prism2dl   This utility is used for loading firmware images into prism2 cards. DO NOT USE IT! UNLESS YOU KNOW EXACTLY WHAT YOU ARE DOING.

                This utility has the capability to damage a card in a way that can only be repaired by the manufacturer.

This software has currently been tested on the following configurations:

Intel:

   linux-2.2.9   + pcmcia-cs-3.1.8   + RedHat6.0

   linux-2.2.12 + pcmcia-cs-3.0.14 + RedHat6.1

   linux-2.3.99-pre9 + pcmcia-cs-3.1.11 + RedHat 6.2

PowerPC:

   linux-2.2.12 + pcmcia-cs-3.1.12 + LinuxPPC2000

The following building and installing instructions assume you have configured source code for both the Linux kernel package and PCMCIA-CS package installed on your system. It's important that the configured code for these packages match the kernel and PCMCIA-CS you currently have running.

Build Instructions: (Login as root. You may follow the mark '#' to type the command.)

1) untar the package using the command:

Copy Linux-wlan-ng-0.1.7.tar.gz and PCMCIA-CS-3.1.8.tar.gz into the /usr/src directory.

cd /usr/src

tar -zxvf pcmcia-cs-3.1.8.tar.gz

tar -zxvf linux-wlan-ng-0.1.7.tar.gz

2) Make sure you have Linux sources on your system.

3) # cd /usr/src/pcmcia-cs-3.1.8

To clean up any unwanted files accidentally included in the tar package, run 'make clean'. If make clean behaves badly (infinite loop, for example), you may have a date/time mismatch. Run the command:

find . -type f -exec touch {} \;

to fix the date and time stamps, then run 'make clean' again.

4) # make config

To configure the pcmcia-cs-3.1.8 package, run 'make config.' and respond to the questions. The defaults should be sufficient for most users. 'make config.' must be run after a 'make clean' and before 'make all'.

5) To build the package.

make all

6) To install the package.

make install

7) # cd /usr/src/linux-wlan-ng-0.1.7

To clean up any unwanted files accidentally included in the tar package, run 'make clean'. If make clean behaves badly (infinite loop, for example), you may have a date/time mismatch. Run the command:

find . -type f -exec touch {} \;

to fix the date and time stamps, then run 'make clean' again.

8) # make config.

To configure the linux-wlan-ng-0.1.7 package, run 'make config.' and respond to the questions. The defaults should be sufficient for most users. 'make config.' must be run after a 'make clean' and before 'make all'.

9) To build the package.

make all

10) To install the package.

make install

11) Edit the /etc/pcmcia/wlan-ng.opts file for configuration. These options are set every time you insert a card.

cd /etc/pcmcia

vi /etc/pcmcia/wlan-ng.opts

; Do we want to enable the card at all? It always sets to 'y'.

; Set to 'n' if you wish to load the flash.

        WLAN_ENABLE=y

; =======WEP==

; [Dis/En]able WEP. Settings only matter if PrivacyInvoked is true

        dot11PrivacyInvoked=false   # true|false

        dot11WEPDefaultKeyID=1   # 0|1|2|3

        dot11ExcludeUnencrypted=true   # true|false, in AP this means WEP

; Use the generator string to generate keys (just a convenience)

        PRIV_GENERATOR=/sbin/nwepgen   # nwepgen, Neesus compatible

        PRIV_GENSTR="12345"

; or set them explicitly. Set genstr or keys, not both.

        dot11WEPDefaultKey0=   # format: xx:xx:xx:xx:xx

        dot11WEPDefaultKey1=   # e.g. 01:20:03:40:05

        dot11WEPDefaultKey2=

        dot11WEPDefaultKey3=

; Station Settings (SSID is all we have for now)

; Set the DESIRED_SSID to the SSID of the AP which you want to link.

```
                dot11DesiredSSID="linux-wlan"

    ; Download code/data?

    ; If you want to configure the card for station,set WLAN_DOWNLOAD to 'n'.

                WLAN_DOWNLOAD=n

                WLAN_DOWNLOADER=/sbin/prism2dl

                WLAN_DLIMAGE=/etc/pcmcia/APFW.hex

    ; Do we want to be an AP? Set IS_AP to 'n' because it will not work.

                IS_AP=n                              # y|n
```

