OKI
PRINTING SOLUTIONS

OkiLan 510w

Configuration Guide

59368001

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For the latest information, go to http://my.okidata.com.

As an ENERGY STAR® Program Participant, the manufacturer has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

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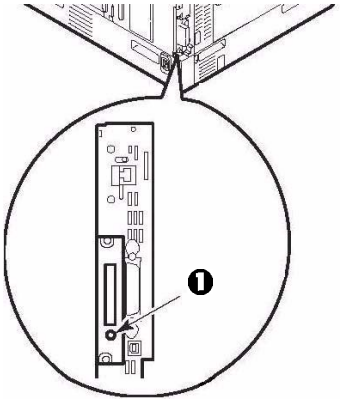
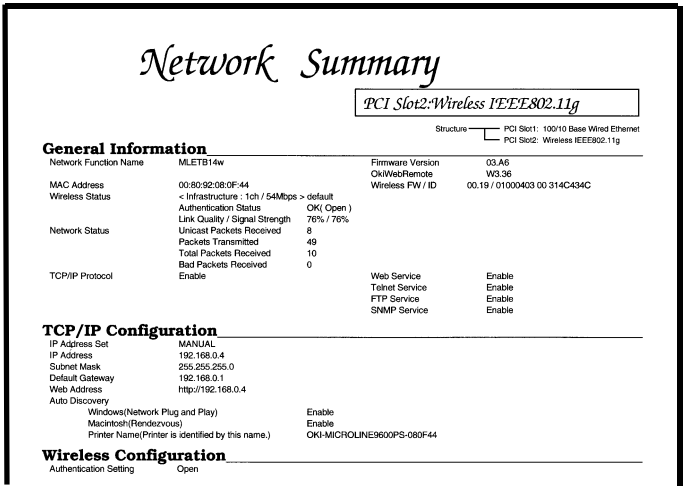
SELF-DIAGNOSTIC TEST

To print the self-diagnostic test for the wireless network card:

1. Make sure **Ready to Print** appears on the display.
2. Press the TEST button (**1**) on the wireless network card for at least 3 seconds.



The Network Summary report prints.



Network Summary

PCI Slot2:Wireless IEEE802.11g

Structure — PCI Slot1: 100/10 Base Wired Ethernet
PCI Slot2: Wireless IEEE802.11g

General Information

Network Function Name	MLETB14w	Firmware Version	03.A6
		OkiWebRemote	W3.36
MAC Address	00:80:92:08:0F:44	Wireless FW / ID	00.19 / 01000403 00 314C434C
Wireless Status	< Infrastructure : 1ch / 54Mbps > default		
	Authentication Status — OK(Open)		
	Link Quality / Signal Strength — 76% / 76%		
Network Status	Unicast Packets Received — 8		
	Packets Transmitted — 49		
	Total Packets Received — 10		
	Bad Packets Received — 0		
TCP/IP Protocol	Enable	Web Service	Enable
		Telnet Service	Enable
		FTP Service	Enable
		SNMP Service	Enable

TCP/IP Configuration

IP Address Set	MANUAL
IP Address	192.168.0.4
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Web Address	http://192.168.0.4
Auto Discovery	
Windows(Network Plug and Play)	Enable
Macintosh(Rendezvous)	Enable
Printer Name(Printer is identified by this name.)	OKI-MICROLINE9600PS-080F44

Wireless Configuration

Authentication Setting	Open

SPECIFICATIONS

IEEE	• 802.11b • 802.11g	
SECURITY:	**Authentication**	**Encryption**
WEP	Shared Key	WEP 64 or 128 bits
WPA-Home	WPA-PSK	TKIP
WPA-Enterprise	EAP-TLS	TKIP
PROTOCOL	TCP/IP	
COEXISTENCE WITH WIRED PRINT SERVER	• Both can work simultaneously as independent interfaces • Each has separate configuration (including IP Address) and separate certificates. • Packet routing is not performed between the two.	

RESETTING TO FACTORY DEFAULTS

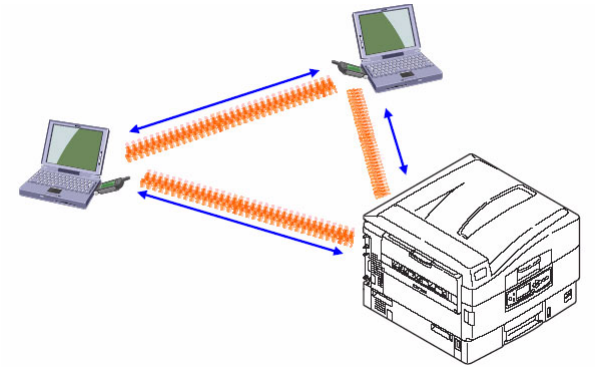
To reset the wireless card to the factory default settings:

1. Turn off the printer.
2. Press and hold the TEST button on the wireless card while turning the printer back on. Keep pressing the button until
   Wait a Moment
   Network Initializing
   appears on the display.
3. Wait for **Ready to Print** to appear.

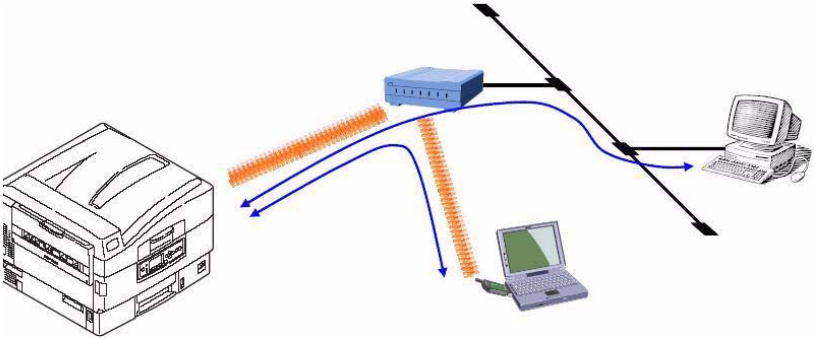
CONFIGURATION OVERVIEW

NETWORK MODES

Ad-Hoc



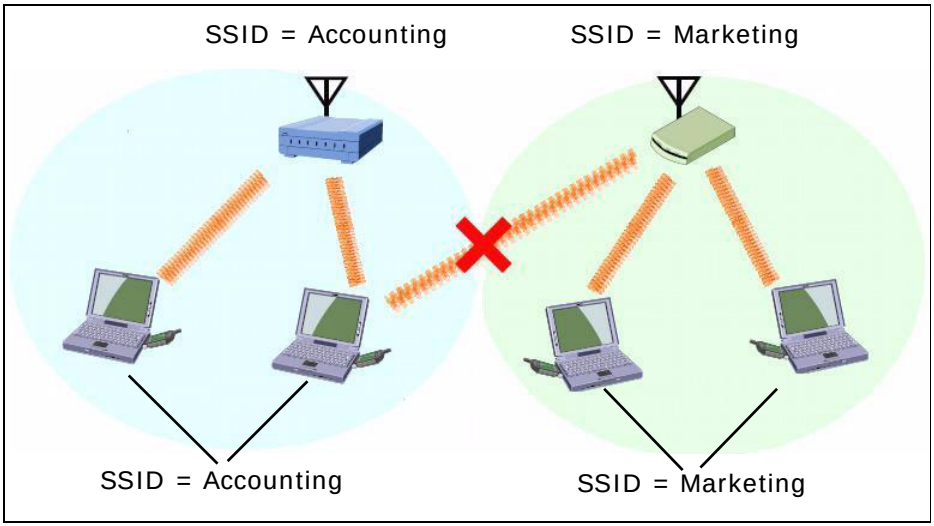
Infrastructure



SSID (Service Set Identifier)

In a wireless network, terminals can be assigned an SSID identifier which restricts their access to printers on the network to only those set up for that SSID.

