VoiceGATE 8D5499

User's Manual
REV. 2.0

Index

PREFACE

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The following installation rules should be respected in order to have the best working order of the equipment and for the user's safety.

ENVIROMENTAL CONDITIONS

ENVIROMENTAL TEMPERATURE from 0 to 45°C   RELATIVE HUMIDITY from 20 to 80% n.c.

Rapid changes of temperature or humidity should be avoided (0,03°C/min).
This equipment, including cables, should be installed in an area free from:
- Dust, humidity, heat from direct sun light.
- Objects which irradiate heat. These could cause damage to the container or other problems.
- Objects which produce a strong electtromagnetic field (loudspeakers, etc.)
- Liquids or chemical corrosive substances.

CLEANING THE TERMINAL

Use a clean and soft cloth. Wet the cloth with water or natural detergent if it is necessary to remove any stains. Never use chemical products such as petrol or solvents.

VIBRATIONS OR DROPPING

Caution against vibrations and dropping.

DECLARATION $C\epsilon$ OF CONFORMITY

Digicom S.p.A. via Alessandro Volta 39 21010 Cardano al Campo-Varese-
This product satisfies the basic requirements of the below indicated Directive:
- **1999/5/CE**
- **EN 55022**
- **EN 61000-3-2**
- **EN 55024**
- **EN 60950**
- **EN 41003**

1.0 GENERAL DESCRIPTION

Digicom VoiceGATE is the ideal solution for the new Telecom Operators who want to take at home or office the new POTs with integration of Voice (Voice over IP) and Internet. VoiceGATE has 3 Ethernet ports (10/100) for the connection of local devices (Personal Computer, Printers, etc.), 2 analog ports and, optional, 1 SO ISDN bus with 2 RJ45 ports (for the connection ISDN telephones).
The connection to the network backbone (Uplink) will take place through the Ethernet 10/100BT or optionally via xDSL.

VoiceGATE integrates the Router function. The hardware architecture of VoiceGATE uses an ARM9 microprocessor of latest generation at 140 Mips, which guarantees, in Router mode, a throughput of more than 15 Mbps in full-duplex.

Through the VoIP functions it is possible to connect up to 2 analog devices (Telephones, Modem, Fax) using the protocols G.711, G.723.1, G.729 A for all the voice functions.

VoiceGATE can be used with two different VoIP configurations:with and without GateKeeper.
The GateKeeper is a device that takes care of associating the telephone address with the IP address.
To simply use the VoIP in your network, Digicom carried out a Address book inside VoiceGATE to avoid the use of the Gatekeeper.

VoiceGATE can be used both in network with Gatekeeper and with the address book. In case you will not use the Gatekeeper, it will be possible to configure the address book through a graphic utility. (VoiceGate AddressBook.exe).

Technical Features

- VoIP capability H.323v3
- G.711, G.723.1, G.729 support
- Modem and Fax support over IP G.711
- 2 analog ports POTs POTs
- 2 ISDN ports
- ISDN Bus (S0) to connect ISDN phones (optional)
- 3 Ethernet ports 10/100BT
- Built-in Store & Forward switch
- Built-in IP router
- RIPv2 support
- RIP1 support compliant
- NAT, TFTP, DHCP support
- Can be managed through SNMP
- Up to 8 devices on ISDN bus
- Web based ROUTER configuration

1.1 LED Description

The VoiceGATE status can be checked through seven led indicators.
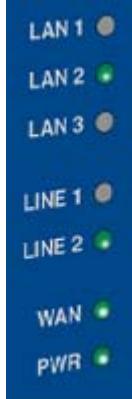
Lan x	Indicates the LAN ports status	
	Off:	no device connected
	On:	device connected
Line x	Indicates the status of the two telephone lines	
	Off:	device not registered at the GateKeeper or internal address book not configured.
	On:	device registered at the GateKeeper or internal address book configured
	Flashing:	line in use
Wan	Indicates the WAN ports status	
	Flashing:	activity on the WAN port
Pwr	Indicates the status of the power	
	Off:	VoiceGATE is not powered
	On:	VoiceGATE is powered

When all the LEDs are on, except the WAN led, it means the device is starting up. This operation takes about 45 seconds and takes place at the starting up, after a saving of the configuration or after a reset.

1.2 Connectors Description

Tel1-2	RJ11 connectors (FXS) for PSTN analog devices (telephones, modem, fax)
ISDN	RJ45 connector for ISDN telephones
Lan1-3	10/100Mbs (MDI-X) switch ports
WAN	10/100Mps (MDI) Ethernet port

2.0 Configuration

VoiceGATE can be configured using a Web browser. (Explore, Netascape, etc). This chapter describes the test to carry out on the computer to enter the configuration and the procedure to save the mofications in the configuration. **In the paragraph "VoiceGATE working test" you find the procedures to carry out your first tests with Digicom's VoiceGATEs. Just few operations and you will be able to install and test two VoiceGATEs.** Then all the configuration menus will be described.

2.1 Computer configuration

Setup minimum requirements:

- 1 PC with 10/100BT Ethernet card
- 1 LAN UTP cable Cat 5 Cross
- Browser (Explorer or Netscape)

To go on with VoiceGate setup, be sure the PC IP address belongs to the same network of VoiceGate (example 192.168.2.xxx).