12) Edit your network.opts file to set up your IP settings.

```
    # vi /etc/pcmcia/network.opts

    ;Transceiver selection, for some cards -- see 'man ifport'

                IF_PORT=""

     ; Use BOOTP? [y/n]

                BOOTP="n"

    ; Use DHCP? [y/n]

    ; If your local network has DHCP, you can set DHCP to 'y' then save the

    ; file and exit.If you set DHCP to 'n', you must set the items below.

                DHCP="n"

    ; Host's IP address, netmask, network address, broadcast address

    ; It is a example to set the items for my local network. You must depend

    ; on your system.

                IPADDR="192.168.0.201"

                NETMASK="255.255.255.0"

                NETWORK="192.168.0.0"

                BROADCAST="192.168.0.255"

    ; Gateway address for static routing

                GATEWAY="192.168.0.1"

    ; Things to add to /etc/resolv.conf for this interface

                DOMAIN="lcat"

                SEARCH="

                DNS_1="140.118.7.125"

                DNS_2=""

                DNS_3=""

    ; You can save the file and exit now if you don't care the other options.
```

; NFS mounts, should be listed in /etc/fstab

    MOUNTS=""

; For IPX interfaces, the frame type and network number

    IPX_FRAME=""

    IPX_NETNUM=""

; Extra stuff to do after setting up the interface

    start_fn () { return; }

; Extra stuff to do before shutting down the interface

    stop_fn () { return; }

13) Restart pcmcia-cs with the command

    # ln -s /etc/rc.d/init.d/pcmcia pcmcia

    # ./pcmcia restart

14) Insert the card.

    A solid LED indicates that the SSID you specified was found,a bss was joined,

    and the firmware completed the authenticate and associate processes.

15) Run ifconfig and route to determine

    if the device WLAN0 is includes and your IP and route settings are listed as you wanted

    them.It's also a good idea to look at the file /etc/resolv.conf to see if your nameserver address

    has been set up correctly.

Chapter 4 Installing & Navigating the Configuration Utility

4-1 PRISM CONFIGURATION UTILITY - INSTALLATION

1. Insert the Configuration Utility CD into an available CD-ROM. Run "D:\PC-OEM\ Utility\setup.exe" (where "D" represents a CD-ROM).
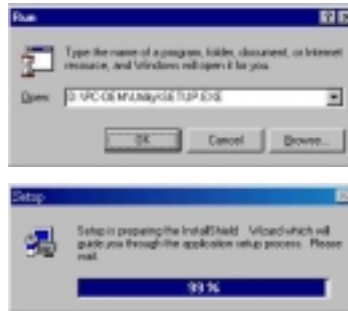
2. It will show a wizard windows and then Click "Next".

3. You may click "Browse…" to change the install folder. Click "Next".
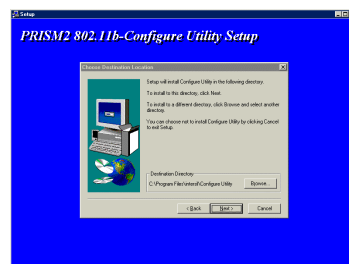
4. You may change the program folder. Click "Next".
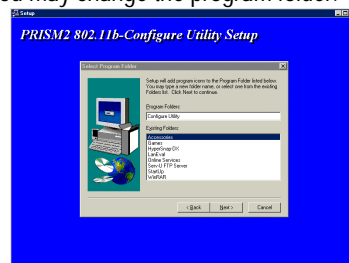
5. The system will install utility files to the appropriate location. After the installation is completed, the system shows a windows dialog. If you want to run the utility, select "Yes, Launch…" and click "Finish". Otherwise, click "Finish".

4-2 CONFIGURATION UTILITY- NAVIGATION

The following section describes and defines the various functions of the Configuration Utility. This utility provides quick access to all adapter settings.

Quick-Launch Icon: After installation is complete, launch the program and a utility icon will appear in the "Quick-Launch" menu in the lower right hand corner of the screen, near the clock.