For example, computers set up as Accounting can only communicate to a printer through the Marketing access point (AP) and computers set up as Marketing can only communicate to a printer through the Marketing access point:



Channels

There are 13 channels available for use in a wireless network. However, adjacent channels share a frequency and can interfere with one another.

Therefore, to obtain maximum communication speed and accuracy, channels for access points which are near each other should be selected with 5 channels space between them: e.g., channels 1, 6 and 11.

SECURITY FEATURES

Open (no security)

This can be used, but is not recommended.

WEP

Wired Equivalent Privacy, assuring wireless network security equivalent to a wired network.

Set the same WEP key (64 or 128 bits) for all printers, computers and access points on the wireless network.

WPA

WiFi Protected Access security, using TKIP encryption. This security uses a pre-shared key set for all printers, computers and access points in the wireless network. The key is periodically changed.

EAP (Using Certificates)

Extensible Authentication Protocol security. In wireless communications using EAP, connection to the wireless network is requested through an access point, which in turn transmits the certificate assigned to the computer and printer to an authentication server such as RADIUS.

- EAP-TLS is used for authentication.
- Client and/or CA certificates must be imported into the printer.
- Certificates must be obtained separately by the network administrator before setting the printer for EAP.

Client Certificates

- This is the printer's own certificate.
- The client must have a private key which corresponds to a public key contained in the certificate.
- Required file format for imported certificates = [PKCS#12].
- Suitable file extensions include *.p12 and *.pfx.

CA Certificates

- The printer is not involved in the CA certificate chain.

- EAP-TLS requires authentication of the Server Certificate issued by a Certificate Authority and sent from a RADIUS server.
- Certificate Authentication requires that the printer have a certificate issued by the Certificate Authority that issued the Server Certificate.
- Required file formats = [PEM] or [DER].
- Suitable CA Certificate extensions include *.pem, *.der and *.cer.

SUMMARY OF CONFIGURATION MODES

AD HOC MODE

In this mode, wireless computers communicate with the printer peer-to-peer, gaining access through an SSID you set.

Available security features for Ad Hoc Mode:

- Open (no security)
- WEP Shared Key Security

INFRASTRUCTURE MODE

In Infrastructure Mode both wireless and wired computers communicate to the printer through an access point such as a hub.

Available security features for this mode include

- Open (no security)
- WEP Shared Key Security
- WPA Pre-Shared Key Security
- EAP Certification Security

TELNET MODE

This mode sets up the printer using Telnet commands.

Available security features for this mode include

- Open (No Security)
- WEP Shared Key Security
- WPA Pre-Shared Key Security
- EAP Certification Security

CONTROL PANEL MODE

You can also configure the wireless card through the printer's control panel, but this mode is very limited.

You can set up an SSID of your choice for accessing the printer over a wireless network, but no other security can be configured through the control panel.

CONFIGURATION: AD HOC MODE

NOTE

These instructions assume the following:

- You have connected the printer's built-in print server.
- You have configured both the printer's and computer's IP Address, Subnet Mask and Default Gateway.

IP ADDRESS

For the Wireless Card

The IP Address for the wireless card is set automatically. It appears on the wireless card Network Summary printout (see page 4) under TCP/IP Configuration.

To set the IP Address manually, use the printer menu:

1. With **Ready to Print** on the display, press **ENTER** to switch to the Menu Mode.
2. Use the ∇ and Δ buttons to scroll to [Admin Setup]. Press **ENTER**.
3. Use the ∇, Δ and **ENTER** buttons to enter your 4-digit password (default is 0000). Press **ENTER**.
4. Use the ∇, Δ and **ENTER** buttons to scroll to [Network Setup] → [Slot2:Wireless] → [IP Address Set], then select [Manual]. Press **ENTER**.
5. Use the ∇, Δ and **ENTER** buttons to enter the IP Address. Press **ENTER**.
6. Press **BACK**.
7. Use the ∇ and Δ buttons to scroll to [Subnet Mask], then use the ∇ and Δ buttons to set the Subnet Mask values. Press **ENTER**.

8. Press **BACK**.
9. Use the ∇ and Δ buttons to scroll to [Gateway Address], then use the ∇ and Δ buttons to set the Gateway Address. Press **ENTER**.
10. Press **ON-LINE** to exit the Menu mode.

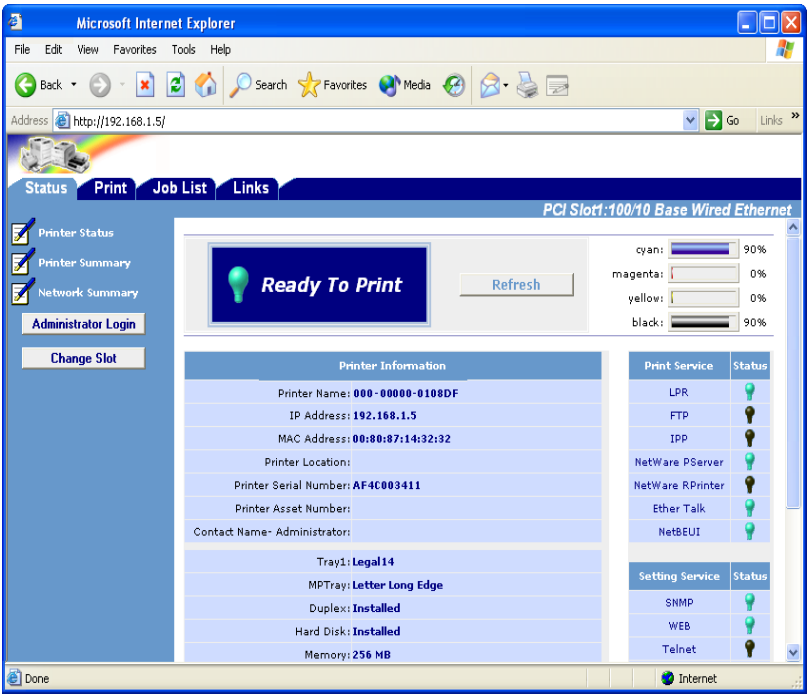
For the Wireless Computer

Set the IP Address using Microsoft Windows® Control Panel.

