NOKIA A032

TROUBLE SHOOTING GUIDE

INTERNET

Contents

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INTRODUCTION

This document is intended to resolve common problems that may occur whilst using the Nokia A032 Access Point. It offers useful advice on avoiding general problems and preventing their re-occurrence. This document is not intended to replace the User Manual but should be read in conjunction with it.

1. STARTUP PROBLEMS

This section provides on troubleshooting advice on Access Point initialization (startup) problems.

1.1 INITIALIZATION ERROR CODES

If the initialization procedure fails an error code should be displayed on the **info** LED's and the **alert** LED will remain on.

The code should be read from left to right. To identify the code write down each LED as a '1' or '0' depending on its state (on = 1).

For example the pattern:

```
on on off off on off
```

would be written:

```
110010
```

The table below lists the error codes (a more detailed explanation of each code is given in the section below the table.

Code	Meaning	Log Text
100001	Bad code image	<none>
110000	Bad PCMCIA hardware	PCMCIA hardware failure
110001	No PCMCIA	No PCMCIA card detected
110010	Bad PCMCIA card	Non-compatible PCMCIA card
110011	Bad radio (does not initialize)	Cannot initialize radio
001000	Bad DRAM (stuck address)	Memory error type 1
001001	Bad Ethernet RAM (stuck address)	Memory error type 2
001010	Bad CMOS Memory	Configuration error - default loaded
101000	LAN controller error	LAN Interface Error
011000	Bad configuration	Configuration error
011001	Bad Manufacturer's info	Bad unit checksum
011010	Bad log sector	Log sector bad — recovered
011011	System error	System fault

1.1.1 info LED error codes explained

100001: Bad code image

This error message indicates that the flash memory firmware is invalid or corrupted. Correct firmware is loaded at the factory prior to shipment. Therefore this problem may be the result of a problem during an upgrade procedure. *Appendix D* of the printed *Nokia A032 Wireless LAN Access Point User Guide* or the *A032_User_Guide.pdf* file describes methods for reloading the firmware. If these procedures fail to solve the problem there may be a failure in the unit and it may need to be repaired by dealer.

110000: Bad PCMCIA hardware

Indicates that there is a failure of the PCMCIA slot. Unit must be repaired by dealer.

110001: No PCMCIA

Indicates that no PCMCIA card has been detected. This will occur if the PCMCIA slot is empty or the radio card did not seat properly. Ensure that the radio card is aligned correctly and pressed firmly all the way into the slot. You may intentionally power up the access point without the radio for certain diagnostic tasks or to configure only using the LAN connection. This error message will appear briefly and then the initialization will complete without the radio card.

110010: Bad PCMCIA card

Indicates that the PCMCIA card is not compatible with the Nokia A032. This may be because it is not a radio card or because it is an incompatible radio card. Ensure that the Nokia C110 or C111 radio card has been inserted into the PCMCIA slot.

110011: Bad radio (does not initialize)

Indicates that the PCMCIA radio card does not respond to initialization requests. This may indicate that the card is faulty. Try using an alternative radio card, ensuring that the radio card used is a Nokia C110 or C111.

001000: Bad DRAM (stuck address) and

001001: Bad Ethernet RAM (stuck address)

Indicates a hardware memory problem in the unit. Unit must be repaired by dealer.

001010: Bad CMOS memory

Indicates that the configuration memory had a checksum error. This memory is used to store the optional settings for the unit. If a checksum error is encountered the Nokia A032 will automatically re-load the default configuration parameters.

101000: LAN controller error

Indicates failure of the Ethernet interface. Unit must be repaired by dealer.

011000: Bad configuration

Indicates that the configuration information is corrupted for some unspecified reason. In this case the access point will automatically reset the default values and restart. Put the Access Point into learn mode and reconfigure.

011001: Bad manufacturer's information

Indicates that the internal configuration information has been corrupted. Contact dealer.

011010: Bad log sector

Indicates that the log information in the flash memory has been corrupted. In this case the Nokia A032 will automatically restore an empty log file. The original log and NID name information will be lost but the unit will proceed with initialization. Reenter NID List and WEP information before continuing.

011011: System error

Indicates failure of initialization due to an unknown cause. Power down and then power up Access Point again. If the error re-occurs the unit must be returned to the dealer for repair.

