VoIP Phone snom 220

IP phone for superior communication

Foreword

Congratulations on the purchase of your snom 220 Voice over IP telephone!

Telephony is part of our everyday life. Over a period of more than 100 years a form of communication has evolved which we feel cannot be ignored. In spite of the new technology base of the snom 220, most of its look and feel will be very familiar to you and you should be able to use it intuitively.

On the other hand, the world of the Internet has opened a whole range of new possibilities. Many users are using web browsers and own one or more e-mail accounts. They will find it easy to manage the phone via its web interface or to make a call to "sip:john@domain.de", for example.

We are confident that developments in the computer industry will follow those in the telecom world.

VoIP is not only about transporting speech over data networks. It is about interoperability and breaking up a vertical market, as well as streamlining business processes by seamlessly integrating the telephone into computer networks and applications. With its technical flexibility, our commitment to all open and relevant standards and our cooperation with other vendors in the VoIP industry, the snom 220 represents a safe investment for the future.

We would like to take this opportunity to wish you a great experience in the VoIP world.

snom technology AG

Note to the reader

This manual is describing the snom220 running in **administrator mode**.

The current version of this manual can be obtained from:

http://www.snom.com/snom220_en.php

Table of Contents

1. Installation

Delivery Content

Please check whether the delivery contains the following parts:

The base unit with display and keypad

The handset

The handset cable

The power supply (optional)

Safety Notes

Please observe the following safety advice. It is crucial for the safe and reliable operation of the device.

Power supply

You have two options for providing the snom 220 with power:

An external power supply (48 V)

Power feeding over the network cable (PowerDsine product family 4000 and 6000)

If you want to use an external power supply, use the one that is included in the package. Other power-supplies may cause damage to the phone, affect its behavior, or induce noise.

Setting up the Phone

The snom 220 must be placed on an even, horizontal surface that gives the rubber pads a secure grip. Do not place the snom 220 on carpets or other materials containing fibers that could block the air vents and cause overheating.

Cleaning

To clean the snom 220, use an anti-static cloth. Please avoid cleaning liquids as they might damage the surface or internal electronics of the phone.

Connecting the phone

First connect one end of the handset cable to the handset and then to the jack on the left-hand side of the phone.

Next plug the Ethernet (network) cable into the RJ45 connector, which is named "NET" and is the nearest to the middle of the phone and plug the other end into the network side to establish a data link. The second RJ45 connector named "PC" is for daisy-chaining further Ethernet devices without the need for a second Ethernet connection line.

If you are using an external power supply, please insert the plug of the power supply into the connector next to the data line and hook up the casing into the mains.

If you want to use a headset, it can be connected to the audio jacks on the rear side of the snom 220. The connector named "In" is for the microphone.

Keypad

The numeric keypad with the keys 0 to 9, * and # is used to enter digits and letters. Depending on the operating mode, different actions can be performed (see the table below):

Entry of digits only (e.g., when dialing a phone number),

Typing in letters and digits by pressing the keys repeatedly (similar to a cellular phone).

The MENU key ⬤MENU is used to invoke the main menu. To cancel actions or input, the CANCEL key ⬤x can be used. The ENTER key ⬤✓ confirms actions, selections and inputs.

Depending on the operating mode, the keys can have context-specific meanings which are described in this manual.

The soft keys F1 to F4 located below the display are context-sensitive function keys. Their current mapping is depicted with symbols in the bottom line on the display.

The five keys on the right with LEDs on them are the programmable function keys that different functionalities can be mapped onto.

The keys of the numeric block in different operating modes:

Key	Digits	Lower case	Upper case
0	0	(SPC)_0	(SPC)_0
1	1	.@1,?!- /():;&%*#+<=>$[]	.@1,?!- /():;&%*#+<=>$[]
2	2	abc2	ABC2
3	3	def3	DEF3
4	4	ghi4	GHI4
5	5	jkl5	JKL5
6	6	mno6	MNO6
7	7	pqrs7$	PQRS7$
8	8	tuv8	TUV8
9	9	wxyz9	WXYZ9
#	#	# or after timeout, number guessing if not numeric	# or after timeout, number guessing if not numeric
*	*	Toggles upper and lower case	

Initialization

Booting

The booting process comprises a series of different configuration steps that set up the phone for future use by any user.

Selecting the language

The default language setting is English. To change to a different language, press the MENU key MENU, go to the submenu "Settings" with ↓ or ↑ and press ENTER ✓ to select this menu entry.

Select "Base" and press ENTER ✓.

Select "Language"

```
Language
Display Method
Contrast
  ↓    ↑    ✕    ✓
```

and set it to your choice, e.g., "English".

```
English
Japanese

  ↓    ↑    ✕    ✓
```

Press ENTER ✓ to activate your selection.

DHCP Configuration

If the network supports DHCP, then on bootup select ✓ when this screen appears:

```
Are you using DHCP?



         ✕    ✓
```

The phone has a built-in DHCP client. It will receive an IP address and other network-related settings (Netmask, IP gateway, DNS server) from the DHCP server.

If DHCP is not used, select ✕ in the screen above. The user will subsequently be asked for the following settings:

Selecting the IP Address

The user can provide a static IP address for the phone if DHCP is not used.

```
——IP Address:——
[192.168.194.118

  ←    →    C←    C
```

9

A valid IP address appropriate to the network in which the phone is being used can be provided.

Selecting the Netmask

Similarly, the user will be asked to provide a Netmask:

```
————Netmask:————
]255.255.0  .0
  ←    →   C←   C
```

Selecting the IP Gateway

If a valid Netmask has been provided, the user will be asked for the IP address of the IP gateway:

```
————IP Gateway:————
]192.168.0  .1
  ←    →   C←   C
```

Selecting the DNS Server

The last item for this series of network-related configuration is the IP address for the DNS server:

```
————DNS Server:————
]192.168.0  .9
  ←    →   C←   C
```

Selecting the Tone Scheme

The user will then be asked for the tone scheme to be used on the phone:

```
Australia
China
Denmark
  ↓    ↑   X   ✓
```

Selecting the Timezone

The timezone to be used on the phone can also be selected by moving through the different timezone options available in the menu and pressing ✓ to activate your selection.

If the settings explained above are set up properly, the phone will ask for the first account registration.

Logging on the first account

If no number is assigned to the phone, you will be prompted to type in your account name. This consists of your phone number succeeded by @ and the address of your registrar (for SIP) or gatekeeper (H.323). The phone tries to guess the correct registrar/gatekeeper address, so it could look something like this:

After typing in your account name, confirm your account by pressing the ✓ key.

The phone tries to register your given account name at the given registrar/gatekeeper. The idle screen is shown and if no crossed box but a phone symbol is displayed in front of your just configured identity, your registration has been successful.

When this state has been reached, the time and date are displayed on the display.

2. Logon

Mobility

In business office environments, desktops are sometimes shared by different employees at the same time or at different points in time (e.g., employees working different shifts, etc). The phones located at the desktops need to be able to cater to this.

To ease the effort of assigning the appropriate phone number to the phone for each different employee, the snom220 offers so-called mobility features, which are described in the following subchapters.

Logon Wizard

If no number is assigned to the phone, it displays a logon screen.

After pressing a button, you will be prompted to type in your account name.

After typing in your account name followed by "@" and the registrar (for SIP) or gatekeeper (H.323), confirm your account with the ENTER key ✓.

The phone tries to register your given account name at the given registrar/gatekeeper. The idle screen is shown and the first line displays your registration.

snom Menu

In idle screen, the soft key [○] is assigned to the snom menu. The following menu items are among those available in SIP if the "Logon Wizard" is configured to be active. For H.323 a few items are hidden.

```
Select Outgoing Line
Logon User
Logoff User
  ↓  │  ↑  │  ✗  │  ✓
```

Logon User

When you select this item and press ENTER ✓, you can register an additional account to the phone. Up to seven accounts can be assigned in this way.

Logoff User

Here you are able to logoff a registered account. A list with the currently assigned registrations is shown. Select the registration you want to logoff and press the ENTER key ✓. The selected registration is logged off and, if it was the only one registered, the logon wizard is displayed again. Otherwise the idle screen is displayed.

Logoff All

When you select this menu item and press ENTER ✓, you will be asked if you really want to logoff all users.

```
───Logoff All───
Log off all users?

          │  ✗  │  ✓
```

If you confirm by pressing the ENTER key, all currently logged-in SIP registrations are logged off and the logon wizard is displayed again.

Select Outgoing Line

Selecting this menu item will provide a list of currently registered SIP lines.