To enter the setup menu, go on as follows:

1. Setup the TCP/IP protocol for the PC Ethernet card with an IP address of the same network of VoiceGate (example **192.168.2.3**). Do not use 192.168.2.1 (default address) and 192.168.2.2 (test address).
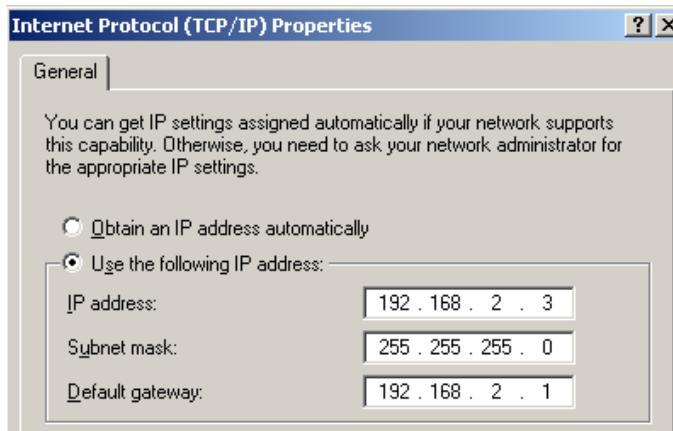
2. Connect the PC to VoiceGate on the **Wan** port using a **cross LAN cable**.

3. Turn on VoiceGate and wait it finishes the Start Up procedure (about 45 sec.)

4. Once the Start Up phase is finished, the led LAN will be off.

2.2 Access to configuration

1. Run the browser and connect to **http://192.168.2.1.** When the connection is established, the following window will appear:
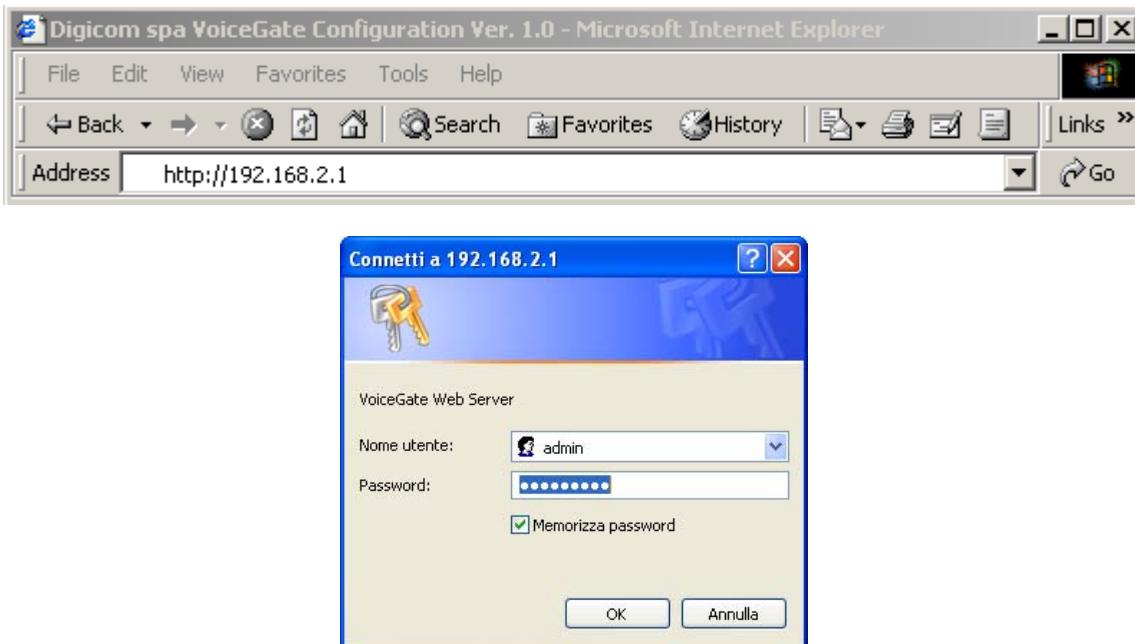
Insert in the User Name field: **admin**
Insert in the Password field: **voicegate**

***NB: User name and password must be written with lower case.***

Press Enter (or click OK) and the following window will be displayed:

<-----
Attention: after you enter the configuration menu, be sure you press the **Submit** key to load the correct configuration.

Note: in case of problems while displaying the configuration, be sure that no **proxy Server** is active.

In Microsoft Internet Explorer the Proxy setup is in: Tools, Internet Options, Connections LAN, Settings.
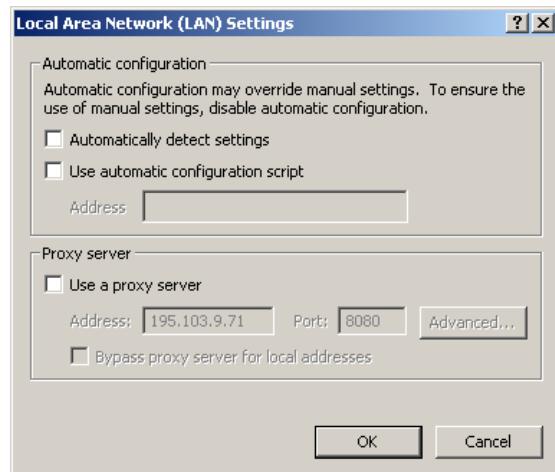
Menù Description