The Configuration Utility: Double clicking the utility icon in the Quick Launch bar will open the Configuration Utility main menu, providing quick access to all adapter settings. The following image shows the Configuration Utility with the "About" tab selected, here you will find Version, Copyright and Manufacturer information.
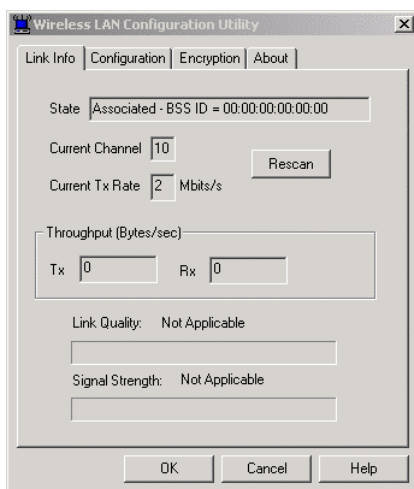
Link Info: The Link Info menu provides information about the current link between the adapter and the base station.
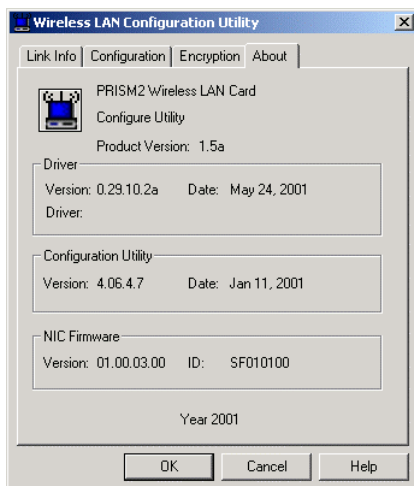
Configuration: Selecting this tab opens the "Configuration" menu. Here you will find options for configuring your adapter.
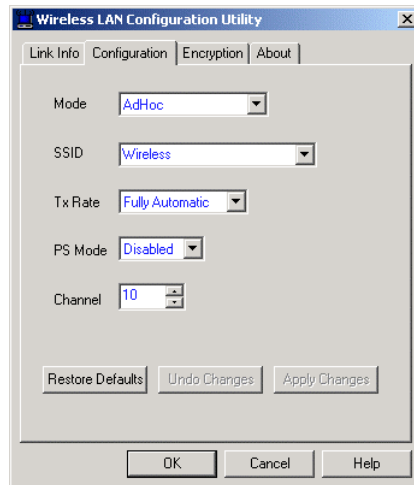
Description of Settings

Following is an explanation of each adapter setting presented by the "Configuration" menu.

Mode: The Mode setting determines the architecture of your wireless LAN. Choose Ad-Hoc or Infrastructure Mode depending on your network type. A brief explanation of each mode follows:

- **Ad-Hoc and 802.11b Ad-Hoc:** This mode is used for a simple peer-to-peer network. This type of network allows the sharing of local resources only between wireless clients without a wireless Access Point (AP).

- **Infrastructure**: This mode allows a wireless LAN to be integrated into an existing wired network through an AP. Infrastructure type networks also permit roaming between Access Points while maintaining connection to all network resources. Infrastructure mode provides additional features, such as WEP security, power saving and extended range.

SSID: An acronym for Service Set Identifier, SSID is the unique name shared among all clients and Access Points in a wireless network. The SSID must be identical for all clients or Access Points participating in the same network. The SSID is case sensitive and must not exceed 30 characters.

Tx Rate: The transmit rate or Tx Rate selects the allowable transfer rates of the wireless client. To optimize performance and range, the Tx Rate should be set to Fully Automatic, which will automatically adjust the transfer speed for best performance and longest range.

Note: The Tx rate setting must be supported by the AP. If the AP does not support the Tx rate, undesired results may occur.

PS Mode: Power Saving Mode enables or disables the power saving features of your wireless adapter. When enabled on a laptop, the power saving mode can reduce power consumption by the wireless card and extend the battery life of your laptop. This setting is only implemented in a network operating in Infrastructure mode.

- **Changing the PS mode:** The PS Mode on your adapter is set to "Disabled" by default. To change the setting, select "Enabled" from the drop-down list, click "OK" and wait a few seconds. The screen will then is updated and show the current Connection Status, Link Quality and Signal Strength.

<u>Channel</u>: This setting specifies the default 802.11b channel used by the Wireless LAN communication. In an Infrastructure type network without an Access Point active on the default channel, clients will scan through all available channels searching for a network with matching SSID.

Changing the Channel: Changing the channel is only effective in Ad-Hoc networks. Networks operating in Infrastructure mode automatically scan for a channel. The following table presents contains the operational channel frequency for several countries.