By choosing a different line, your originator phone number is changed to this line. This means that different people can start calls from the same phone with their own originator phone number and the called phone will display the current outgoing line information. The current outgoing line is marked on the idle screen with a black-colored phone icon in front of the registered SIP line.

DND Mode on/off

Independent from Logon Wizard settings, the DND functionality is available in the snom menu. DND is short for "Do Not Disturb". When this mode is activated, incoming calls will no longer come through to the phone and you will be completely undisturbed by the phone. If there is a mailbox set up for you, the call is redirected to it. Before this mode is activated, you will be asked if you really want to change to this mode.

In idle mode, "DND active!" is displayed in the bottom left-hand corner of the screen when DND is activated.

Please, keep in mind that contact type "VIP" overrides the DND mode, i.e., a call from a number you have defined as contact type "VIP" will be put through to your phone even when DND is active.

Challenge/Authentication

In SIP, a user can also set up authentication requirements for each registration on the phone. The password for each account name can be set up via the web interface of the phone in Lin1-7 / Login Information / Password.

If the authentication password is not set, or set wrongly, the account will not register on that domain and the phone will be challenged for

that line. A challenge response will ask for the correct password. This can look like:

The default mode for password input is integer. You can switch to other input modes by pressing ▨123▨, ▨ABC▨, or ▨abc▨. The password is hidden and replaced by a series of *s to keep it hidden from prying eyes.

Repeat the same procedure for all accounts with authentication. The challenge responses are stored in the phone and will be used at re-registration or on reboot. You can also edit this information via the web interface.

3.   Basic Functions

Idle State

In idle state the phone shows:
the date and time,
the first five registered users,
the connection state of each of the first 5 registered users.

An empty box (□) before the account indicates that the registration process is in progress. A phone symbol (☎) means that the account is successfully registered. A black colored phone symbol (☎) means that the account is successfully registered and that the line is the active line for outgoing calls. A box with a cross (☒) signals an unsuccessful registration attempt.

Dialing

There are two methods to begin a call from the idle state of snom 220. You can either dial with the handset resting in the cradle and then pick it up, or you can pick up the handset and then dial the number. In the latter case press ENTER ✓ to indicate that the number is complete and dialling can commence.
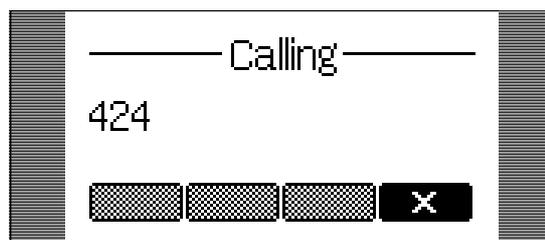
The snom 220 shows the current communication status in the display.

Input Modes

Dependent on the context, various types of inputs are possible. The active input mode is indicated in the bottom right-hand corner of the display:

123	Only digits can be entered.
ABC	Upper case mode. Press * to activate lower case mode.
abc	Lower case mode. Press * to activate upper case mode.

Key mapping for input:

←	Moves the cursor to the left.
→	Moves the cursor to the right.
C←	Deletes the character to the left of the cursor.
123	Changes input mode to numbers.
ABC	Changes input mode to capital letters.
abc	Changes input mode to small letters.

As mentioned in the table above, you use 123, ABC or abc to change the input mode. After using a specific input mode for dialing a number, the phone saves this mode as default for future use. If you want to use a different mode, begin dialing and, if the mode is wrong, choose your preferred mode and continue dialing.

Dialing a phone number

A telephone number is dialed with the numeric keypad.

```
——— Enter Number ———
456456215|

                    123
  ABC    C←    ←    →
```

If block dial, the default setting, is on and the user has not pressed any keys for a few seconds, the phone will remind the user to press ENTER ✓ in order to start the call.

```
——— Enter Number ———
456456215|

[Ok?]               123
  ABC    C←    ←    →
```

Key mapping:

←	Moves the cursor to the left.
→	Moves the cursor to the right.
C←	Deletes the character to the left of the cursor.
123	Changes input mode to numbers.
ABC	Changes input mode to capital letters.
abc	Changes input mode to small letters.
✓ ENTER	Dials the number.
✗ CANCEL	Aborts the dialing.

TIP

E.164 numbers
E.164 is the standard that defines normal phone numbers. They may contain digits from 0-9, *, and #. H.323 differentiates between these numbers and "H.323 addresses" that may contain alphanumeric characters. Several Gatekeeper implementations do not differentiate between E.164 numbers and H.323 addresses. If you encounter problems, try specifying the number as an H.323 address.

Dialing an H.323/SIP Address

Enter an H.323/SIP address via the alphanumeric block. To find the "@" symbol, press the numeric key "1" several times.

```
——Enter Number——
user@test.com|

                    abc
 123  C←   ←    →
```

Key mapping:

←	Moves the cursor to the left.
→	Moves the cursor to the right.

C←	Deletes the character to the left of the cursor.
123	Changes input mode to numbers.
ABC	Changes input mode to capital letters.
abc	Changes input mode to small letters.
✓ ENTER	Dials the H.323/SIP address if entered correctly.
x Cancel	Aborts the dialing.

Dialing an IP Address

Enter the IP address via the numeric block. Use the "*" key instead of the dot (".") or press the hash "#" key a little longer and the hash character will change to a dot!

```
——Enter Number——
192*168*0*25|

                  123
ABC   C←   ←   →
```

Key mapping:

←	Moves the cursor to the left.
→	Moves the cursor to the right.
C←	Deletes the character to the left of the cursor.
123	Changes input mode to numbers.
ABC	Changes input mode to capital letters.
abc	Changes input mode to small letters.
ENTER	Dials the IP address if entered correctly.
x CANCEL	Aborts the dialing of the IP address.

TIP

Dialing an IP Address
When you are calling an IP address, the called phone or computer cannot determine which user you want to reach. In SIP mode it is assumed that "anonymous" is being called and with H.323 no assumptions are made. This is the case with many phones and applications. Therefore, you should only use this method in exceptional cases, as the entry of IP addresses is rather cumbersome.

Number guessing

For your convenience this functionality offers you the first number from dialed numbers, missed calls, received calls, or numbers in the phonebook that match the beginning of the number you have already typed in.

If the displayed number is not the one you wanted, you can either keep pressing the "#" key (in alphanumeric modes) to get the next matching number or continue typing your desired number, or press the ← function key to temporarily switch off the number guessing for this session of editing a phone number.

Terminating a call

You can end a call by setting the handset on its cradle, pressing the hook switch, or pressing CANCEL x. The snom 220 will terminate the call and return to the idle state.

Incoming Call

When your snom 220 is called, it rings and displays the following screen.

Accepting a Call

Picking up the handset or pressing ENTER ✓ will accept the call. The snom 220 is now in a call.

Press ≫/≪ for scrolling to the next / previous set of softkeys.

Key mapping:

𝟧 , R	Hold / Resume call
	Transfer call
◁ , ▷	Handsfree mode on/off
≫	Scroll forward to next softkey set
≪	Scroll back to previous softkey set
D	Mutes / Unmutes the microphone
	Changes the volume

See below for a further description.

Denying/Blocking a Call

When the snom 220 signals an incoming call, you have the option to deny the call with ⊖.
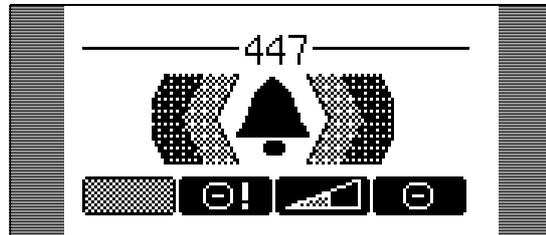
If you decide to press ⊖!, the caller will be placed on the deny list and will always be denied automatically. If ⊖! is not displayed, it is switched off in the settings. You can enable it again via the web interface ("Deny All" feature).

Adjusting the Volume

While making a call, you can use the [key] and the [key] keys to the right of the display to increase or lower the volume.

Key mapping:

←	Reduces the volume in steps.
→	Increases the volume in steps.
✓ ENTER	Sets the volume and returns.
x CANCEL	Returns without setting the volume.

Mute / Unmute

To mute the microphone during a call, press the softkey "Mute" or ⓞ. Press the softkey "Unmute" or ⓞ to enable the microphone again.

Handset / Handsfree / Headset

The snom220 supports calls being made while using the handset or the handsfree capability. During a call it is possible to switch between both modes by pressing the function keys ▣◳ / ▣◳ or the Speaker key ▣ on the right side beside the display.