CONFIGURATION

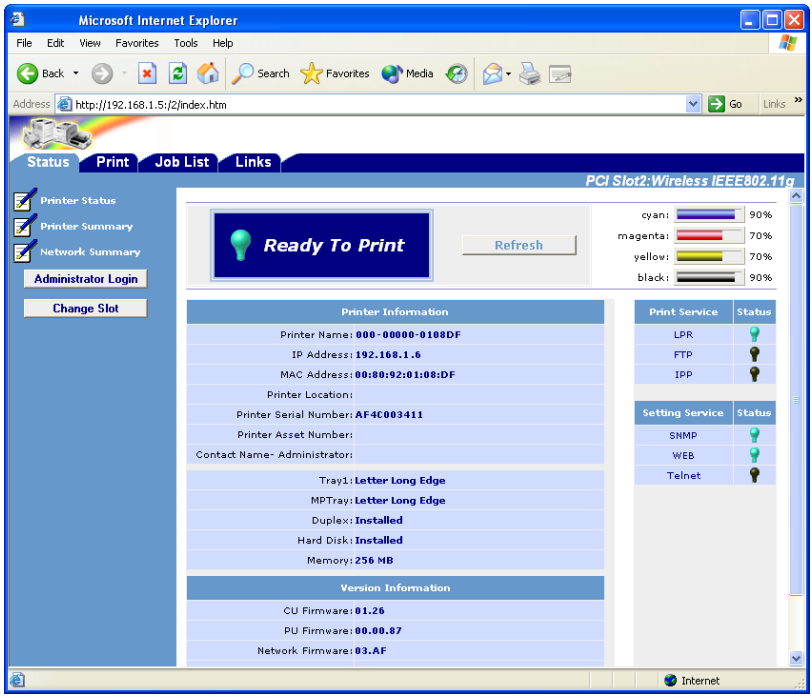
Configuration Using Web Browser

1. Open the browser.
2. Enter the IP Address for the printer's built-in print server and press the Enter key.



3. Click [Change Slot].

4. Select PCI Slot2:Wireless, then click [OK].



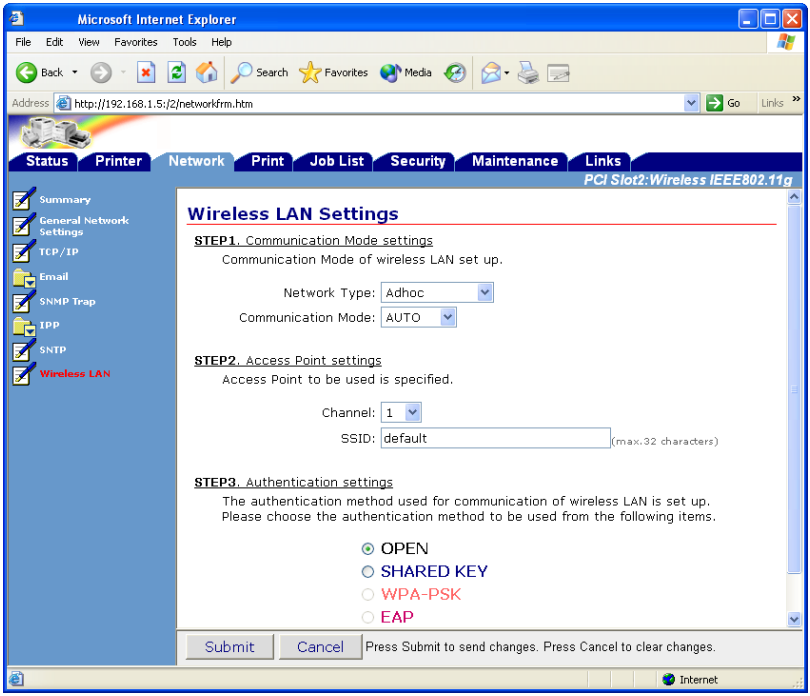
5. Click Administrator Login.

6. Enter
   User ID = root
   Password = last six digits of the Mac (Ethernet) Address for the wireless card (under General Information on the Network Summary printout–see page 4), minus the punctuation marks.

7. Click [Skip].

8. Select the [Network] tab.

9. Click [Wireless LAN] on the left side of the screen.



10. Make your selections:

- Network Type = Ad Hoc
- Communication Mode = AUTO or 802.11b
- Channel = 1 through 13 (to ensure speed and accuracy when using wireless access points which are near each other, be sure to leave 5 blank channels between assigned channels; e.g., select channels 1 / 6 / 11)
- SSID = (name you select)
- Authentication = Open or Shared Key (WEP)

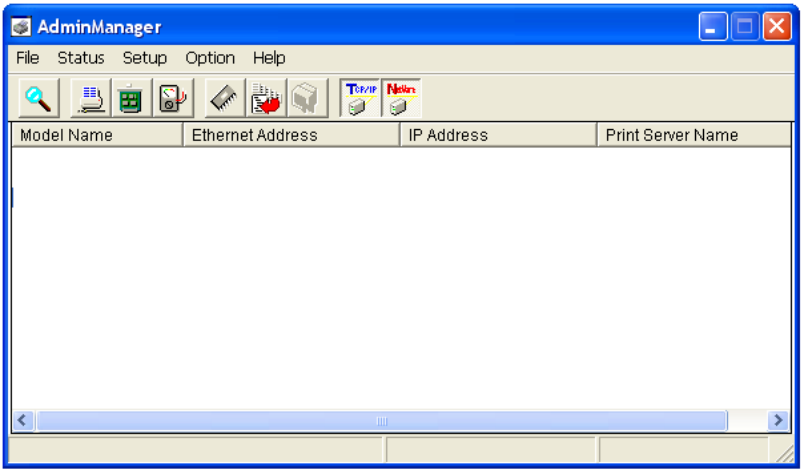
11. Click [Submit].

Configuration Using AdminManager

NOTE

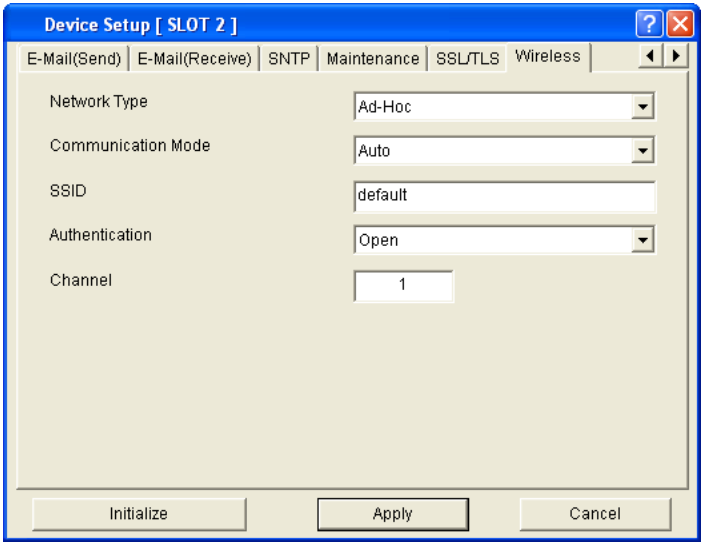
If you are using AdminManager to configure the wireless card, and you have not installed the utility on your computer, you will need the CD supplied with your printer to launch the utility.

1. Launch AdminManager:
   - From your computer: [Start] → [Programs] → [OKI Setup Utility] → [Admin Manager]
   - From CD, after AutoRun: [(Language]) → [Next] → [Custom Install] → [Network Software] → [Installation/Config] → [Admin Mgr / Quick Setup] → [(language)] → [OKI Device Standard Setup] → [Execute from CD-ROM] → [Next].
2. Wait for the software to discover the printer (if automatic discovery fails, click [File] → [Search]).
   The printer appears as MLETB13 or OkiLAN8200e.



3. Click the discovered printer, then select [Oki Device Setup] from the Setup menu.
4. Select [Guest User], click [OK].

5. On the [General] tab, click [Change SLOT], then click [Yes].
6. Referring to the Network Summary printout for the wireless card (under General Information), enter the last six digits of the Mac address as the password (minus any punctuation), then click [OK].
7. Scroll over to the far right and click the [Wireless] tab.



8. Make your selections:
   - Network Type = Ad Hoc
   - Communication Mode = AUTO or 802.11b
   - SSID = (name you select)
   - Authentication = Open or Shared Key (WEP)
   - Channel = 1 through 13 (to ensure speed and accuracy when using wireless access points which are near each other, be sure to leave 5 blank channels between assigned channels; e.g., select channels 1 / 6 / 11)
   - SSID = (name you select)
9. Click [Initialize].

CONFIGURATION: INFRASTRUCTURE MODE

NOTE

These instructions assume the following:

- You have connected the printer's built-in print server to a computer via an access point.
- You have configured both the printer's and computer's IP Address, Subnet Mask and Default Gateway.

IP ADDRESS

For the Wireless Card

The IP Address for the wireless card is set automatically. It appears on the wireless card Network Summary printout (see page 4) under TCP/IP Configuration.