1. General Configuration	It displays the information on the HW and SW release of the equipment.
2. Telephony Configuration	It allows the reading and the voice parameters setup.
3. Supplementary Services	It allows the reading and the voice supplementary services setup.
4. Public Network Configuration	It allows the reading and the Wan (Uplink) parameters setup.
5. Private Network Configuration	It allows the reading and the LAN (private user network) parameters setup.
6. Mac Addresses	Displays the Mac Address Wan side and LAN side.
7. SNMP Agent	It allows the reading and setup of SNMP protocol parameters.
8. RIP	It allows the reading and setup of Rip protocol parameters.
9. Routing Table	It allows the reading of the routing table.
10. Security Configuration	It allows the password setup.
11. Save Setting	Save the configuration.
12. Reset	Reset the equipment without modifying the current configuration.

The **Submit** button loads the current configuration. Use the "Submit" button before going on with the consultation of the other menus.

2.3 Save the configuration

To confirm the new settings you must press the **Submit** button at the end of any WEB page.
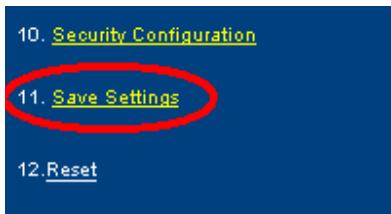
To activate the modifications it is necessary, before you exit the configuration, to enter the **Save settings** menu and press the **Submit** button. At this point VoiceGATE will execute a StartUP, then (after about 45 seconds) the modifications are active.

2.4 VoiceGATE Working Test

With simple operations you can test at once the working of VoiceGATE. We suggest to follow the procedures described in this chapter so to avoid working problems of VoiceGATE due to wrong configurations.
The factory settings of VoiceGATE are the following:

Ethernet: **Voice:**
IP address: 192.168.2.1   Mode: Address Book
Subnet Mask: 255.255.255.0   Numbers: Line1->123 Line2 ->456

To test the working of any single VoiceGATE, proceed as follows:

- Power on your VoiceGATE
- Wait for the start-up phase (about 45 seconds)
- The led Line 1 and Line 2 of VoiceGATE will remain on (fixed red)
- Connect two analog phones in Tel 1 and Tel 2
- Take up the receiver of the phone connected in Tel 1
- Be sure you hear the dial tone and dial the number 456
- The phone connected in Tel 2 will ring

To test the working of a couple of VoiceGATE, go on as follows:

- Modify the IP address of one of the two VoiceGATEs entering the WEB configuration, and following the indications in the paragraphs "**Computer Configuration**" and "**Access to configuration**".
- Select the menu number **4. Public Network Configuration** and modify the IP Address from 192.168.2.1 to 192.168.2.2

   Attention: If the IP address is not correctly inserted, there's the risk VoiceGATE is no more reachable.

- Click on the **Submit** button at the end of the WEB page
- Select the **Save settings** menu and press on **Submit**
- At the end of the reset procedure (about 45 seconds) only the leds Line 1 and Line 2 of VoiceGATE will remain on (fixed red)
- The following telephone numbers will be associated to the VoiceGATE with IP address 192.168.2.2 : Line1-> 111 and Line2 ->222
- Connect the two VoiceGATEs directly, using an Ethernet cross cable, through the WAN ports or use two Ethernet right cables, passing through an hub or a switch
- Connect an analog phone to the Tel1 port of the VoiceGATE with IP address 192.168.2.1 and the other phone to the Tel1 port of the VoiceGATE with IP address 192.168.2.2
- Take up the receiver of the first phone
- Be sure ou hear the dial tone and dial the number
- The phone connected to the second VoiceGATE will ring