If a headset is connected and the audio output is set to headset ("RJ Conn" or "Chinch"), the snom220 will treat the headset as the output device for calls. When the snom 220 is used in a call center environment, the connected headset will be the default setting for speaking on the phone. The ENTER key ✓ is therefore used to accept incoming calls.

Key mapping:

▣◳ / ▣◳   Switch to handsfree mode and back.

✓
ENTER   Accept incoming calls in headset mode.

✗
CANCEL   Returns the phone to the idle state.

Programmable Keys

The five keys to the right of the numbers block are the programmable function keys that have the following options:

Line
Destination
Intercom
Park Orbit
Voice Recorder
DTMF (H.323 only)

Each of these buttons has an LED indicating the status of the respective programmable key at any given time.

Some features are common to all keys:
Pressing a key when its LED is blinking and the phone is ringing will receive the call.
Pressing the key when a call is in progress at that key, as indicated by the constantly lighted LED, will put the call on hold.
Pressing the key twice while editing a number for dialing at that key, *with the receiver in the cradle,* will return the phone will go to idle state.
Pressing the key twice while editing a number for dialing at that key, *with the receiver off the hook,* will erase the number.

Each of these different options will now be explained in detail.

Line

'Line' can be used in one of the following ways:

a. **To map a local SIP line**: A user can assign the local lines to programmable keys by selecting this option and setting the URL of the local line as argument to that key setting. For example, if a phone has 2 registrations, 501@my.proxy.com and 502@my.proxy.com, the user has the option to map two programmable keys to each one of these lines by selecting 'Line' and setting the respective SIP URL as argument. In this case, all the calls to a particular line will go to its matching programmable key, e.g., if 502@my.proxy.com is mapped at key P2, the LED on that key will start blinking when there is an incoming call on that line. Similarly, if the user presses P2 in the idle state with the receiver on hook, 502@my.proxy.com will become the active line for that call. This feature enables the customer to use his different SIP accounts as he would use different PSTN phone lines. It is also possible to assign different ringtones to each SIP line in order to make an acoustic differentiation. This can be done either on the proxy or on the phone's web interface page Set-up/Config Line 1-7.

b. **To map a SIP URL for call pickup**: Selecting this option with a SIP URL as argument will subscribe to dialog state changes of the phone with that registration. The LED on that key will show the status of the registration as idle, talking, or ringing by varying frequencies of blinking. This allows the user to pick up a ringing call remotely by simply pressing a key. An example of its usage would be the mapping of the office reception phone line to the phone of a secretary. If for some reason a ringing phone is not answered at the reception, the secretary can see its ringing status by the blinking LED and pick up the call by pressing that programmable key. This way, no calls go unanswered.

c. **Free Key**: 'Line' is also the default setting for the programmable keys. If no argument is set, the keys are treated as free. Outgoing and incoming calls not bound to any other key go to the first such free key.

Destination

The user can map a SIP URL to a particular programmable key by setting this option and providing the URL as argument. This option can be used in the following ways:

a. If the sip line 505@my.proxy.com is bound to key P3 with this option, all calls coming to the phone from this number will go to P3.

b. If P3 is pressed during the idle state, 505@my.proxy.com will be dialed, as it is set as destination for this key.

c. In the ringing state, if the call comes from any line other than 505@my.proxy.com, pressing P3 will transfer the incoming call to 505@my.proxy.com.

Intercom

This option is similar to 'Destination' with the exception that pressing the key bound to 'Intercom' enables the intercom mode and the phone will be directly connected to the set snom phone if authentication is set up properly. This feature is useful in an office environment as a quick access key to connect to the operator or the secretary.

Park orbit

snom4s provides its customers with the opportunity to set up parking orbits on the media server, where calls can be parked and picked up. The option 'Park Orbit' enables the phone to provide this feature. Suppose key P4 is bound to orbit1@my.proxy.com. The LED on this key now displays the status of calls, if any, parked on this orbit. A blinking LED indicates that a call is parked there; the user can pick up this call by pressing P4. Pressing P4 during a call will park it at orbit1@my.proxy.com until the same or another user picks it up later. The caller will hear the holding music. This feature is useful for call center environments and all places where there is a great inflow of calls and some kind of queuing is required to manage them.

Voice recorder

This option can be set up with a valid voice recording account. Suppose that vr@my.proxy.com offers voice recording and is bound to key P5 on the phone. Its usage is as follows:

During a call, the user is able to record his conversation with the other party by pressing P5. Pressing button P5 again will end the recording process.

The recorded media can later be listened to by accessing the recorder account vr@my.proxy.com.

This feature is also useful for recording short messages or memos to self. By pressing P5 in the idle state a user can record an important message to be listened to later.

The same applies to the recording of a debate or discussion, to keep audio minutes of a meeting, or to record an important conference call hosted on the phone.

DTMF

In H.323 mode, this line type offers the ability to set up the programmable keys as additional function keys concerning PBX functionality controlled via DTMF key codes. Upon a key press to the programmable key set up as DTMF line type, the specified number sequence is dialed as DTMF key codes.

Main Menu

By pressing the MENU key ⬬ MENU ⬬ in the idle state the main menu is invoked. The following submenus are available: Phonebook, Call List, Deny List, Tones, Settings, and About.

Key mapping:

↓	Moves the cursor down.
↑	Moves the cursor up.
✓/ENTER	Enters the submenu.
✗/CANCEL	Returns the phone to the idle state.

Adjusting the Volume in Idle Mode

Via the main menu item "Tones", the following window is activated:

Here, the volume of the casing speaker, handset speaker, or headset speaker can be adjusted. Select one of the three choices.
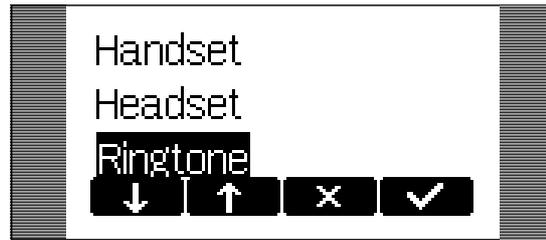A tone is played back at the selected volume and you can decide on the desired setting.

Key mapping:

←	Reduces the volume in steps.
→	Increases the volume in steps.
✓ ENTER	Sets the volume and returns.
✗ CANCEL	Returns without setting the volume.

Ring Tones

Via the main menu item "Tones" the following window is called up:

Select the submenu "Ringtone". Here, the ring tone can be set.
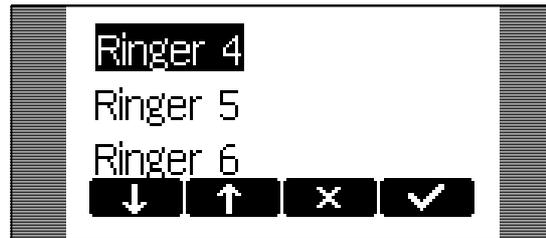
The selected ring tone is played back and you can decide on the desired setting.

Key mapping:

Key	Description
↓	Moves the cursor to the next ring tone.
↑	Moves the cursor to the previous ring tone.
✓ /ENTER	Activates the selection and returns.
✗ /CANCEL	Returns without changing the ring tone.

About

Via the main menu item "About", the following window is activated:
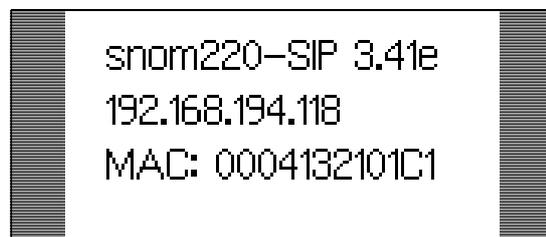
This indicates the type of your phone, the software version, the currently assigned IP address, and the MAC address of the phone.

4.   Advanced Functions

Hold and Resume

When a call is in progress, pressing the flash key [R] or [⚡] (language dependent) puts the call on hold, i.e., the speech is set to mute (neither party can hear the other).

```
——Calls on Hold: 1——
447


  [⚡]  [░░]  [░░]  [◁»]
```

Pressing the flash key again will resume the call. While a call is on hold, you can establish another call by dialing the desired number.
When more than one call is on hold the following window appears.

```
——Calls on Hold: 2——
447


  [⚡]  [←]  [→]  [◁»]
```

Select the party you wish to talk to with the keys [←]/[→]. Press the ENTER/Flash key to get connected.