To set the IP Address manually, use the printer menu:

1. With **Ready to Print** on the display, press **ENTER** to switch to the Menu Mode.
2. Use the ∇ and Δ buttons to scroll to [Admin Setup]. Press **ENTER**.
3. Use the ∇, Δ and **ENTER** buttons to enter your 4-digit password (default is 0000). Press **ENTER**.
4. Use the ∇, Δ and **ENTER** buttons to scroll to [Network Setup] → [Slot2:Wireless] → [IP Address Set], then select [Manual]. Press **ENTER**.
5. Use the ∇, Δ and **ENTER** buttons to enter the IP Address. Press **ENTER**.
6. Press **BACK**.

7. Use the ∇ and Δ buttons to scroll to [Subnet Mask], then use the ∇ and Δ buttons to set the Subnet Mask values. Press **ENTER**.
8. Press **BACK**.
9. Use the ∇ and Δ buttons to scroll to [Gateway Address], then use the ∇ and Δ buttons to set the Gateway Address. Press **ENTER**.
10. Press **ON-LINE** to exit the Menu mode.

For the Computer

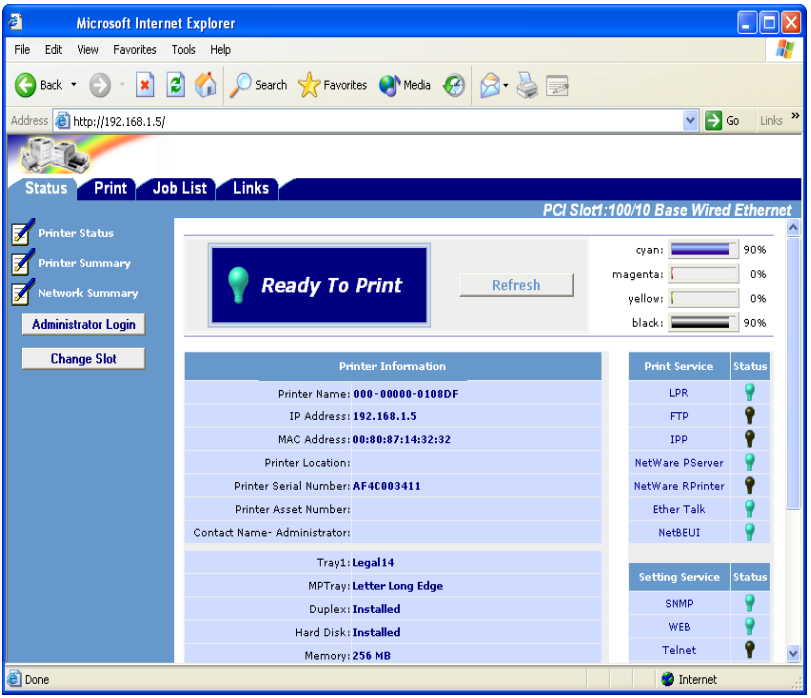
Set the IP Address using Windows Control Panel.

CONFIGURATION

Configuration Using Web Browser

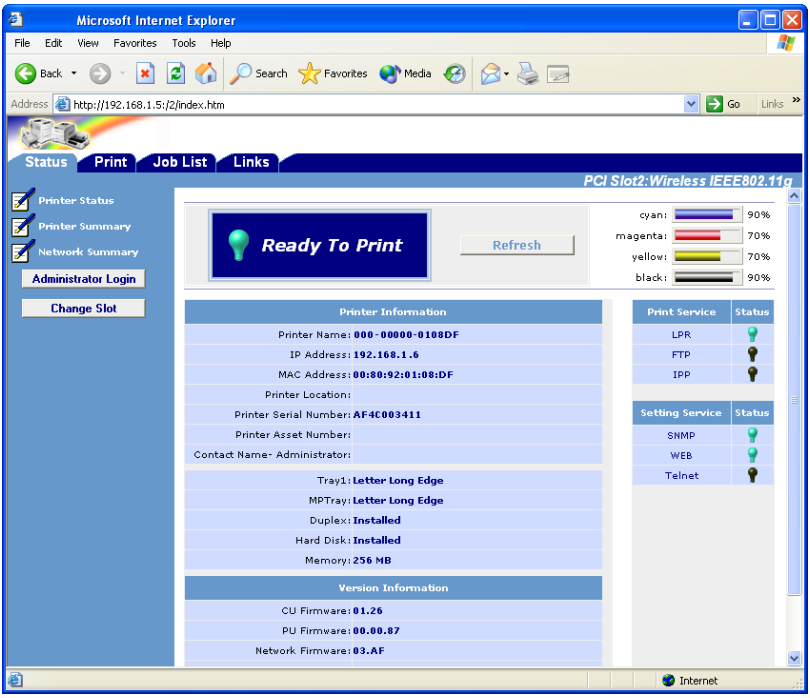
1. Open the browser:
   - Microsoft® Internet Explorer 5.5 or higher
   - Netscape® 6.2 or higher.

2. Enter the IP Address for the wireless card and press the Enter key.



3. Click [Change Slot].

4. Select PCI Slot2:Wireless, then click [OK].



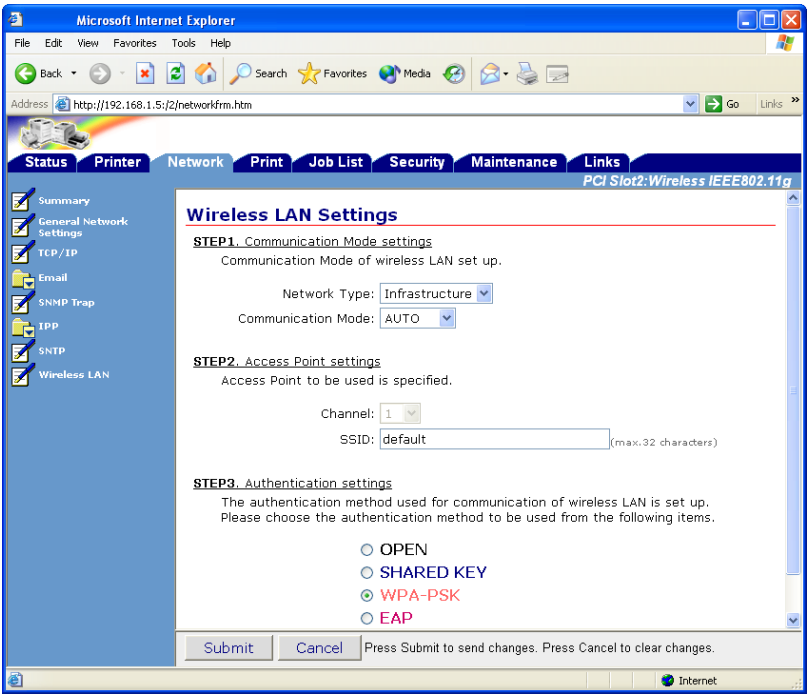
5. Click Administrator Login.

6. Enter
   User ID = root
   Password = last six digits of the Mac (Ethernet) Address for the wireless card (under General Information on the Network Summary printout–see page 4), minus the punctuation marks.