2.5 Configuration Menù description

General Information

The information concerning the Hw and SW version and the elapsed time from the power on are displayed in this window.
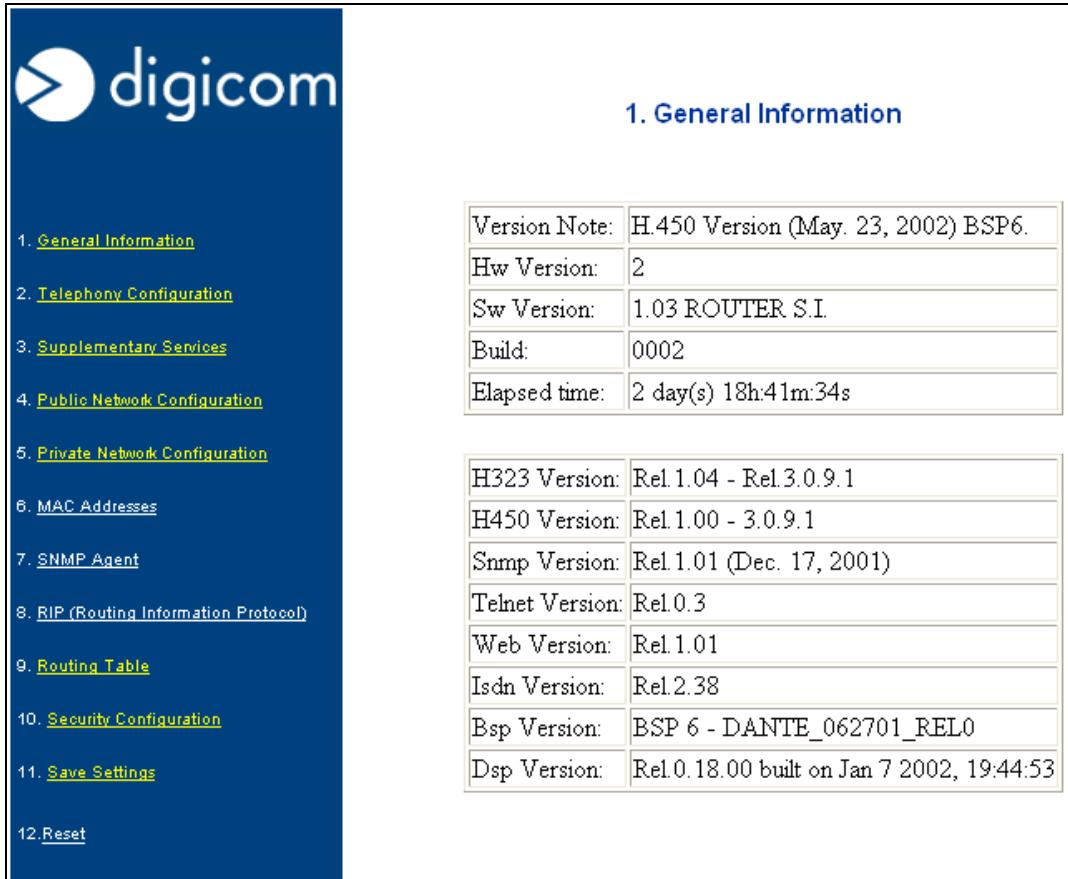
Telephony Configuration

The voice information are displayed in this window, in particular:

Call Setting: defines the Voice working mode. It can be set to work with the Gatekeeper or with the internal address book.

Codec Selected: it allows to define the priority list for the codec, when the codec is set in **Automatic**. "1" indicates the main codec.

H323 Alias: name used when registering at the Gatekeeper.
Note: This String must be different for each devices.

Phone Number: In this menu you assign the number to the telephone lines. For each number it is possible to activate the management of the identifier (_clir/clip_) and of the Modem/fax.
Note: In case the VoiceGATE is programmed in "AdrressBook" mode, in the "Phone Number" field it is displayed the telephone number present in the address book and it will be possible to change it using the "VoiceGateAddressBook" program only.

How to modify the phone number in Gatekeeper configuration?

Type the new telephone number in the **Phone Number** field (e.g.1001), then type 1 in the Index field (line1=index1) and select **Modify** in the field next to Index.

Click on the submit field to confirm. In the Phone number field it will appear the telephone number you typed.

Interdigit Delay: wait in sec. from the last digit of the number, before starting the call. It is possible to activate the immediate dialling of the number, inserting the "#" character at the end of the number.

Element in Gatekeeper: Gatekeeper IP address for registration. Maximum 4 addresses can be stored.

Gatekeeper Keep Alive: Time in sec. for Gatekeeper registration renewal.

Fixed Tei: TEI setup (Automatic or Fixed). This parameter is valid for the ISDN interface only.

Interdigit Delay: (s)	5
Element in Gatekeeper :	No Element in Gatekeeper
	Address [ ]
	Zone [ ]
	Index [ ] [▼]
Gatekeeper Keep Alive: (s)	3600
Tei :	Automatic ▼
Tei Value :	0
Isdn Bus :	Short Passive ▼

Submit   Reset

Tei Value: This parameter is to be inserted in case of fixed TEI only.

Isdn Bus: ISDN Bus definition: Short Passive or Extende Passive.

How to insert the Gatekeeper IP Address?

Call Setting :	Gatekeeper ▼

Be sure the **Gatekeeper** is in **Call Setting**.

Element in Gatekeeper :	No Element in Gatekeeper
	Address 195.103.9.90
	Zone [ ]
	Index 1 Add ▼

Insert the Gatekeeper IP Address in the **Address** field, then type 1 in the Index field, and select **Modify** in the field next to Index.

Submit   Reset

At the end of the WEB pages, click on Submit to confirm.

Element in Gatekeeper :	1) 195.103.9.90 0

Supplementary Services

The information concerning the reading and the voice supplementary service setup, according the H.450 standard, are displayed in this window.

You will find here a brief description of the various supplementary services.

For almost all the supplementary services it is necessary to hold on a call (**H.450.4** service enabled). This operation is carried out through the "R" key or "Flash" key with analog phones; in case of ISDN phones there can be different modes: Hold Key, or through a proper configuration menu (example Mirò phone of Telecom Italia).

Note: in the description of the services the R/Flash key will be described with (R).

H.450.2 Call Transfer
The H.450.2 service allows to manage the call transfer.
During the conversation, by pressing (R) you can put on hold a call and activate a second call. At this point by pressing R4 (R key + 4 key on the phone) the communication will inetrrupt and the on hold call will be put in contact with the second call.