Key mapping:

[X] CANCEL	The call being held is terminated.
[⚡], [R]	Resumes the call being held.
[▸▸]	Transfers the call being held.
*,#,digits	Can be used to initiate another call.
[◁»], [▷«]	Handsfree mode on/off.

Transfer

Direct Transfer

During a call press the transfer key [▸▸] to put the connected party on hold, then dial the number the call is to be directly transferred to.

```
 ──Enter Number──
456456215|

                    123
 ┌ABC┐┌C←┐┌ ← ┐┌ → ┐
```

As soon as you press ENTER ✓, the snom 220 will transfer the held party to that number.

Key mapping:

←	Moves the cursor to the left.
→	Moves the cursor to the right.
C←	Deletes the character to the left of the cursor.
ABC	Changes input mode to capital letters.
abc	Changes input mode to small letters.
123	Changes input mode to numbers.
✓ ENTER	The snom 220 transfers the call.
x CANCEL	Aborts the transfer.

Consultation Transfer

During a call in progress, put the connected party on hold by pressing the hold key R or ⚡.

While the call is on hold, you can establish a second call by dialing the desired number and pressing ENTER ✓. When the second call is established, you can consult the second party, e.g., to announce the call. You can connect the two parties by pressing the transfer key ⬛ or the hook on the handset.

Conference

If the phone is connected with two calls, one on hold and one active, you can connect all three phones in a conference by pressing the function key ⬛.

```
 ──Connected──
404

               0:09
 ┌ ⚡ ┐┌ ┐┌ ┐┌ » ┐
```

29

By pressing the function key ![key], the conference is disconnected and the calls are dropped.

Call Diversion

All kinds of call diversions can be set, changed, and deactivated in the menu "Settings/Redirection".

Diverting all calls

By setting the option "Settings / Redirection / Redirection" to "always", every incoming call is diverted immediately to the number set in "Settings / Redirection / Redirect Target" without the phone ringing.

To disable this feature set the "Settings / Redirection / Redirection" to "never".

Divert when Busy

By activating the option "Settings / Redirection / Redirection / When Busy", every incoming call is diverted to the number set in "Settings / Redirection / Busy Target" if another call is already in progress.

Divert when not answered

You can set the number of seconds in "Settings / Redirection / Redirect Time" after which every incoming unanswered call is diverted to the number set in "Settings / Redirection / Redirect Target".
Note: To activate call divert immediately, see above.

Call Completion

The call completion functionality allows the user to establish calls successfully when the other party is busy or not answering.

On "busy" (CCBS)

When the party you are trying to reach is busy, the following window will appear during a call attempt:

By pressing the [✓] key, call completion is activated and the phone waits for the other party to return to idle.

```
─── Call Completion ───
Waiting: 447


[░░░] [░░░] [ X ] [ ✓ ]
```

If you wish to receive and make calls while you are waiting for call completion, press [✓] again to return to the idle screen which now shows the letters 'CC' in the lower left corner. (Pressing "CANCEL" [x] cancels the call completion procedure.)

```
☎Two Twenty..........
☎220@snom.com....
.........................
.........................
CC..................... 10/6
[ () ] [ ⊂⊟ ] [ ⊟⊟ ] [ →• ]
```

When the other party becomes idle, the following window appears:

```
─── Call Completion ───
Dial: 447?


[░░░] [░░░] [ X ] [ ✓ ]
```
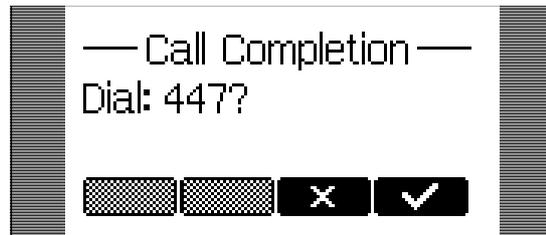
If you press the [✓] key, the phone will dial the number again in order to establish a connection to the other party.

On "no response" (CCNR)

When the phone signals "no response" to your call, activate call completion by pressing the CC key.

```
────── Calling ──────
447


[░░░] [ CC ] [ ◢�◤ ] [ X ]
```

The phone will now wait for the dial destination to become active again.

```
── Call Completion ──
Waiting: 447


          ☒ │ ☐ │ X │ ✓
```

If you wish to receive and make calls while you are waiting for call completion, press ✓ again to return to the idle screen which now shows the letters 'CC' in the lower left corner. (Pressing "CANCEL" ⊗ cancels the call completion procedure.)

```
☎447@intern.snom.(
......................
......................
......................
CC.................. 5.10.
   ○ │ ⟨☰ │ ⟨☰☰ │ →•
```
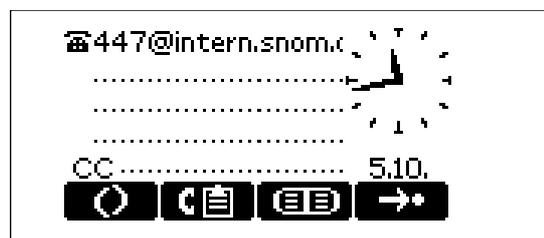
When the other side is available, the display will prompt you to dial the number again.

```
── Call Completion ──
Dial: 447?


          ☒ │ ☐ │ X │ ✓
```
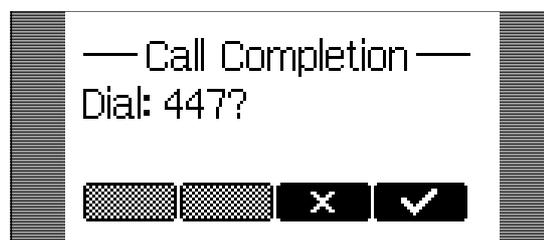
DTMF Tones

During a call, e.g. with a voicemail system, pressing the digits 0-9, *, or # will generate and send DTMF tones to the other party.

Short Messages (SMS)

Incoming short messages are automatically displayed when the phone is in idle state.

```
From:
sip:intern.snom.de:5060
To:
sip:dd@intern.snom.de:506
   ↓ │ ↑ │ ☐ │ ✓
```

Key mapping:

↓	Scrolls the message forward.
↑	Scrolls the message backward.
✓ ENTER	Shows the next message or the idle screen.

Short messages can be received from clients like Microsoft Messenger, etc.

Message Waiting Indication (MWI)

If you did not answer a call and the mailbox recorded a message for you, the idle screen shows that a recorded message is waiting for you.

On the idle screen, the letter icon to the left of the SIP registration line indicates the registered phone number the call was recorded for.

After you press the function key ✉, the phone displays more information about the number of new and old recorded messages.

To connect to the mailbox in order to listen to the recorded messages, press function key ✓ or take the handset off the hook.

Key mapping:

↓	Scrolls the message forward.
↑	Scrolls the message backward.
✓, Handset off hook	Call mailbox to listen to recorded messages.
✓ ENTER	Back to idle screen.

Conducting a Software Update

If your provider/administrator is offering you a new software version for your phone, a "SW" is displayed in the left lower corner of the idle screen.

In this case, an additional entry "SW Update" can be found in the snom menu (⬛️⟨⟩⬛️).

```
┌──────────────────────────────┐
│ ▓▓                        ▓▓ │
│ ▓▓  User Mode            ▓▓ │
│ ▓▓  ▐SW Update▌         ▓▓ │
│ ▓▓  Net Info            ▓▓ │
│ ▓▓  [ ↓ ][ ↑ ][ ✕ ][ ✓ ] ▓▓ │
│ ▓▓                        ▓▓ │
└──────────────────────────────┘
```

Pressing the ▐✓▌/ENTER key reboots your phone after a few seconds. During boot-up the phone asks you whether or not it should proceed with the boot loader and/or firmware update.

Additional PBX Features

When the phone is set up to use H.323 protocol, additional PBX features are available if they are enabled.

Pickup

If someone else's phone is ringing and you want to pick up the call on your own phone, press the ⬤➡️ key or the function key ▐»▌ at the idle screen to scroll to the second set of available function keys. Then press the function key ▐➡️▌.

Conference

If the phone is connected with two calls, one on hold and one active, pressing function key ▐⚟▌ will connect all three involved phones in a conference.
Pressing function key ▐⚟▌ will disconnect the conference.

5.   Call Register

Phone Book

The snom 220 contains an internal phone book that can be reached from the phone's idle state by pressing the phone book key ⬛.

Key mapping:

⬛	Scrolls to the next item.
⬛	Scrolls to the previous item.
⬛	Enters the edit mode for the selected entry.
⬛	Deletes current item.
✓ ENTER / Off Hook	Dials the number of the selected entry.
x CANCEL	Returns to the idle state.