7. Click [Skip].

8. Select the [Network] tab.

9. Click [Wireless LAN] on the left side of the screen.

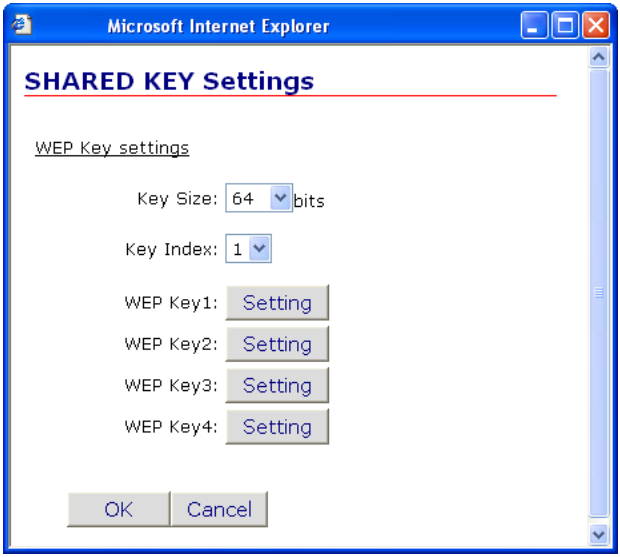


10. Make your selections:

- Network Type = Infrastructure
- Communication Mode = AUTO or 802.11b
- SSID = (name you select)
- Authentication:

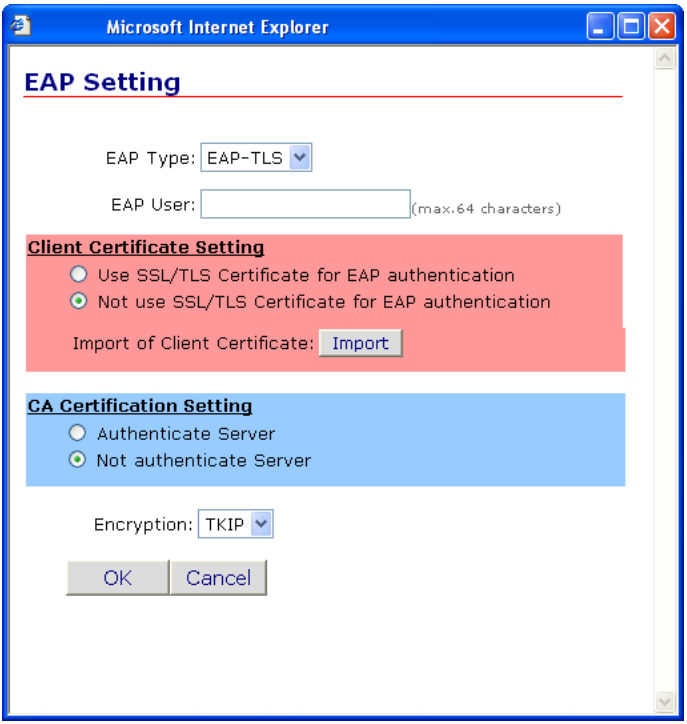
– Open (no security)

– Shared Key (WEP)



– WPA (Pre-Shared Security)

– EAP (for more information on setting up EAP security, see “Setting Up EAP Using Web Browser” below).



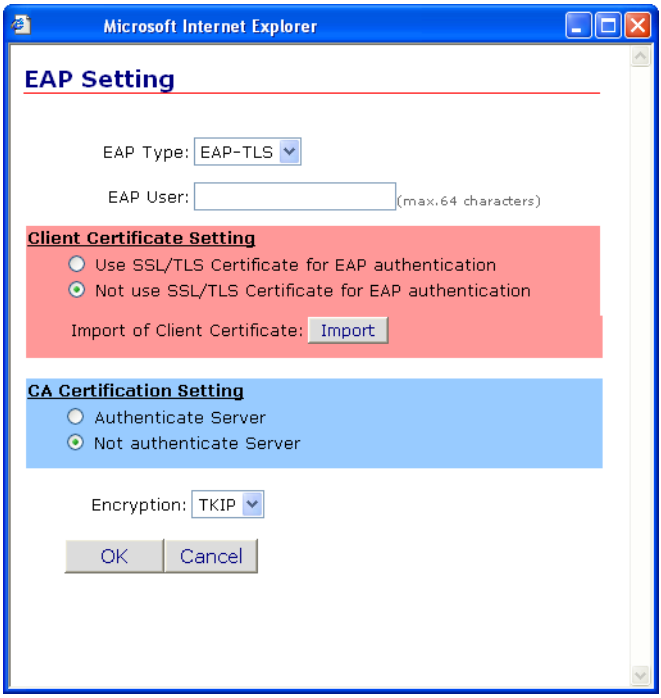
11. Click [Submit].

NOTES

Certificates must be obtained separately by the network administrator before setting the printer for EAP.

These instructions assume you have performed steps 1 through 10 under “Configuration Using Web Browser” , starting on page 19.

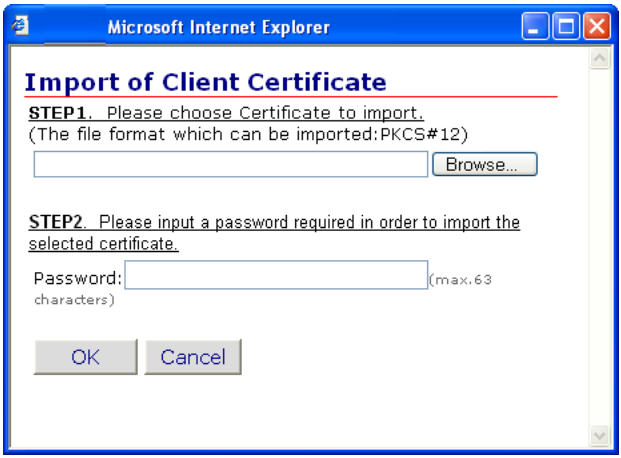
For more information on EAP, see page 8.



▶ To Use the Client Certificate

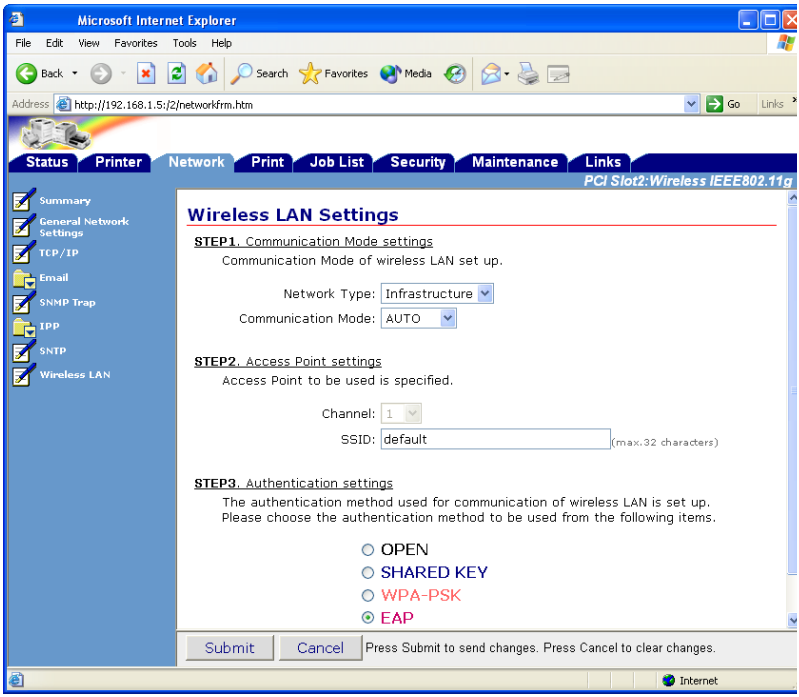
1. Select the Client Certificate setting.
   Note: Normally the SSL/TLS Certificate should NOT be selected. It is often not authenticated by the RADIUS Server because it does not contain Client Authentication in the Extend Key Usage attributes. If you select SSL/TLS, the [Import] button disappears.

2. Click [Import.



3. Perform Steps 1 and 2, then click [OK].
   The certification file is imported. When complete, a result window appears.
4. Click [Close].

5. Click [OK].



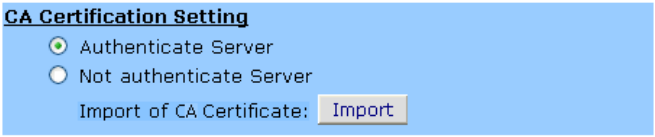
NOTE

To view the certificate, open the EAP Setting window by clicking EAP, then click the newly added [View] button.