H.450.3 Supplementary Services

H.450.3 services allow the user to divert the incoming calls to another number.
4 types of service are available:

- **CFU** *(Call Forwarding Unconditional)*:   calls addressed to the user requiring the service are always forwarded.
- **CFB** *(Call Forwarding Busy)*:   calls are forwarded only if the user is busy.
  Note: the user is busy only if he has made a call to another user. Then, if the receiver is up, the number is free, as no info on the status change has been sent to the Gatekeeper yet.
- **CFNR** *(Call Forwarding No Reply)*:   calls are forwarded only if the user requiring the service is free but does not answer within the time fixed in the CNFR Timeout field (15 sec.)
- **CD** *(Call Deflection)*:   le chiamate sono deviate solo se l'utente che richiede il servizio risulta libero ma esplicitamente redirige le chiamata (solo ISDN).

In the field telephone number 1 and 2 it must be inserted the number to forward the call.

H.450.4 Call Hold
H.450.4 service allows to put on hold a call and to call another number. Once the two calls have been activated, you can:

- Press R + 1 -> To close the active call and recover the on hold call.
- Press R + 2 -> To switch from a conversation to another, keeping one on hold.
- Press R + 3 -> To activate a three users conference.

Note: For the three users conference it is necessary to use the GateKeeper Server and the MCU Server (Multipoint Conference Unit) not supplied with the product.

H.450.6 Supplementary Services

H450.6 service allows the management of the call waiting option.

During the conversation you hear the beep for a call waiting, you can:
- Press R+0 -> To reject an incoming call.
- Press R+1 -> To close the active conversation and answer the incoming call.
- Press R+2-> To put on hold the active call and answer the incoming call.

Public Network Configuration

The information concerning the reading and the Wan (Uplink) parameters setup are displayed in this window.

Use DHCP to obtain configuration: Enables/Disables the device to DHCP configuration

IP Address: Device IP address - LAN site

Subnet Mask: Device Network Subnet Mask

Dns List: List of active Domain Server Name (4 maximum)

Domain Name: Name of the Domain

Router List: Device default Gateway on the Wan

Time Server List: List of Time Server IP addresses (maximum 4)

Wan Leased Time: Validity time for the IP address (valid only if the device is configured by DHCP server)

Tftp Server: TFTP Server IP addresses for the code download

Tftp Path: Code file name to download

Private Network Configuration

The information concerning the reading and the LAN part parameters are displayed in this window:

<-----
Attention: do not insert an IP address of the same network used in the WAN configuration "**PublicNetwork Configuration**". If the WAN address is 192.168.2.1 you cannot use addresses 192.168.2.x.

Enable DHCP Server:	Enables/Disables the DHCP Server functionality to the LAN
IP Address:	Device IP Address – LAN side
Subnet Mask:	Device Network Subnet Mask
Address Pool List:	List of IP addresses to be assigned to the devices connected on the LAN side. (This features is on only if the DHCP server is enabled)
IP Address Pool Mask:	Network Mask of the addresses to be assigned to the LAN side.
Router List:	Default Gateway for the LAN side
Dns List:	List of active Domain Name Server
Domain Name:	Domain name
Leased Time:	Validity time for the IP address assigned to the devices connected to the LAN side (valid only if the device is configured as a DHCP server)
NAT:	Enables/Disables the NAT protocol

Mac Addresses

The Mac addresses of the device (Wan and LAN side) are displayed in this window.

6. MAC ADDRESSES

Public Network Mac:	00:A0:A2:02:00:49
Private Network Mac:	00:A0:A2:02:00:48

Public Network Mac: Mac address assigned to the WAN

Private Network Mac: Mac Address assigned to the LAN

SNMP Agent

The information concerning the reading and the parameter setup of SNMP protocol are displayed in this window.

7. SNMP AGENT

Snmp Version :	Rel.1.01 (Dec. 17, 2001)	
Snmp Trap Server:	0.0.0.0	0.0.0.0
Snmp Security Server: (MAX4)	1) 0.0.0.0	Address Index

Submit Reset

SNMP Version: Device SNMP agent version

SNMP Trap Server: Server IP address to send the TRAP

SNMP Security Server: Server IP address enabled for SNMP queries

RIP

The information concerning the reading and the parameters setup of the RIP protocol are displayed in this window.

RIP:	Enables/Disables the RIP
Silent Mode:	**OnlyRX** – It manages the routing table in reception only **RX+TX** – It manages the routing table also in transmission
Rip2 Mode:	**Multicast** – It indicates if the RIP packets must be sent to the defined multicast address 224.0.0.9 (RIPv2) **Broadcast** – It indicates if the RIP packets must be sent to the interface broadcast address (RIPv1 compliant).
Timer Rate:	Time in seconds. It shows the updating time of the internal tables.
Supply Interval:	Time in seconds. It shows the forwarding time of the routing tables.
Expire Time:	Time in seconds. It shows the time after which a route is removed from the routing table.
Garbage Time:	Time in seconds. It shows the time after which an expired route is removed from the internal tables.

Route Table

The informations concerning the routing table are displayed in this window.

```
9. ROUTING TABLE

Destination          Gateway              Interface

192.168.2.0          192.168.2.39         mac1
192.168.30.0         192.168.30.1         mac0
127.0.0.1            127.0.0.1            lo0
```

Security Configuration

The informations concerning the password setup.

```
10. Security Configuration

For FTP to work, the Admin Password should be at least 8 characters and no
more than 15 characters. Do not use '&' in the password.

Admin
Password     [                                    ]

Retype
Password     [                                    ]

              [ Submit ]  [ Reset ]

Settings need to be saved to Flash and the system needs to be rebooted for
changes to take effect.
```

Save Setting

In this page it is possible to save the modified configuration via browser, clicking on the Submit button.