Adding an entry

In order to add a new entry, go on to the list item <New item> and press ⬛.

Enter the name and phone number and confirm each item by pressing ENTER.

The title of the window indicates which input is expected. Pressing CANCEL ⊗ aborts the addition of a new entry.

Key mapping:

`ABC`	Changes input mode to capital letters.
`abc`	Changes input mode to small letters.
`123`	Changes input mode to numbers.
`C←`	Deletes the character to the left of the cursor.
`←`	Moves the cursor to the left.
`→`	Moves the cursor to the right.
✓ ENTER	Accepts the entry.
⊗ CANCEL	Cancels the entry.

Editing an entry

After pressing the edit key ⌗ on the entry to be modified, the name and phone number will be brought up in sequence. Confirm each item by pressing ENTER ✓.

The title of the window indicates which input is expected. ✓ ENTER accepts the data, CANCEL ⊗ aborts the editing.

Key mapping:

`ABC`	Changes input mode to capital letters.
`abc`	Changes input mode to small letters.
`123`	Changes input mode to numbers.
`C←`	Deletes the character to the left of the cursor.
`←`	Moves the cursor to the left.
`→`	Moves the cursor to the right.
✓ ENTER	Accepts the entry.
⊗ CANCEL	Aborts the editing process.

Please, keep in mind that the contact type "VIP" overrides the DND mode, i.e., calls from someone on your "VIP"-list will be put through to your phone even when DND is 'active!'.

Export

To save the content from an already filled phonebook, right-click onto the "Click <u>here</u>" link at the bottom of the "Addressbook" page on your built-in web interface ("Click <u>here</u> to save the current address book").
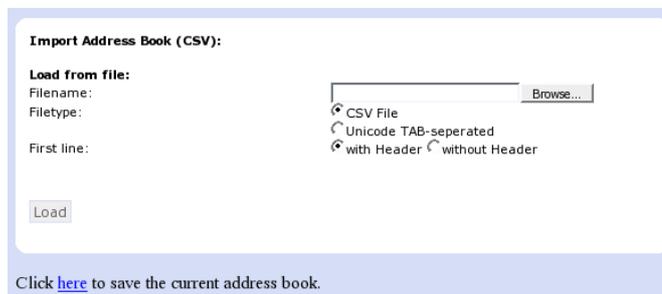
With "Save Target As…" you can save the phone book content in a comma-separated file containing the current address book entries (CSV = Comma-Separated Values).
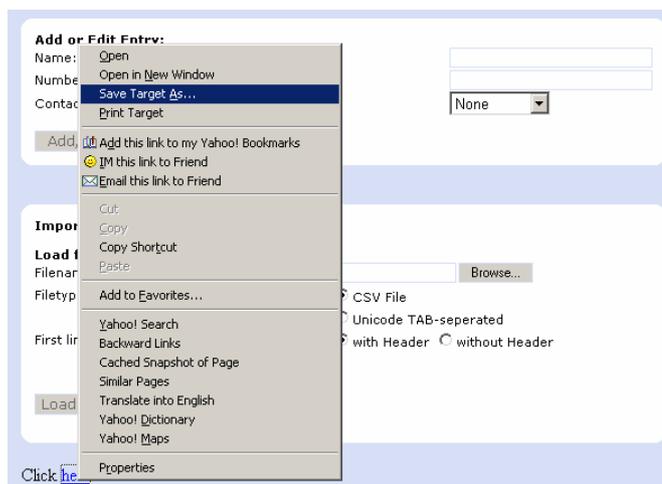
Import
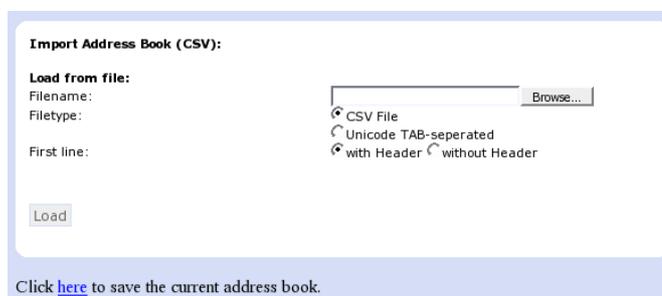
To load an address book from a file, click on the "Browse" button on the "Addressbook" page in the section entitled "Import Address Book (CSV)". Select the pre-stored CSV file from the storage medium and then press the 'Load' button.

It should not matter if some of the entries already exist in the phone book. They will not be duplicated if both name and number are exactly the same respectively. If the number field is the same but the name is not, the file entries will replace the old ones (just like editing the old entry to save a different name). If the name is the same but the number is not, a new file entry will be made.

You will first receive a

Preview

A preview feature is available while importing files for the phone book. One way to do this is to use a Comma Separated Values (CSV) file. A CSV file has entries separated by a comma (and without spaces between the comma and the preceding and following entry). It can look like this:

```
Name,ZIP,City,Street,Phone number,Type
Kate,123243,New York,21 Street,278139232,family
George,52765,Tokyo,Mainroad,13153243,friends
Harry,10364,Berlin,Pankestr,112984382,colleagues
```

The first line represents the header, which shouldn't be imported, that is why the option "without header" has to be selected in this case.

Selecting a CSV or Unicode TAB-separated file is possible through the web interface, as shown in the following:
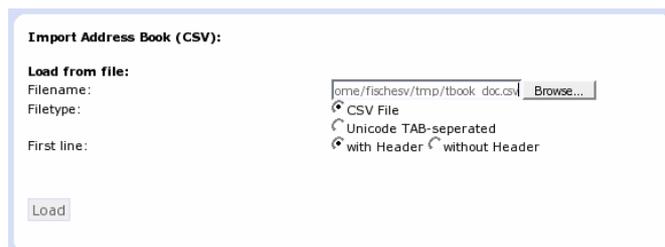
After choosing a file, a preview of the selected file contents will be shown.

Now assign the three possible data types (name, number, contact type), which can be imported, to the columns in the preview representing those kinds of data.
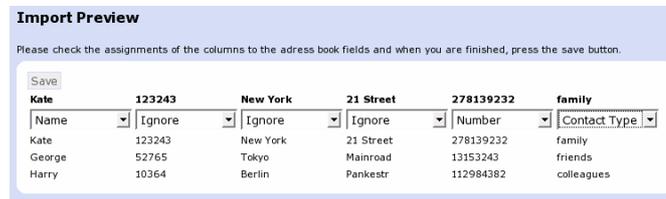
Once satisfied with the preview, pressing "Save" will save the file contents to the phone book, which could look like this:
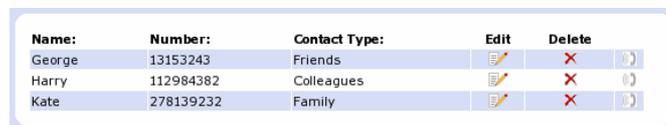
These new entries will become part of the existing phonebook. They will be stored on the flash and can be retrieved anytime until they are deleted or a factory reset is performed.

Call Lists

The snom 220 maintains lists of missed, received, and dialed calls that can be accessed by pressing the call list key from the idle state.

For example, after choosing the missed calls, the most recent missed call is displayed first.
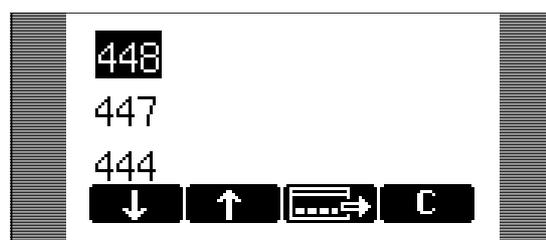
Key mapping:

⬇	Scrolls to the next call.
⬆	Scrolls to the previous call.
▣➡	Shows details of this call.
C	Deletes the current entry.

ENTER / Dials the number of the current entry.
Off Hook

✗ Returns to the idle state.
CANCEL

By pressing the ▣➡ key you can get details about this missed call. Information regarding "To", "From", "Time", and "Missed" (i.e., number of missed calls) is provided.

```
┌──────────────────────────┐
│    ──────To:──────        │
│                           │
│  447                      │
│                           │
│   [▦] [▣▣] [ » ] [ C ]    │
└──────────────────────────┘
```

Key mapping:

▦	You can use the current entry for your next call and possibly edit the number before calling it.
▣▣	Saves the current calling party to the phone book.
»	Step to the next kind of information: To, From, Time and Number of calls
C	Deletes the current entry.