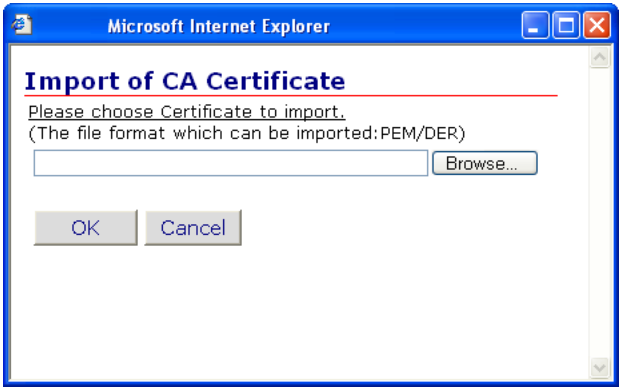
6. If you wish to add Server Authentication, see the next section. Otherwise, click [Submit].

▶ To Add Server Authentication

1. Select [Authenticate Server] under [CA Certificate Setting].
   The [Import] button appears.

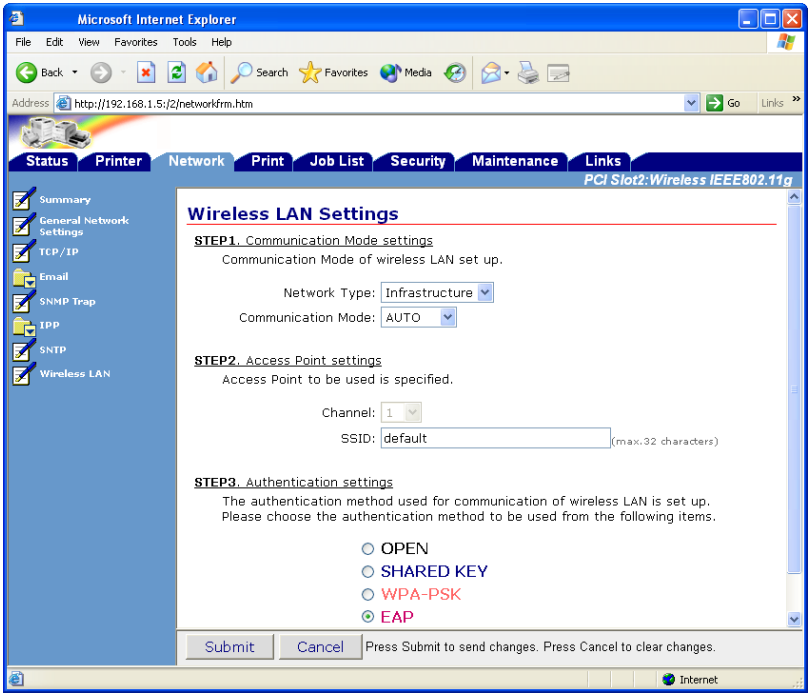


2. Click [Import].



3. Fill in (or browse to) the name of the certificate file to be imported, then click [OK].
   The certification file is imported. When complete, a result window appears.
4. Click [Close].

5. Click [OK].



NOTE

To view the certificate, open the EAP Setting window by clicking [EAP], then click the newly added [View] button.

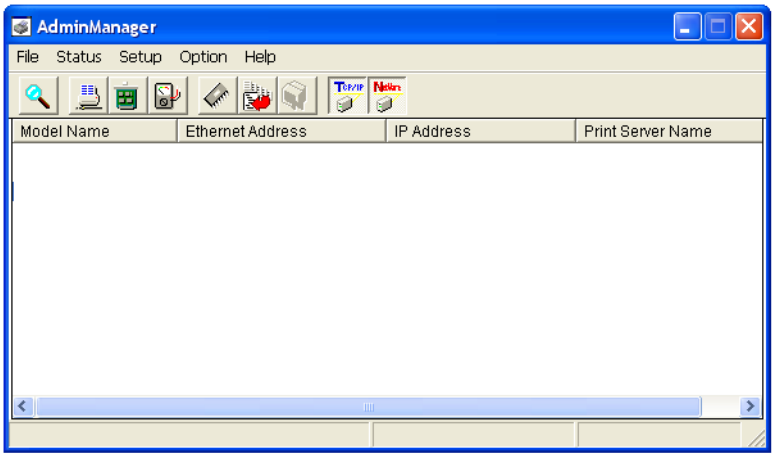
6. Click [Submit].

Configuration Using AdminManager

NOTE

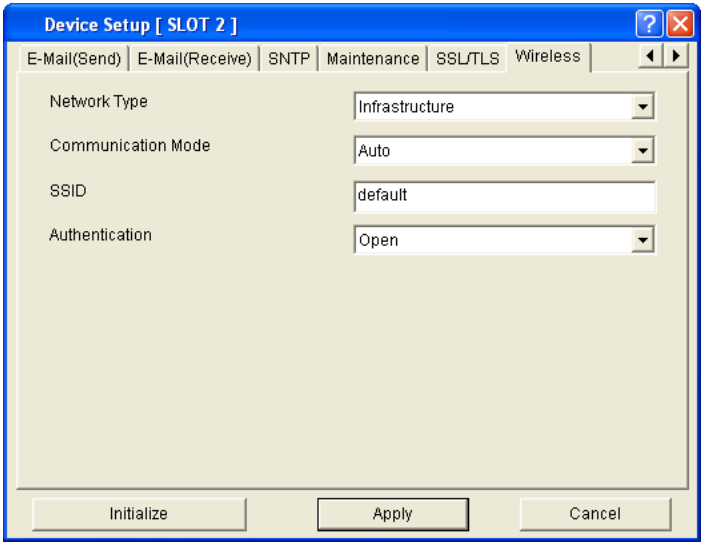
If you are using AdminManager to configure the wireless card, and you have not installed the utility on your computer, you will need the CD supplied with your printer to launch the utility.

1. Launch AdminManager:
   - From your computer: [Start] → [Programs] → [OKI Setup Utility] → [Admin Manager]
   - From CD, after AutoRun: [(Language)] → [Next] → [Custom Install] → [Network Software] → [Installation/Config] → [Admin Mgr / Quick Setup] → [(language)] → [OKI Device Standard Setup] → [Execute from CD-ROM] → [Next].
2. Wait for the software to discover the printer (if automatic discovery fails, click [File] → [Search]).
   The printer appears as MLETB13 or OkiLAN8200e.



3. Click the discovered printer, then select [Oki Device Setup] from the Setup menu.
4. Select [Guest User], click [OK].

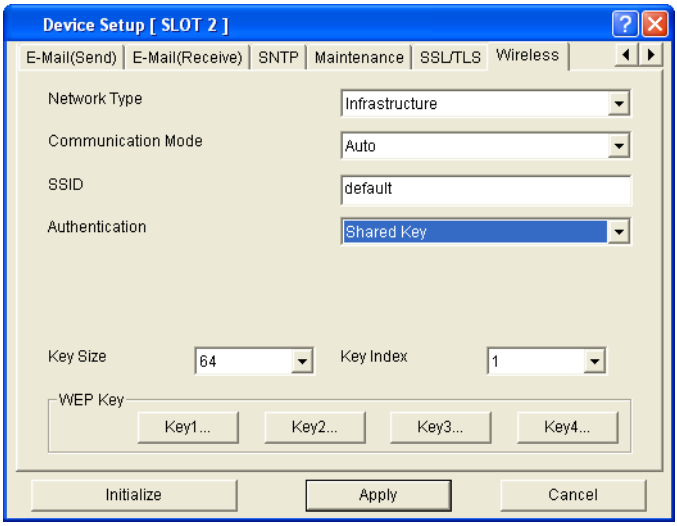
5. On the [General] tab, click [Change SLOT], then click [Yes].
6. Referring to the Network Summary printout for the wireless card (under General Information), enter the last six digits of the Mac address as the password, then click [OK].
7. Scroll over to the far right and select the [Wireless] tab.