Regulatory Channel Frequency

Channel	Frequency (MHz)	FCC	Canada	ETSI	France	Spain	Japan
1	2412	∨	∨	∨			
2	2417	∨	∨	∨			
3	2422	∨	∨	∨			
4	2427	∨	∨	∨			
5	2432	∨	∨	∨			
6	2437	∨	∨	∨			
7	2442	∨	∨	∨			
8	2447	∨	∨	∨			
9	2452	∨	∨	∨			
10	2457	∨	∨	∨	∨	∨	
11	2462	∨	∨	∨	∨	∨	
12	2467			∨		∨	
13	2472			∨		∨	
14	2484						∨

Encryption: Selecting the Encryption tab allows you to create new WEP keys.
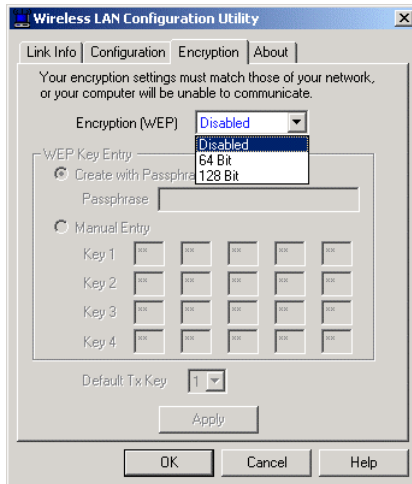
NOTE : An acronym for Wired Equivalent Privacy, WEP is an encryption scheme used to protect your wireless data communications. WEP uses a combination of 64-bit or 128-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each wireless client on the network must use an identical 64-bit or 128-bit key. *This feature is only available in Infrastructure Mode and must also be enabled on the Access Point. Select the WEP tab to enable or disable this feature.*

The 64-bit or 128-bit WEP keys can be generated from a user-defined passphrase (any text string with a maximum of 32 characters) or a manual entry. To generate encryption keys for each client communicating in the wireless network, complete the following steps:

1. Select "Create with Passphrase" and type the exact same case sensitive text in the Passphrase entry field for each client. Click "Apply" to change.

2. Or, select "Manual Entry" and the "Default Tx Key" of four keys. Click "Apply" to change.

3. Or, select "Manual Entry" and key in the ten hex values in the selected default key. Click "Apply" to change.

4. The 128-bit WEP only has a Tx key.
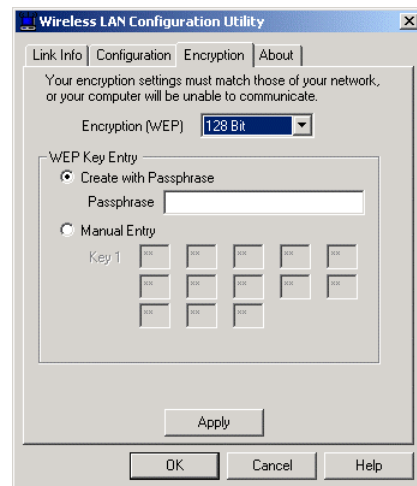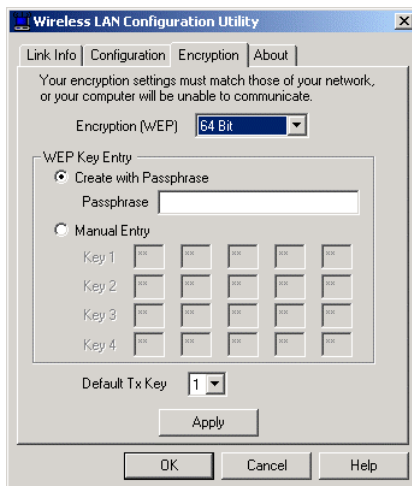
About : The "About" displays the information about Driver, Utility and firmware version of the PC Card.

Wireless LAN Configuration Utility

Link Info | Configuration | Encryption | About

PRISM2 Wireless LAN Card
Configure Utility

Product Version: 1.5a

Driver
Version: 0.29.10.2a   Date: May 24, 2001
Driver:

Configuration Utility
Version: 4.06.4.7   Date: Jan 11, 2001

NIC Firmware
Version: 01.00.03.00   ID: SF010100

Year 2001

OK   Cancel   Help
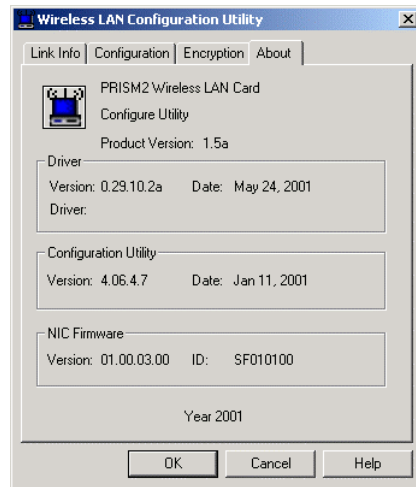
Appendix A Troubleshooting

Problem Solving

My computer does not recognize the GL2411V1-A.