VoiceGATE will restart to load the new configuration. After about 45 seconds it will be ready to be used.

Reset

In this page it is possible to reset the device, clicking on the Submit button.

VoiceGATE resets and load the current configuration.

All the unsaved modifications are lost.

3.0 VoiceGATE.exe

The **VoiceGATE** utility allows to :
- Create the "AddressBook"
- Load the AddressBook in the VoiceGATEs
- Upgrade the VoiceGATE firmware

In the following parameters you will find some information on the use of the program; for further details refer to the Help on-line.

3.1 Address Book Management

Address Book Management allows to create the address book in a simple way.

This address book can manage up to 250 different telephone numbers
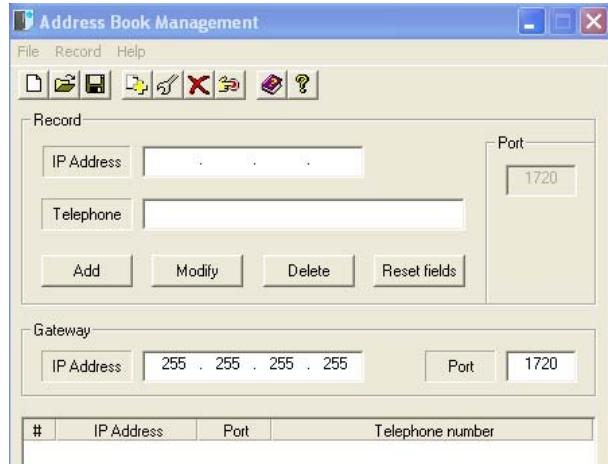
To insert new IP addresses/telephone numbers:
- Insert the WAN IP address (Public Network VC) of the VoiceGate (i.e. 80.204.9.194)
- Insert the first telephone number you want to associate to VoiceGate (i.e. 101)
- Click on **Add** to confirm

To insert the second telephone number:
- Insert the WAN IP address of the VoiceGate (i.e. 80.204.9.194)
- Insert the second telephone number you want to associate to VoiceGate (p.e 102)
- Click on **Add** to confirm
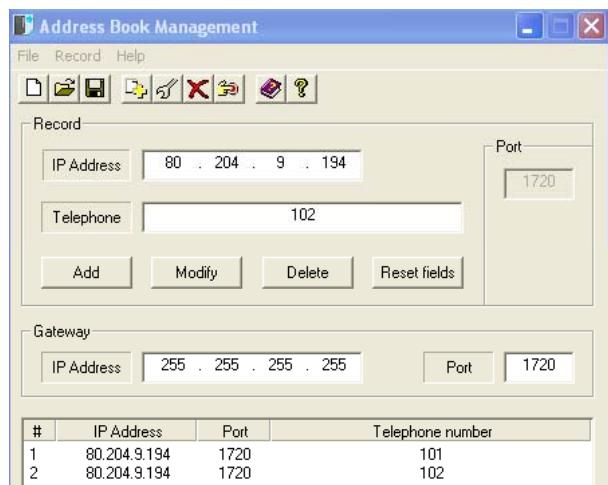
After you have completed the insertion, save the address book clicking on **Save**, select the **addrbook.cpe** file and proceed confirming with **Save**.

Gateway IP Address
The IP Address field concerning the Gateway represents the IP Address of an eventual PSTN/ISDN Gateway.
The Gateway allows the communication between the VoIP network and the traditional telephone lines (PSTN, ISDN and GSM). If the VoiceGATE doesn't find the selected number in the address book, it sends it to the Gateway, that will call the selected number.

Special Functions
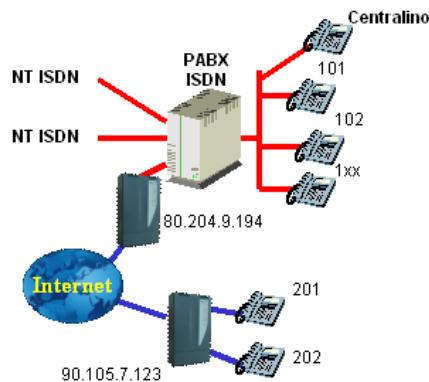
Picture 1

If VoiceGATE is connected to an ISDN switchboard, as shown in picture 1, it could be necessary to associate multiple telephone numbers (from 100 to 199) to an IP Address (example: 80.204.9.194). In this case it is possible to insert the number with the indication 1**.

#	IP Address	Port	Telephone number
1	90.105.7.123	1720	201
2	90.105.7.123	1720	202
3	80.204.9.194	1720	1**

With this configuration, all the calls coming from 201 and 202 telephones and addressed to the numbers included among 100 and 199 will be directed to IP 80.204.9.194; the call will arrive at the ISDN switchboard, that if correctly programmed, will directly switch the call to the extension.

Attention: when you fill in the address book, the telephone numbers composed by "*" character must be inserted at the end.

| #	IP Address	Port	Telephone number
1	90.105.7.123	1720	201
2	90.105.7.123	1720	202
3	80.204.9.194	1720	100
4	80.204.9.194	1720	1**

NOTE:
The address book must contain the correspondence among the IP addresses and the telephone numbers of your VoIP network.