1.2   USING THE INITIALIZATION LOG FILE

The Initialization log file keeps a record of each time the Nokia A032 is restarted. You can use it to diagnose start-up problems.

During initialization, as each part of the system is started, entries are made in the log. If the startup is successful the resulting log file changes are written into the flash memory as a record of the event.

The log file can hold data from approximately 30 restarts. After this the oldest entries are overwritten by new entries. To keep a more permanent record, upload the log file periodically using TFTP and save it to disk – see *Using the TFTP wireless station program* in the *Nokia A032 Wireless LAN Access Point User Guide* or the *A032_User_Guide.pdf* file.

1.2.1 An example log file

An example log file is shown below:

```
Initializing version: 3.00.00 on Tue, 20 Apr 2000 16:19:05

Initialize LAN port...

LAN Port ready: Message. CLM Request


Initializing version: 3.00.00 on Tue, 20 Apr 2000 16:43:28

Initialize LAN port...

LAN Port ready,
```

The log file shows the following information:

The first line of an entry shows the time at the restart and records the version of Nokia A032 software (in this case 3.00). The next lines show the LAN port is initialized after which the unit is operating normally.

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1.2.2 Real-time troubleshooting via the serial port

If there is a problem during initialization the Nokia A032 may stop and display an error code on the **info** LED's. You cannot view the contents of the log file because the Nokia A032 is not operating.

To provide a solution to this problem, the Nokia A032 also writes all log file entries to the serial port *during* initialization. If the unit fails to initialize and you can't discover the problem, try attaching a serial terminal to the unit.

Connect a serial terminal to the serial port with the following settings:

> Baud rate: 9600 bps
>
> #bits: 8
>
> No parity

This will result in the display of progress messages. You'll see log messages written to the terminal – these might provide useful information. These error messages are listed in paragraph 2.1.

2. PROBLEMS WHEN JOINING THE NETWORK

This section gives advice on problems which may occur when trying to associate with the Access Point or when joining the network.

2.1 ASSOCIATING

If a wireless station cannot associate with the Access Point when the wireless station is booted up check the following.

2.1.1 Network name

The network name that is entered into the profile must be the same as the network you are trying to join. Check that the network name in the profile is exactly the same as the network name in the Access Point remembering that the Network names are case sensitive.

2.1.2 WEP

The Access Points default WEP mode is WEP, this ensures that the network is safe from intruders if the access point is ever defaulted. When using a Nokia C110 radio card in the wireless station when association with the access point fails due to WEP, a message will appear on the wireless station user interface.

The WEP mode must be the compatible, for example a wireless station in WEP Mode Open will not associate with an access point in WEP Mode WEP.

If shared key authentication is being used the keys used must be identical and in corresponding slots in both the access point and wireless stations.

If personal WEP keys are being used the wireless stations user name (normally the MAC address) and key must be on the database. The user name and key must be the same on both the wireless station and database.

WEP Keys are not transmitted over the airwaves and therefore must be in place on the access point (or database) and the wireless station before any association is begun.

2.1.3 NID list

If you are using NID List security and the MAC address of the wireless station is not entered in the NID list the access will be prevented.

A NID (Network Identifier) list is used when configuring an Access Point to stop unwanted wireless stations associating with the Access Point. If the MAC address of the Radio card in the wireless station has not been added to the NID List the wireless station will not be able to associate. Speak to your Network manager.

2.1.4 Radio card

Check the statistics page on the card user interface to ensure that Network is visible.

If the Network is not visible replace the radio card in the wireless station. If the network is still not visible replace the radio card in the Access Point. If these procedures fail and you have another Access Point (which you know is fully functional) try to associate the wireless station with that Access Point.

2.2 JOINING THE NETWORK

If the wireless station has associated with Access Point but cannot join the network the wireless station may need to renew its IP address for the specific network.

If the IP information in the wireless station machine is obtained using DHCP, you may need to *renew* the information before you can access the A032. If you have moved from a network where you had a fixed IP address you must first change the settings so that the IP address is obtained.

1. Right click the mouse on **Network Neighborhood** icon on the desktop.
2. Choose **Properties**
3. Highlight TCP/IP -> Nokia C11x Wireless LAN Card (or other wireless LAN card if different) and Click Properties
4. Click button Obtain IP address automatically.
5. Click **OK** and restart the wireless station.