Probable Solution:

- The GL2411V1-A is not properly inserted into the PCMCIA slot.

- Ensure that the GL2411V1-A has been inserted into an available PCMCIA slot.

The GL2411V1-A does not work properly.

Probable Solution:

- Insert the PCMCIA Card into Notebook's slot again. A beep should be heard if the adapter is properly inserted.

- Check the I/O cable that connects the RF module and the PCMCIA Card. The power LED indicator will be active if the cable is properly connected.

- For non-Windows 95/98 environments, ensure that a PCMCIA card service driver is installed in your computer.

- 1) Click on the Control Panel and then on PC-Card. Check whether it has PCMCIA card in one of the sockets or not. If you find PRISM25 IEEE 802.11 PC-Card Adapter in one of the sockets, it means the card is detected properly. If you see the yellow sign of

- question-mark(?), the resources are conflicting.
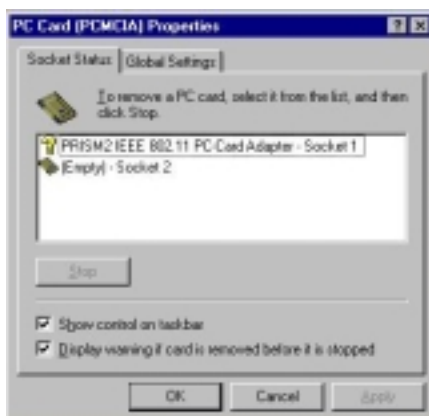
- 2)Right click on "My Computer" and the select Properties. Select the device Manager and click on the Network Adapter. You will find PRISM25 IEEE 802.11 PC-Card Adapter if it is installed successfully. If you see the Yellow sign the resources are conflicting. Click on PCMCIA card and then on PCMCIA Card service, you can see the status of PCMCIA card. If there are yellow sign either on adapter or PCMCIA card, please check followings.

- 2-1) Check if your Notebook supports 3.3V card.

- 2-2)Check if your Notebook has a free IRQ

- 2-3) Check that you have inserted the right card and have installed the proper driver.
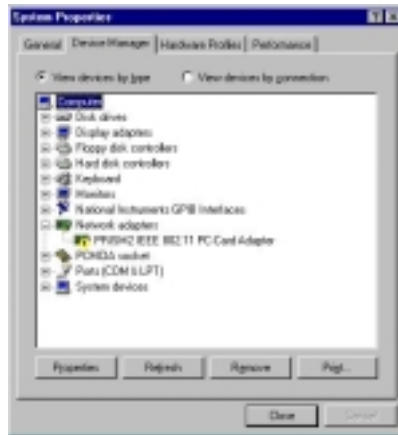
If the GL2411V1-A does not function after attempting the above steps, remove the PCMCIA Card, and do the following:

- From the run window enter, c:\windows\system, locate and delete the cw10.sys file

- Open the "Control Panel" double-click "System" and delete PRISM25 IEEE 802.11 PC-card Adapter.

- Restart the PC and repeat the hardware and software installation steps outlined in Chapters 3 and 4.

The GL2411V1-A station cannot communicate with other computers linked via Ethernet in the Infrastructure configuration.

Probable Solution:

- Ensure that the GL2411V1-A with which the station is associated is powered on.

- Confirm the station is configured with the same operating radio channel as the GL2411V1-A. If the IDs are different, change the GL2411V1-A and all the stations within the BSS to another radio channel.

- Ensure that the station is configured with the same security options as the GL2411V1-A, and can be turned off and on with the same security key.

- Confirm that the BSS ID is the same as the GL2411V1-A for a roaming disabled station. Alternately confirm that the ESS ID is the same as the GL2411V1-A for a roaming enabled station.

Appendix B Glossary

Access Point - An internetworking device that seamlessly connects wired and wireless networks together.

Ad-Hoc - An Ad-Hoc wireless LAN is a group of computers each with wireless adapters, connected as an independent wireless LAN without an access point to make point-to-point wireless communication.