3.2 Address Book Upgrade

Through the **Address Book Upgrade** you can send the address book created with the **Address Book Management**.

After selecting **Address Book Upgrade** choose the address book file to be sent.
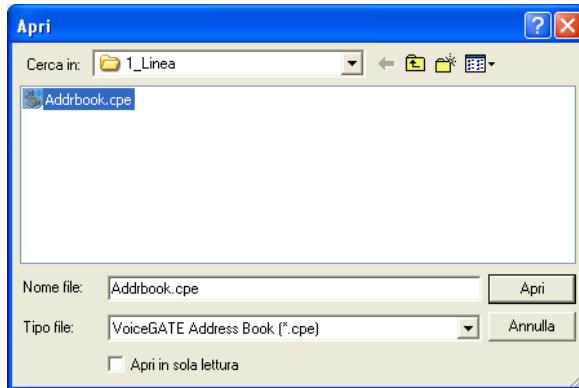
Insert the IP address, UserID and Password of the VoiceGATE to which you must send the address book, then confirm with **ADD**. If you want to send the address book to other VoiceGATEs it is sufficient to repeat the procedure, adding more addresses in th list.
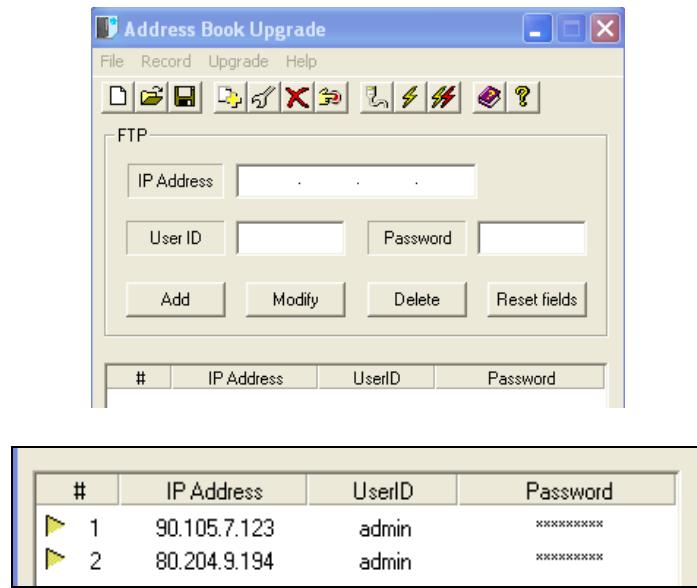
Using the buttons on the tools bar, you can:

verify the presence of the VoiceGATE devices in the list.

upgrade the selected VoiceGATE devices.

upgrade all the VoiceGATEs in the list.

It is possible to save the list of the VoiceGATEs (File/Save). In this way you will have the saved list for future upgrades.

Attention: Turn-off and Turn-on the VoiceGATEs to activate the new settings.

Configuration Example

Here is an example to use the VoiceGate and its configuration.
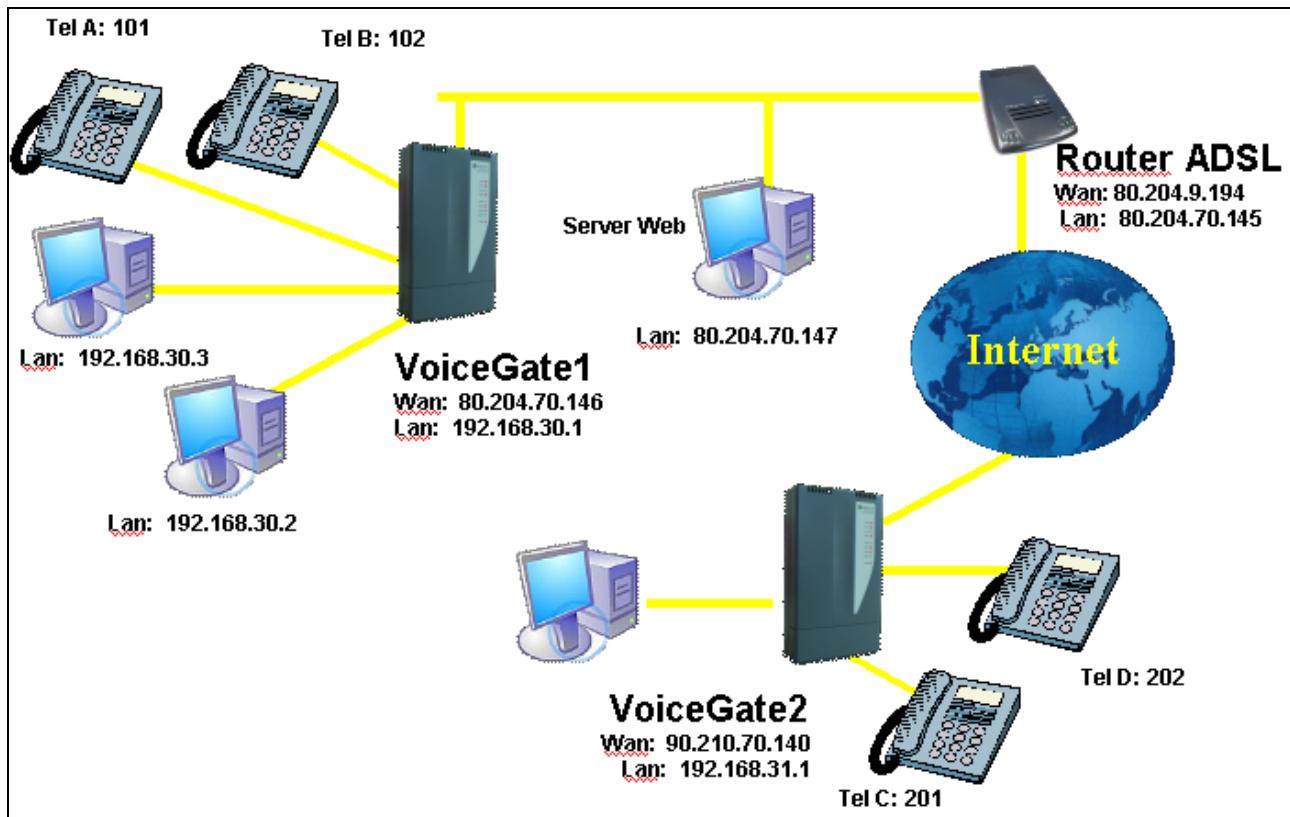
In teh following application there are two VoiceGATE (one in the main office and the other one in the branch office) and no Gatekeeper is required. We will use the internal address book to configurate the VoiceGate.
To set the device it is necessary to know the information concerning the company network where you want to install the VoiceGate. In this example we will describe the configuration of VoiceGATE1:

VoiceGATE1 will be connected to an ADSL router, that will act as a gateway for the connection to the Internet network.
The used ADSL access supplies 8 public IP addresses. Five of them can be used: from 80.204.70.145 to 149.
It is necessary to associate one of the five public IP addresses (80.204.70.146) to the WAN interface (Public Network Configuration). The LAN part (Private Network Configuration) will be set with 192.168.30.x addresses.

To act on the configuration of a VoiceGate set with factory configuration, it is necessary to set the PC Ethernet card with the address 192.168.2.x (see chapter VoiceGATE CONFIGURATION).

Here are the configuration windows where to insert the correct parameters:

In this menu insert the following information::
- Alias
- The two telephone numbers
- If you yse the internal address book or the reference Gatekeeper.
-

In this example we choose the Address book mode, setting the Call Setting parameter as Address Book.

In the Public Network Configuration Menu you define the information concerning the VoiceGate WAN interface.

Insert the IP Address and the Subnet Mask. Furthermore you have to define the Default Gateway (Router List) inserting the LAN IP address of the ADSL Router.

In the Private Network Configuration menu you define the information concerning the VoiceGate LAN interface.

Besides the IP address and the SubnetMask, you have to enable the NAT.

Configuration example of the PC Ethernet card to connect to the VoiceGate LAN ports.

You have to insert the DNS regarding your ADSL account.
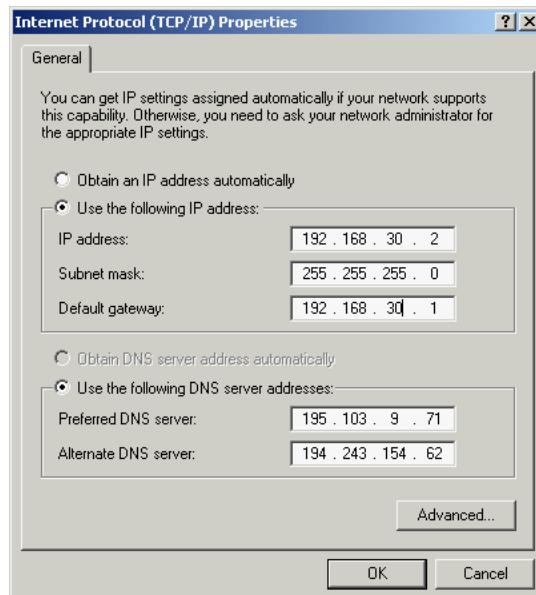
NOTE: To set the VoiceGate internal address book, refer to the chapter: **VoiceGate.exe**

VoiceGATE Configuration Work Sheet

Installation:

Company:		Installed By:	
Office:		Date:	

Hardware Information:

Code:	
Serial Number:	

Firmware Information:

Sw Version:	
Build:	
Isdn Version:	

Telephony Configuration:

H323 Alias:	

Call Setting					
AddressBook:		GateKeeper:		GK- IP Address:	

Phone Number			
Line 1		Line 2	
Number	Codec	Number	Codec
Line 3		Line 4	
Number	Codec	Number	Codec

Codec Selected Priority List	
G.711-A	
G.711-u	
G.729	
G.729-A	
G.729-B	
G.723	

Public Network Configuration:

IP Address	Subnet Mask	Router List (Gateway)

Private Network Configuration:

IP Address	Subnet Mask	NAT

WorkSheet

Voice IP Network Information

Company: Compiled By: Date:

Location Office	Telephony — Phone Line									Call Setting		IP Address			
Alias	Number1	Codec	Number2	Codec	Number3	Codec	Number4	Codec	AddressBook	GateKeeper	WAN IP	WAN SubMask	LAN IP	LAN SubMask
h323Alias	123	auto	456	auto					yes	no	192.168.2.1	255.255.255.0	192.168.30.1	255.255.255.0