If, when the wireless station has rebooted, the wireless station does not automatically renew the IP address, or the wireless station was already configured correctly, then you must renew it manually.

Using Windows 95/98.

1. Choose **Run** from the **Start** menu.
2. Enter WinIPcfg and press Enter.
3. Select the correct adapter card in the pull-down menu.
4. Click **Release**.
5. Click **New**.

If the Release and New buttons are blanked out (not accessible) check that your wireless station does not have a fixed IP address (you can check this in Network Neighbourhood Properties).

Using Windows NT or Windows 2000.

1. Choose **Command Prompt** from the **Start** menu, **Programs** menu.
2. Enter ipconfig /renew

You should now be able to access the network via the A032 from your wireless station machine.

3.   RESETTING FACTORY DEFAULTS

If you don't know the Nokia A032's current configuration status and you want to ensure that you are starting from a clean and known state, you can restore the factory default settings.

You might want to do this before using Learn mode to configure the Nokia A032.

Assuming the Nokia A032 is not security locked (see the *Nokia A032 Wireless LAN Access Point User Guide*) you can use the following procedure:

> 1. Put the Nokia A032 into Learn mode
>
> 2. Hold in the **mode** button.
>
> The LED's perform a binary count, slowly coming on from left to right.
>
> 3. Keep holding the **mode** button until all the LED's are on. This takes about 10 seconds.

The unit has now overwritten the configuration with the factory defaults, and it should restart.

Remember to hold the **mode** button again when the unit restarts if you want to return to Learn mode.

4.   GENERAL ACCESS POINT TROUBLESHOOTING

4.1   WEB MANAGEMENT CHANGES

If the web management screen is not updating changes after information is entered the most likely cause is forgetting to press **Enter** before pressing **Save**.

Enter the required values and press **Enter**. Then press **Save**.

You may make changes on one Web Management page, press Enter and then update values on other Web Management screen (remembering to press Enter before moving to the next page) and then press Save to update all the changes. If you forgot to press Enter (and just press save) the changes on that specific page will be lost.

4.2   INTERNET ACCESS WITH FIXED IP ADDRESSES

If the Access Point is not configured as a DHCP server and wireless station is not forcing a dial out when it is connected to a modem, it is likely that the gateway on the wireless station is not set up correctly. The IP Address of the Access Point must be configured as a gateway in the wireless station.

1. Right click the mouse on **Network Neighborhood** icon on the desktop.

2. Choose **Properties**

3. Highlight TCP/IP -> Nokia C11x Wireless LAN Card and Click **Properties**

4. Click **Gateway** tab and enter IP address of Access Point.

5. Click **OK** and restart the wireless station.

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4.3 ACCESS POINT AS A DHCP SERVER

The Access Point can be configured as a DHCP server. More than one Access Point on the network can be configured as a DHCP server providing that the address pool of each server does not overlap.

Care should also be taken that any Access Point configured as a DHCP server should not conflict with any other DHCP server on the network.

Note that difficulty may be experienced if the pool size of the DHCP server is less than 8 when using wireless stations with MS windows. This is because Windows sometimes requests several addresses before accepting an offered IP address causing several addresses to be temporarily unavailable.

5. TROUBLESHOOTING DIAL-UP CONNECTIONS

The Nokia A032 uses PPP to connect and send data to an ISP. A basic understanding of its operation may be helpful if you're having problems with a dial-up connection.

There are four phases to the connection process:

1. Dialing the ISP phone number.

2. This phase checks the compatibility of the modem on the other end of the phone line and negotiates the speed of the connection based on the quality of the phone line.

3. Talking to the ISP server and agree that it can use the PPP protocol.

4. Identifying the user to the ISP by sending a username and password.

5. Agreeing the IP addresses that will be used during the session.

If all four steps complete the Nokia A032 will be able to deliver and receive IP packets to and from the Internet.

We'll look at each phase in detail and highlight possible problems. You might find it helpful to view the PPP Log screen.