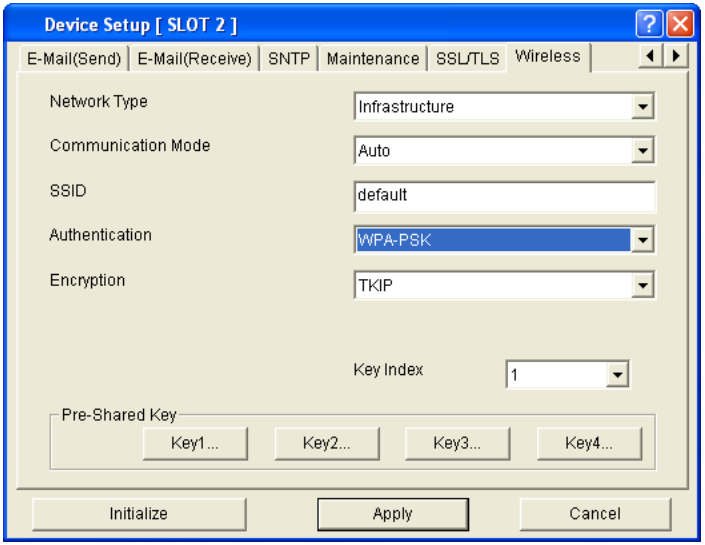
8. Make your selections:
   - Network Type = Infrastructure
   - Communication Mode = AUTO or 802.11b
   - SSID = (name you select)
   - Authentication:

– Open (no security)

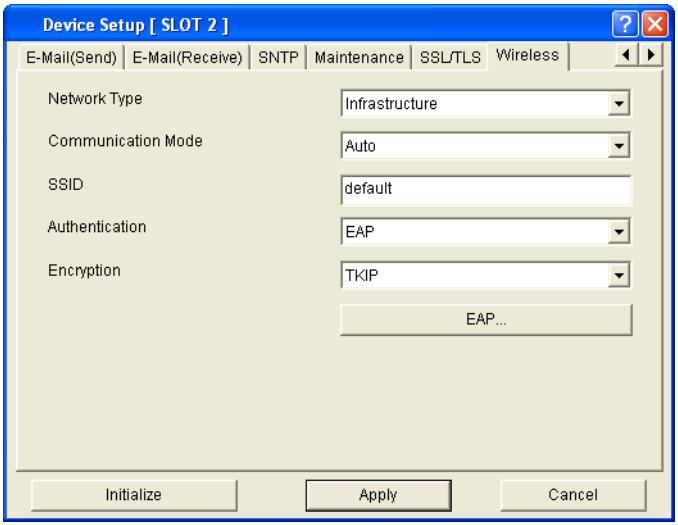
– Shared Key (WEP)



– WPA (Pre-Shared Security)

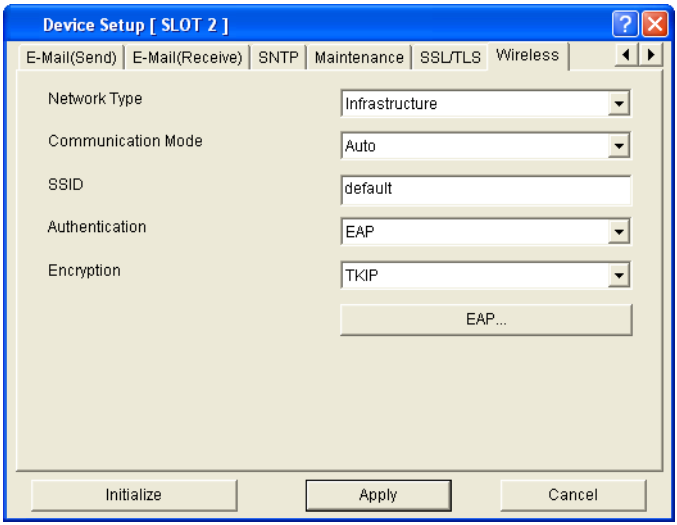


– EAP (for more information on setting up EAP security, see “Setting Up EAP Using Web Browser” below).



9. Click [Initialize].

Setting Up EAP Using AdminManager



NOTES

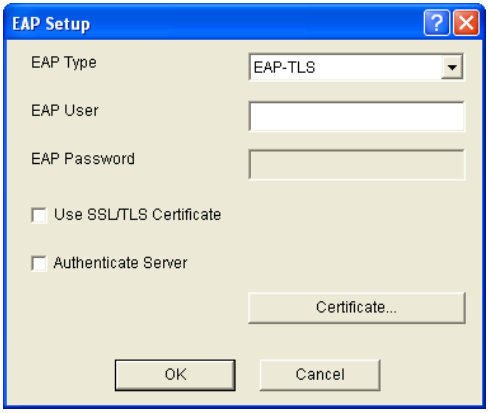
Certificates must be obtained separately by the network administrator before setting the printer for EAP.

These instructions assume you have performed steps 1 through 8 under “Configuration Using AdminManager” , starting on page 30.

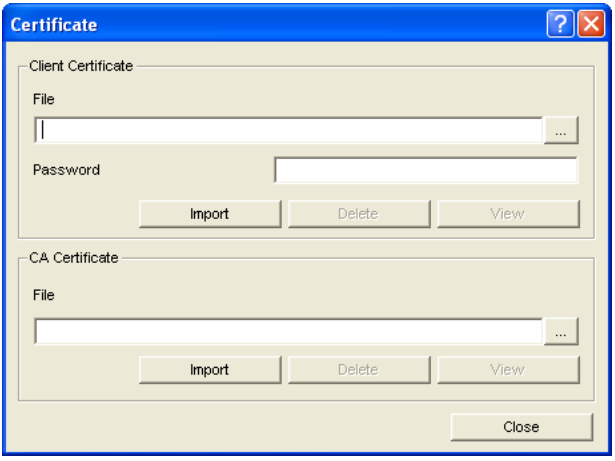
For more information on EAP, see page 8.

▶ To Use a Client Certificate

1. Select EAP under [Authentication], then click [EAP].



2. Click [Certificate].

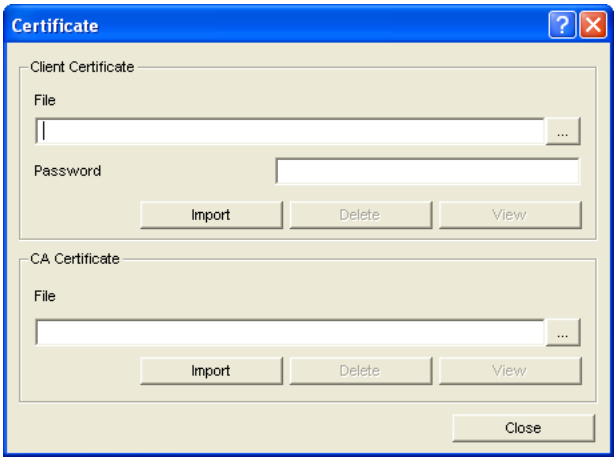


3. Type in the name of the certificate file to be imported, or click [...] to browse to it.
4. Type in the password provided by the issuer of the certificate.
5. Click [Import].
6. Click [OK] to confirm importing the file.
   The certification file is imported. When complete, a result window appears.