✓
ENTER / Dials the number of the current entry.
Off Hook

✗ Returns to the idle state.
CANCEL

Speed Dial

The snom 220 supports speed dial of up to 33 numbers. These are mapped onto the numbers 0-30, *, and #.

Dialing

Speed dialing is initiated by typing in a number from 0-30, *, or #, respectively, and confirming with the ✓ key. In this way, 33 speed dial numbers can be called up without having to look at the display.

Editing speed dial entries

Set up the speed dial numbers on the built-in web interface page of your phone.
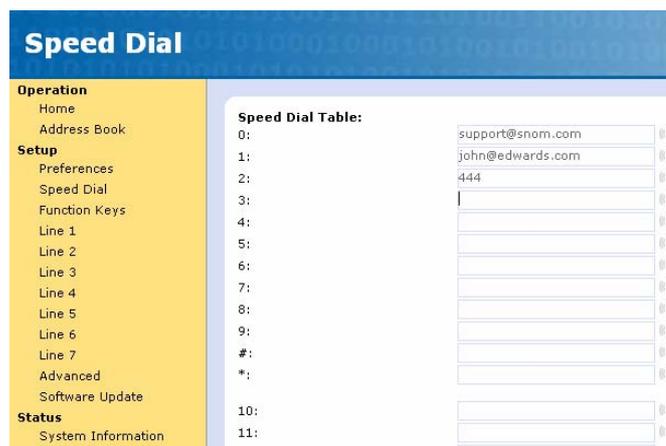
Deny List

The snom 220 gives you the option of putting numbers on a deny list to prevent calls from these numbers.

Browsing

You get to the deny list window via the submenu "Deny List" on your phone's display.

The numbers to be denied are displayed here.

Key mapping:

↓	Scrolls to the next number.
↑	Scrolls to the previous number.
C	Deletes the current number.
⊞	Pressing this on <New Item> will add a new entry.
X CANCEL	Returns to the idle state.

Or use the web interface "Address Book" page:
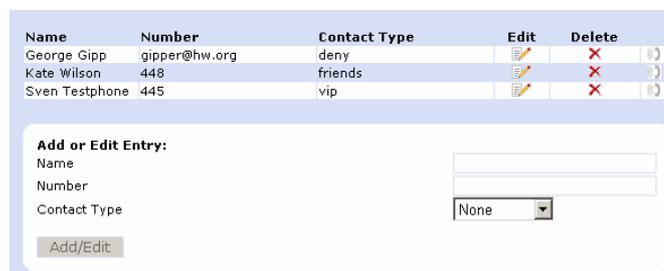
The numbers to be denied are displayed and marked with contact type "deny".

Adding a number

While you are being called you can press the deny list key. This will not only deny the present call, but will also add the number to the deny list.
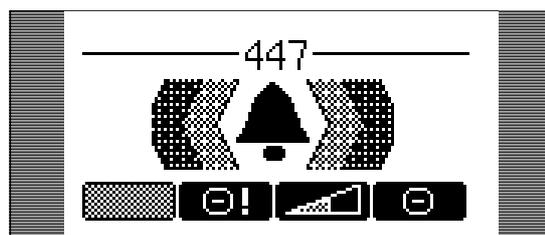
In addition, any number can be added to the deny list by selecting <new item> in the deny list of the phone directly.

After the number has been entered, it is added to the deny list.

Or add a new deny list entry on the "Address Book" webpage and mark it "deny".
Pressing ⊖ on an incoming call will only deny that particular call and will not put the caller on the Deny List.

Removing a number

There are three ways to remove a number from the deny list: (1) Press the "clear" key C on your phone while viewing the deny list. (2) On the "Address Book" webpage click onto the small red crossed icon at the end of the line you want to delete. (3) Change the contact type on the "Address Book" webpage!

6.   Settings

A long list of different settings is available that can be used to control the behavior of the snom220. These settings are explained in the FAQ "Configuring snom phones for Mass Deployment", which you will find under **http://www.snom.com/faq_en.php**. The FAQ "How can I update a snom phone?" describes the different options available to update the phone, also via setting file.

The settings can be specified in different ways:
Via the phone
Via web browser on a PC

Settings via Phone

Press the MENU key MENU in the idle state of the phone. With the function keys ↓ and ↑ you can navigate in the menu. Scroll to the submenu "Settings" and press ENTER ✓.

You are now in the "Settings" menu, which has the following submenus:

Redirection
Base
SIP
Codecs
Miscellaneous
Network
Key Mapping
Administrator Mode
Reset Values

Use the keys ↓ and ↑ to scroll within the "Settings" menu. Press the ENTER key to select a submenu.
Now the list of settings of the selected submenu is displayed. Use the ↓ and ↑ to scroll within the list. By pressing ENTER ✓ the value of the setting can be viewed or modified.

Some entries cannot be set to any variable value. Instead they offer a list of allowed values from which one has to be selected. Use the ↓ and ↑ to scroll within the list to set the desired value. Press ENTER ✓ to set the value. Press CANCEL ✗ if you decide not to change the value.

Other settings require the editing of numbers or strings. This can be done with the keypad of the phone. Digits are entered directly via the keys and letters can be called up by pressing a key repeatedly. You can toggle between lower case letters ("a") and upper case letters ("A") with the * key.

Key mapping:

←	Moves the cursor to the left.
→	Moves the cursor to the right.
C←	Deletes the character to the left of the cursor.
ABC	Changes input mode to capital letters.
abc	Changes input mode to small letters.
123	Changes input mode to numbers.
✓ ENTER	Accepts the entry.
x CANCEL	Aborts the changes.

Settings via Web Browser

It is usually more convenient to use a web browser to configure the settings. The snom 220 has an integrated web server for this purpose. If the phone is connected to a network that provides DHCP, it can be immediately accessed via the browser after boot-up. If you do not want to use DHCP, you must specify the IP address, netmask, gateway, DNS domain, and DNS server statically to ensure correct operation.

Illustration 1: Web configuration

Start your web browser.

Enter the IP address of the phone as the URL (e.g. 192.168.0.100). (If you do not know the IP address, you can look it up on the phone's display by pressing the menu key, scrolling to the "About" submenu, and pressing ENTER ✓.)

On the left side of the web page there is a selection menu.

Just click on the desired submenu and the current settings of this submenu will be displayed on the right.

You can now modify and store the values by using the mouse and keyboard. To store the changes made, click on the SAVE button. Do **not** press SAVE if you want to discard the changes.

Settings Options

The following options are available in administrator mode via web interface.

Setup Preferences

GENERAL INFORMATION

The webpage may look like this:

Webinterface Language

The web interface can be displayed in different languages independent from the current language used on the phone (see below).

Language

Your phone is able to show all display texts in different languages. Here you can select the language that suits you the best.

Number Display Style

Specifies the display of incoming and outgoing calls:
Full Contact: Shows the complete URL
Name: Only the name is displayed
Number: Only the number is displayed
Name + Number: Name and number are displayed

Tone Scheme

Select the dialtone you prefer for your phone.

MWI Notification

Specify the type of MWI notification that will inform you when a new message arrives.

MWI Dial Tone

Set the dialtone to stutter mode in case of an active MWI.

Use Headset Device

Select the headset device you would like to use. Select "none" if you don't want to use a headset.

Use Backlight

The snom220's display has a built-in backlight. If you set this function to 'on', the backlight will be turned on when you press a key on the phone. It is automatically switched off after a short time.

REDIRECTION
You can have all incoming calls diverted to a specific number.

Redirection:	
Event	Never
Timeout:	
Number (Redirect):	
Number (Busy):	

The following options for redirection are available:

Never: This deactivates all call diverts.
Always: All calls are diverted to the number specified in "Number Redirect".
When Busy: When a call is in progress, any other call made to that number is rejected and will receive a busy indication. The phone can be set in such a way that the second caller is diverted to another number set in "Number Busy".
After Timeout: Calls are diverted after the timeout in seconds specified in "Timeout" to the number specified in "Number Redirect.

The following fields for diversion are available:

Timeout

Specifies the timeout in seconds after which the call should be diverted.

Number redirect

Specifies the number to which the calls should be diverted.

Number busy

Specifies the number to which the calls should be diverted if the phone is busy.

<u>RINGTONES</u>
This section looks like the following:

Ringtones:

Default Selection	Source
"Friends"	Ringer1
"Family"	Ringer1
"Colleagues"	Ringer1
Ringer Device for Headset	Use Speaker
Default Ringer	Ringer1
Custom Melody URL:	

Default Selection

Select the criterion according to which the ringing melody is selected for incoming calls, i.e., based on the caller or callee address.