ATIM – It means "Announcement Traffic Indication Message". A station may enter power save mode if and only if the value of the ATIM Window in use within the IBSS (in Ad hoc mode) is greather than zero. If this value is NULL, no power management is used within IBSS created by the station.

Authentication Type – The Authentication Type controls the WEP key validation during the authentication of a station by the access point. When the Shared Key option is selected, the access point will validate that the station is using the same WEP key with it. This procedure goes like this: the access point sends a known unencrypted packet to the station. The station encrypts this packet and sends it back to the access point. The access point tries to decrypt this packet and then sends an Authentication response packet to the station indicating the success or failure of this process. On the other hand, under Open Authentication, there is no check for a matching WEP key.

Backbone - The core infrastructure of a network, the portion of the network that transports information from one central location to another central location. The information is then off-loaded onto a local system.

Base Station - In mobile telecommunication, a base station is the central radio transmitter/ receiver that maintains communication with the mobile radio telephone sets within range. In cellular and personal communications applications, each cell or microcell has its own base station; each base station in turn is interconnected with other cells' base.

BSS - Stands for "Basic Service Set." An Access Point associated with several wireless stations.

ESS - Stands for "Extended Service Set." More than one BSS can be configured as an Extended Service Set. An ESS is basically a roaming domain.

Ethernet - A popular local area data communications network, originally developed by Xerox Corp., which accepts transmission from computers and terminals. Ethernet operates on 10 Mbps baseband transmission over shielded coaxial cable or over shielded twisted pair telephone wire.

Fragmentation Threshold – The Fragmentation Threshold defines the number of bytes used for the fragmentation boundary for directed messages. The purpose of "Fragmentation Threshold" is to increase the transfer reliability thru cutting a MAC Service Data Unit (MSDU) into several MAC Protocol Data Units (MPDU) in smaller size. The RF transmission can not allow to transmit too big frame size due to the heavy interference caused by the big size of transmission frame. But if the frame size is too small, it will create the overhead during the transmission.

Infrastructure - An integrated wireless and wired LAN system is called an Infrastructure configuration.

Listen Interval – The Listen Interval field is used to indicate to the AP how often a station wakes to listen to Beacon managemetn frames. The value of this parameter is the station's Listen Interval MIB attribute and is expressed in units of Beacon Interval. The length of the Listen Interval decides the wake up time to listen to Beacon management. Longer Listen Interval decreases the performance and shorter interval decreases power saving function.

PCMCIA - Personal Computer Memory Card International Association, which develops standards for PC cards, formerly known as PCMCIA cards, are available in three "types" which are about the same length and width as credit cards, but range in thickness from 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type

III). These cards can be used for many functions, including memory storage, as landline modems and as wireless LAN.

Preamble Mode – Preamble is a sequence of bits transmitted at 1Mbps that allows the PHY circuitry to reach steady-state demodulation and synchronization of bit clock and frame start. Two different preambles and headers are defined: the mandatory supported Long Preamble and header, which interoperates with the 1 Mbit/s and 2 Mbit/s DSSS specification (as described in IEEE Std 802.11), and an optional Short Preamble and header (as described in IEEE Std 802.11b). At the receiver, the Preamble and header are processed to aid in demodulation and delivery of the PSDU. The Short Preamble and header may be used to minimize overhead and, thus, maximize the network data throughput. However, the Short Preamble is supported only from the IEEE 802.11b (High-Rate) standard and not from the original IEEE 802.11. That means that stations using Short-Preamble cannot communicate with stations implementing the original version of the protocol.

Roaming - A function that allows one to travel with a mobile end system (wireless LAN mobile station, for example) through the territory of a domain (an ESS, for example) while continuously connecting to the infrastructure.

RTS Threshold – Transmitters contending for the medium may not hear each other. The RTS (Request To Send) Threshold defines the number of bytes used for the RTS/CTS (Clear to Send) handshake boundary. The small setup value will cause the overhead during the transmission and too big setup value will decrease the transfer reliability. So normally the value should be default in 2432 bytes. By inconsistent data flow, try to minor the value. The RTS/CTS mechanism can solve this " Hidden Node Problem".

WEP – Wired Equivalent Privacy (Wep) is an encryption scheme used to protect wireless data communication. Selecting "Disabled" will prevent you from sharing data with other computers if your network uses Wep. If your network is Wep enabled, you must choose "64 bits" or "128 bits". Consult your System Administrator for more information about your network type. For more information about Wep, see the chapter entitled "PRISM Configuration Utility" in this manual.