5.1 DIALING PHASE

What happens	Possible problems and solutions
The Nokia A032 looks for a modem. The first required indication is that the DTR (Data terminal ready) signal at the serial port is active. This tells the Nokia A032 that there is a device connected to the serial port.	Verify that the DTR signal is active by viewing the Modem Status screen (see the printed *Nokia A032 Wireless LAN Access Point User Guide* or the *A032_User_Guide.pdf* file) – the DTR box should be red. If it is blue ensure that the modem is powered on; check the cable connecting the modem to the Nokia A032.
After DTR is detected the Nokia A032 attempts to communicate with the modem using the industry standard AT command set.	If this step fails, make sure the modem is in its factory default state. Most modems automatically adapt to the data rate of the computer to which they are attached. If your modem has a fixed data rate you may need to specify that in *Advanced Internet Access setup (modem).*
The Nokia A032 sends a reset command to the modem and then, optionally, Sends a user-defined initialization string.	Most modems do not need an initialization string. However, if you are having problems, check the modem supplier's support site for more

What happens	Possible problems and solutions
	information on this.
The Nokia A032 issues the command to dial. You should hear the modem dialling and attempting to connect. If, successful the modem will notify the Nokia A032 and proceed to the next stage.	If the line is busy or you've specified the wrong ISP number, the connection will fail. One possible failure at this point is that the modem uses an unusual message to indicate connection. The last message received can be seen in the Modem Status web management screen (see the printed *Nokia A032 Wireless LAN Access Point User Guide* or the *A032_User_Guide.pdf* file). It should normally contain the word "Connected". If not, you may need to use a special initialization string to get the correct message (check the Nokia support site for more information on this).

5.2 LCP PHASE

What happens	Possible problems and solutions
The Nokia A032 and the ISP agree to use PPP and negotiate the various options that might be available to improve efficiency. This phase of negotiation uses *Link Configuration Protocol* (LCP).	Looking in the PPP Log (see the printed *Nokia A032 Wireless LAN Access Point User Guide* or the *A032_User_Guide.pdf* file) you should see entries labeled 'LCP' and identified as configure request, configure reject and configure NAK.
	These entries are normal and part of the bartering process. However, if the two sides are unable to agree one will eventually give up and drop the link.
	• If you see a long sequence of LCP messages followed by a hang-up then there is probably a compatibility problem between the ISP and the Nokia A032. In this case you should contact Nokia technical support for advice.
	• If the PPP Log contains configure requests but no replies, the ISP either doesn't support PPP or needs some special procedure to turn on PPP. This will generally only be the case with older ISPs, although it may include some quite large services. In this case it may be necessary to use a *script* to log in and tell the ISP that you want to use PPP (see *Setting a logon script* of the printed *Nokia A032 Wireless LAN Access Point User Guide* or the *A032_User_Guide.pdf* file.

The LCP phase will complete when both sides have sent an LCP configure request to the other and received an LCP configure ACK in reply.

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5.3   AUTHENTICATION PHASE (LOGGING IN)

Almost all ISPs require you to identify yourself by logging in after the LCP phase is complete.

What happens	Possible problems and solutions
The Nokia A032 will send the user name and password which you have previously configured. If the login is accepted you will see an `accept` message in the PPP log.	If the login is not accepted, you will either see a reject message in the PPP log, or the line will just be dropped by the ISP. If your password is not accepted there may be several causes including: • _Incorrect capitalization_ With most ISPs, the password open is not considered the same as Open. • _Missing prefix_ Sometimes the username needs to be prefixed with a network identifier. For example, an ISP called Fastnet Inc. might require the user name to be prefixed with the string FSN/. Check with your ISP. • _Login script required_ The ISP does not accept logging in via PPP and requires the use of a login script. See _Setting a logon script_ of the printed _Nokia A032 Wireless LAN Access Point User Guide_ or the _A032_User_Guide.pdf_ file.

5.4   IPCP PHASE

The ISP agrees or assigns the IP address information you will use on its network.

What happens	Possible problems and solutions
In most cases, the ISP will send the IP address information to the Nokia A032 to use as its _external_ IP address (see _Appendix E_ of the Printed _Nokia A032 Wireless LAN Access Point User Guide_ or the _A032_User_Guide.pdf_ file). The negotiation during this phase is done in a similar way to the LCP negotiation. However, in this case the protocol is called _IP Configuration Protocol_ (IPCP).	If the ISP fails at this point of the negotiation:-.... • you may have programmed incorrect values in the Nokia A032, or • the ISP is unable to provide IP information automatically.

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