Contact Type Specific Ringers

Specify the ringing melodies for different contact types from your personalized phone book entries. These melodies will be used only if you selected "Source" in the "Default Selection" setting above.

Ringer Device for Headset

In case you want to hear the ring tone via the headset only, choose "headset", otherwise "speaker" as usual.

Default Ringer

Choose the default ringing melody for your snom phone through this setting.

Custom Melody URL

Specify an URL to your own ringing melody. The type of files that should be supplied to the phone is: "PCM 8 kHz 16 bit/sample (linear) mono WAV".

AUTO ANSWER

snom phones have auto-answering capabilities. Through these settings you can control the behavior of auto answer. This section looks like this:

Auto Answer:

Auto Answer	○ on ⦿ off
Auto Answer Indication	○ on ⦿ off
Type of Answering	Handsfree

Auto Answer

You can disable auto answer on your phone by turning this setting off. Turn it on to enable auto answer again.

Auto Answer Indication

In case you want to be informed when an incoming call is automatically answered from your phone, select "on".

Type of Answering

If auto answer is on, you can select how you would like to receive the incoming call, i.e., in hands free mode or on the handset.

PRIVACY SETTINGS:

Privacy Settings:
Call Line Identification Presentation (CLIP):   ○ Hide ● Show
Call Line Identification Restriction (CLIR):   ○ Reject ● Accept
Presence Inactivity Timeout (in minutes):   15

Presence Inactivity Timeout

This is the time after which, if there is no activity, presence is set to "closed". The default is 15 minutes. If it is set to 0, the presence stays closed and nothing is published. In other words, presence is disabled for all practical purposes.

Call Line Identification Presentation (CLIP)

Show or hide your own phone number when making a call.

Call Line Identification Restriction (CLIR)

Reject or accept anonymous incoming calls.

Setup Speed Dial

Speed Dial Table

Set up your speed dial numbers via this webpage.

Function Keys

You have the option to program up to sixty-five keys with LEDs. This section helps you achieve this objective. Program the keys P1-P5 or EK1-EK60 to perform any of the 5 different functions. They include "Line", "Destination", "Intercom", "Park Orbit" and "Voice Recorder". Each of these was explained in detail in the chapter entitled "Programmable Keys". You also need to specify the number for each of the keys in order to enable the specific key utility to work.

The keys EK1-EK0 can be used via up to three cascaded external keyboards of 20 keys each.

Setup Line1-7

Through this page you can set up SIP lines you would like to use on your phone. You have the option to set up to seven lines. Each line setting looks like the following:

LOGIN INFORMATION

Display Name

Set the name you would like to associate with a line, e.g., "John Smith".

Account

This is the account with which you would register to a registrar/proxy. It could be alphanumeric, e.g., "js", or based on digits like "701" in the screenshot above.

Password

This is the password to be used for challenge responses. In order to protect privacy, passwords are not displayed in their true form.

Registrar

Specify the IP address or URL of the registrar/proxy with which you would like to register this account.

Mailbox

If you have set up a mailbox, specify the account name for that mailbox here to associate it with this particular SIP line.

Ringtone

Through this setting, you can select a distinctive ring tone that will alert you when a call comes in on this particular line. In order for this to work, you will have to have specified "Destination" in the "Default Selection" in "Preferences".

ADVANCED LINE SETTINGS

Outbound Proxy

You can specify the outbound proxy here.

Dial Plan String

You can set up the dial plan for this line here.

Q-Value

You can set up the probability of registration for each line through this setting. The default is 1.0.

Proposed Expiry

You can select the time when the registration on this line expires. The phone will send a fresh re-registration request at the expired time.

Transport

Select the protocol for transport layer communication through this
setting.

Offer ICE

Choose whether you want to use ICE or not.

Codec 1-5

You can select the preferred order for the potential used codec. The
available options are G.711 ulaw, G.711 alaw, GSM, G.726-32 and
G.729a.

Packet size

Select the packet size in bytes. It affects only ulaw and alaw codecs
(other codecs have fixed packet size). Eighty (10 ms), 160 (20 ms),
240 (30 ms) and 320 (40 ms) bytes are available.

Setup Advanced

NETWORK

With these settings you can set up the basic network settings of your
phone. The web interface for this looks like the following:

DHCP

Turn on or off the use of DHCP with this option.

IP address

You can change the IP address of the device through this setting.
Changing this parameter requires a reboot. This parameter is
mandatory in order to enable the ethernet connection.

Netmask

Change the netmask for the device. Changing this parameter also
requires a reboot.

Phone name

Change the hostname of the phone here. If this parameter is available,
it is used for identifying the device in SIP signaling.

IP Gateway

This setting shows the IP address of the default IP gateway (*not* the VoIP gateway). It is the address to which the packets are routed if the wanted packet address is not in the current subnet. Setting up this parameter is mandatory in order to reach an external network.

DNS

```
DNS:
Domain:          intern.snom.de
DNS Server 1:    192.168.0.9
DNS Server 2:    195.58.161.3
```

Domain

Specify the DNS domain for your phone here.

DNS Server 1

Specify the IP address of the DNS server for your network here.

DNS Server 2

Specify the IP address of a backup DNS server for your network here.

TIME SETTINGS

```
Time:
NTP Time server:   192.53.103.103
Timezone           +1 Germany (Berlin)
```

NTP Time server

Specify the URL or IP address of the NTP server here.

Timezone

Select the time zone of your geographical location through this option.

HTTP

```
HTTP:
User:
Password:
Authentication Scheme:      Digest  Basic
HTTP Proxy:
HTTP port:                  80
HTTPS port:                 443
Register http contact       on  off
Webserver connection type:  http or https
```

User

Here you can select the HTTP username for your phone.

Password

Set up the HTTP password for your phone here.

Authentication Scheme

Define whether "Basic" or "Digest Authentication Scheme" should be used.

HTTP Proxy

You can select the HTTP proxy address for your phone here.

HTTP port

Specify the HTTP port to be used by your phone through this setting.

HTTPS port

Specify the HTTPS port to be used by your phone for HTTPS connections.

Register http contact

Should the phone add the http URL of the phone as additional contact information?

Web server connection type

Set up the type of connection the phone's web server is willing to answer to:
http
https
http & https
off

Phone Behaviour

Phone Behavior:	
Call Completion:	● on ○ off
IDNA (RFC 3490) Support:	○ on ● off
Action on Ethernet cable replug:	Ignore ▼
Auto Dial:	off ▼
Number Guessing:	● on ○ off
Block URL Dialing:	○ on ● off
Deny All Feature:	● on ○ off
Challenge Response on Phone:	● on ○ off
Broadsoft Call Control Features:	○ on ● off
CMC Feature:	○ on ● off
Dialog-Info Call Pickup:	○ on ● off
Call Waiting Indication:	● on ○ off
Dialtone during Hold:	● on ○ off
Disconnect on Hook:	● on ○ off

Call Completion

Turning this setting to "On" will prompt the user to activate call completion, if possible, while dialing a number. When the dialed party becomes available again, your phone will be able to automatically redial the number.

IDNA (RFC 3490) Support

Switch on support for Internationalizing Domain Names in Applications (IDNA).

Action on Ethernet cable replug

Choose the action that should be performed after the network connection is reestablished: "Do nothing" or "reboot".

Auto Dial

This setting is switched off by default. You can set a timeout after which a number is dialed automatically without pressing the ✓ key or taking the handset off the hook.

Number Guessing

Here, the number-guessing functionality can be activated or deactivated.

Block URL Dialing

You can block the dialing of SIP URLs by turning this setting on. In this case only numerics will be allowed as input.

Deny All

When turned on, this setting shows the "Deny All" softkey on incoming calls so that incoming numbers can be put on the "Deny List". Turning the setting off will disable this feature.

Challenge Response on Phone

As explained in an earlier chapter, snom phones can handle challenge responses on the phone. Turning this setting off will disable this feature and you will only be able to handle authentication through the web interface of the phone.

Broadsoft Call Control Features

Support for Broadsoft call control can be enabled here.

CMC (Client Matter Code)

When this setting is turned on, the user is offered a softkey during a call; its use sends a unique code to the server using the INFO message in SIP. This code can later be used for billing or book keeping along with the call ID of that call.