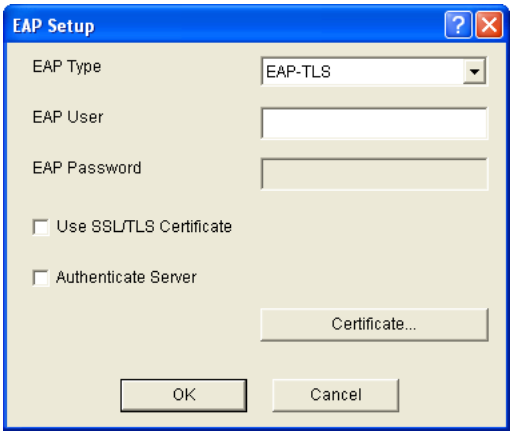
7. Click [OK].

▶ To Add Server Authentication

1. Under [CA Certificate], type in the name of the certificate file to be imported, or click [...] to browse to it.



2. Click [Import].
3. Click [OK] to confirm the import.
   The certification file is imported. When complete, a result window appears.
4. Click [OK], then click [Close].



5. Enter the user name to be distributed along with the certificate by the network administrator under [EAP User] and select [Authenticate Server]. then click [OK].
6. Click [Apply] to save the settings to the wireless card.

NOTE

To view the certificates, click [EAP] on the [Wireless] tab, then click the newly added [View] button for the certificate you wish to see.

CONFIGURATION: TELNET

Before starting, have the NEtwork Summary you printed for the wireless card handy: You will need the IP Address and Mac (Ethernet) Address from it to configure the card.

The following assumes:

- Windows 2000 Professional
- IP Address = 111.222.333.444
- Ethernet Address = 00:11:22:33:44:55

Configuring Using Telnet

1. Go to the Windows command prompt.
2. Verify the connection to the wireless card using the ping command followed by the IP Address for the wireless card:

   ```
   c:\Windows ping 111.222.333.444
   ```

3. Log onto the wireless card from Telnet:

> NOTE
>
> User name = root
>
> Password = last 6 digits of Mac Address (minus punctuation marks)

```
c:\telnet 111.222.333.444
Trying 111.222.333.444 ...
Connected to 111.222.333.444
Escape character is '^]'
EthernetBoard OkiLAN510w Ver 03.89 TELNET server.

login: root
'root' use needs password to login.
password:
User 'root logged in.
```

```
No.  M E N U (level.1)    Slot2: Wireless IEEE802.11g
_____________________________________________________
 1: Status / Information
 2: Printer Config
 3: Network Config
 4: Security Config
 5: Maintenance
99: Exit Setup
Please select(1-99)?
```

4. Type 3 and hit Enter.

```
No.  M E N U (level.2)    Slot2: Wireless IEEE802.11g
_____________________________________________________
 1: Common
 2: TCP/IP
 6: SNMP Trap
 7: E-Mail Send
 8: E-Mail Receive
 9: SNTP
10: Wireless Settings
99: Back to prior menu
Please select(1-99)?
```

5. Type 10 and hit Enter.

```
No.  M E N U (level.3)    Slot2: Wireless IEEE802.11g
_____________________________________________________
 1: Network Type                : Ad-Hoc
 2: Communication Mode          : Auto
 3: Channel                     : 11
 4: SSID                        : "default"
 5: Authentication              : Open
 6: WEP
 7: EAP
 8: WPA-PSK
99: Back to prior menu
Please select(1-99)?
```

6. To set WEP, type 6 and hit Enter:

```
No.  M E N U (level.4)    Slot2: Wireless IEEE802.11g
_____________________________________________________
 1: Key Size                    : 64
 2: Key Index                   : 1
 3: WEP Key 1                   :
 4: WEP Key 2                   :
 5: WEP Key 3                   :
 6: WEP Key 4                   :
99: Back to prior menu
Please select(1-99)?
```

7. To set EAP, type 7 and hit Enter:

```
No.  M E N U (level.4)    Slot2: Wireless IEEE802.11g
_____________________________________________________
 1: EAP Type                    : EAP-TLS
 2: EAP User                    :
 3: Encryption                  : TKIP
 4: Use SSL Certificate         : No
 5: Authenticate Server         : No
99: Back to prior menu
Please select(1-99)?
```

8. To set WPA-PSK, type 8 and hit Enter:

```
No.  M E N U (level.4)    Slot2: Wireless IEEE802.11g
_____________________________________________________
 1: Encryption                  : TKIP
 2: Key Index                   : 1
 3: Pre-Shared Key 1            :
 4: Pre-Shared Key 2            :
 5: Pre-Shared Key 3            :
 6: Pre-Shared Key 4
99: Back to prior menu
Please select(1-99)?
```

9. When done making your settings, go back to the Exit Setup menu, then type 1 to save the settings and reset the wireless card.

CONFIGURATION: PRINTER CONTROL PANEL

To make changes in the wireless card settings using the control panel: with **Ready to Print** on the display, press **ENTER** to switch to the Menu Mode.

Use the ∇, Δ and **ENTER** buttons to drill down to the Slot2 menu and make settings as follows:

[Admin Setup] → [Password] → [Slot2: Wireless] →

- [Network Type] = Ad-Hoc or Infrastructure
- [Communication Mode] = Auto or 802.11b
- [Channel] = 1 to 13
- [SSID] = your choice
- [Authentication] = Open
- [IP Address]
- [Subnet Mask]
- [Default Gateway]

TROUBLESHOOTING

Here is some basic troubleshooting information. For more detailed information, check out http://my.okidata.com.

PROBLEM	SOLUTION(S)
Communication is unstable.	Communication speed may be decreased or the wireless connection may be broken due to obstacles or radio source of 2.4 GHz such as a microwave oven or cordless phone. • Check radio sources in the surrounding area. • Change the location or direction of the access point and printer.
	Too many wireless devices are using the same or neighboring channel. This can decrease communication speed or break the wireless connection. • Reduce the number of wireless devices using the same channel. • Check for access points installed on the floor above or below and/or for unauthorized access points.

PROBLEM	SOLUTION(S)
Connection problems for wireless devices.	Problems with the access point devices or wireless computers. • Consult the FAQ information of the vendors for the access points and wireless computers. • Check that you have the latest firmware for access point devices. • Check that you have the latest drivers for the wireless computer.
	Access point device may be set to “High-Speed Mode.” • Disable the High-Speed Mode settings of access point devices
	MAC Address Filtering is enabled in the access point device. • Register the wireless card’s MAC address in the MAC Address FIltering list of the access point device.
	Multiple access point devices have the same SSID. • Check the SSID of access point devices in the surrounding area. • Check the SSID of access point devices on the floors above and below. • Check for unauthorized access point devices.

PROBLEM	SOLUTION(S)
EAP authentication fails.	Check the network configuration of the wireless card. • Make sure that IP Address, Subnet Mask and Default Gateway are all set correctly. • Ad-Hoc mode: IP Address cannot be obtained by DHCP.
	Check the network protocol: • The wireless card supports only TCP/IP protocol. • Ethernet and IPX/SPX are not supported.
	Check the configuration of the wireless card: • SSID, WEP Key and WPA Pre-Shared Key are all case sensitive. • In the Shared Key mode, check the Key Index and Key SIze.
	The supported scheme is EAP-TLS. Make sure that the RADIUS Server access point supports EAP-TLS.
EAP CA Certificate	Supported key sizes and encryption schemes: • Key Scheme = RSA or DSA • Key Size = 512, 1024, 2048 or 4096 bit. • Hash Scheme = md5 or sha1.
	“Client Auth” must be included in the “Extend Key Usage” attribute of the Client Certificate.
	The “EAP User” setting in the wireless card must match the Client Certificate setting.
	The CA Certificate must be provided by the Certificate Authority that directly issued the Server Certificate.