Dialog-Info Call Pickup

snom phones subscribe to the status information of SIP URL's mapped as "Destination" on the programmable keys. By turning this setting on, the user will be offered a pickup if a mapped destination gets a call and is in the ringing state. The display will change in the idle state to show the source and destination of that call and the user can pick it up by pressing the ENTER key ✓. The pickup offer will be available as long as the destination is ringing and disappear when the user of the phone offering pickup presses CANCEL ✕, when the call is connected, when the call is cancelled by the caller, or when a third party picks up the call.

Call Waiting Indication

You can enable or disable the CWI on the phone through this setting.

Dialtone during Hold

Turning this setting on will produce a dial tone when a call is being held and the user is trying to dial a second number. A dial tone will not be played when this setting is not turned on.

Disconnect on On-hook

Sometimes it is useful to disable the disconnection of a call when the handset is placed on-hook, e.g., during conference calls or handsfree mode, etc. This can be achieved by turning this setting off.

Keys

Here you can change the key behaviour on the phone to your wishes. The web page may look like this:

Break Key

The "Break" key on the phone can be used either to disconnect the connected call or as a "Transfer" hard key. You can make that choice through this setting.

Transfer on On-hook

In case the transfer feature triggered by on-hook is confusing you, you can switch it off here.

Block DND

Users have an option to disable the DND feature. This can be achieved by turning the "Block DND" setting on. If this setting is turned on, the users of the phone will not have the DND option on their phones. This can be useful in call center environments.

Logon Wizard

Turn this setting on if you want to use the Logon wizard. Switch it off to disable the Logon wizard.

PRESELECTION

This section looks like this:

Preselection:
Prefix:

Prefix

Specify the number to be prefixed to each dialed number.

AUDIO

Set up audio-related settings on your phone. These settings may look like this:

Audio:

Mute Microphone	○ on ● off
Disable Casing Speaker	○ on ● off
DTMF echo on Speaker Phone	● on ○ off
Call Released Notification	● on ○ off

Mute Microphone

Setting this to "on" will mute the microphone of the phone. Turning it off will enable the microphone again. Specify the number to be prefixed to each dialed number.

Disable Casing Speaker

Turn this setting on to disable your speaker.

DTMF echo on Speaker Phone

Option to switch off DTMF echo.

Call Releases Notification

Turn this on to enable late media when a call is released. Turning it off will take you directly to the idle state when a call drops.

Advanced Network

In this section you can alter the advanced network settings of your phone. This page has the following settings:

```
Advanced Network:

NAT detection:                        Automatic ▾

STUN server (IP-addr:port):           [                    ]

STUN binding interval (seconds):      [                    ]

Use Mapped Address:                   ○ on  ⦿ off

Dynamic RTP port start:               10000

Dynamic RTP port stop:                11000

Type of Service (TOS):                160

DTMF Payload Type:                    101

Network identity (hostname):          [                    ]

Network identity (port):              [                    ]

Local SIP port                        ○ Network port ⦿ Default SIP port

SIP T1 (ms):                          500

SIP Session Timer (s):                3600

SIP Dirty Host TTL (s):               [                    ]

SIP Max Forwards:                     70

ENUM Suffix:                          e164.arpa

Music on hold server:                 on_hold@intern.snom.de

Use user:phone:                       ⦿ on  ○ off

Publish Presence:                     ○ on  ⦿ off

Refer-To Brackets:                    ○ on  ⦿ off

Require PRACK:                        ⦿ on  ○ off

Symmetrical RTP:                      ⦿ on  ○ off

Offer GRUU:                           ⦿ on  ○ off

Offer MPO:                            ○ on  ⦿ off

Challenge for Dialog:                 ○ on  ⦿ off

Challenge for Reboot:                 ○ on  ⦿ off

Challenge for Check-Sync:             ○ on  ⦿ off
```

NAT Detection

Users can select the kind of NAT according to their network through this setting. Available options are "Automatic", "UPnP", "STUN", "Static" or "Off". The default is "Automatic".

STUN Server (IP-addr:port)

If you selected "STUN" as NAT detection type, specify the address of the STUN server followed by the port number.

STUN Binding Interval (seconds)

Similarly, set the STUN binding interval time in seconds through this setting.

Use Mapped Address

Through this setting you can switch the mapped address feature on or off.

Dynamic RTP port start

If you want to set up the RTP port dynamically, give the start port number in this setting.

Dynamic RTP port end

Give the last port number in this setting for dynamic RTP port selection.

Type of Service (TOS)

You can set up the TOS in this setting. A value could, for example, be 160.

DTMF Payload Type

Set up the payload type for Out of band DTMF here, e.g., 101.

Network Identity (host name)

Specify the host name of the Network identity through this setting.

Network Identity (port)

Set the port number of the network identity here.

Local SIP Port

Should both network identity settings following below be used instead of the default SIP port?

SIP T1 (ms)

Set the re-try timer 1 in milliseconds here.

SIP Session Timer (s)

A user can specify the session timer for SIP in seconds here.

Dirty Host TTL (s)

Specify the "Time to Live" (TTL) for dirty hosts in seconds through this setting.

SIP Max Forwards

If you want to specify the maximum number of forwards, you can set it here.

ENUM Suffix

When using ENUM, you can specify a suffix here, if desired.

Music on hold server

If you have configured a "music on hold" server, specify that contact here. Music from this server will be played to the other side when you hold a call.

Use user=phone

Turn this setting on if you want to use user=phone in SIP URLs. Select "off" to disable it.

Publish Presence

Control the "presence" status information through this setting.

Refer-To Brackets

To switch additional brackets on or off in the Signaling for Refer-To.

Require PRACK

To force the usage of PRACK, choose "on" here.

Symmetrical RTP

In case you want to use symmetrical RTP, switch it "on" here.

Offer GRUU

This setting is used to toggle the support for GRUU (Globally Routable User agent URL's) in SIP.

Offer MPO

Using this setting, the user can turn the Media Path Optimization on or off.

Challenge for Dialog

Turning this setting on enables a challenge response for dialogue messages.

Challenge for Reboot

This setting enables/disables a challenge response for remote reboot request.

Challenge for Check-Sync

Turning this setting on enables a challenge response for Check-Sync.

UPDATE

Update:
Update Policy   Ask for update
Setting URL:

Update Policy

You can select the best possible update policy you would like to adopt for your phone.

Setting URL

Set up the URL of the settings server from where you would like to obtain the configuration file to configure your phone.

VLAN

VLAN ID (0..4095) and Priority (0..7)
seperated by a space (e.g. "128 5"):
Id Priority: [   ]

Id and Priority

Enter your VLAN ID (0..4095) and Priority (0..7) separated by a space (e.g., "128 5").

DEBUG

Debug:
LCServer: [192.168.0.34   ]

LCServer

Specify the IP address of the remote LCServer if you want your phone to connect to it. Normally, you would not need to set the LCServer setting. It is for company internal development only.

SECURITY

Security:
Administrator Mode   ⦿ on ○ off
Administrator Password: [****]
Administrator Password (Confirmation): [****]

Administrator Mode

This setting allows you to switch between User and Administrator modes of the phone.

Administrator Password

In Administrator mode, you can set up the admin password through this setting. A password can be an alphanumeric string of any length.

Administrator Password (Confirmation)

You have to confirm the password to ensure no typing errors have been made.

Certificates

Upload Server Certificate: [   ] [Browse...]
[Load]

Upload Server Certificate

Here you can upload your own server certificate for secure https communication.

Setup Update

MANUAL SOFTWARE UPDATE

Here you can select the binary files to be put on the phone yourself.
This section may look like:

Bootloader

Specify the address for the bootloader file you would like to place on the
phone through this setting.

Firmware

Similarly, you can provide the firmware address in this setting.

Press the "**Load**" button if you changed anything in these settings and
would like to load the binary files through the newly provided addresses.

H.323

This mode of settings will be available to you if your phone is operating
in H.323 mode.

E.164 Number

Set the E.164 number by which you would like to identify your phone.

H.323 ID

Alternatively, you can specify the H.323 ID for your phone.

URL ID

Set the H.323 ID in the form of an URL through this setting.

GK/GW Mode

Through the GK/GW Mode setting, the user has an option to select the
mode for the registrar to either "Auto", "Gatekeeper", "Gateway" or
"None".

GK/GW Domain

Specify the DNS or IP address of the Gatekeeper or Gateway with which
you would like your phone to register.

GK TTL

If you selected "Gatekeeper" in the GK/GW Mode above, you can specify the "Time to Live" (TTL) through this setting.

Message Center Number

Users can set the message center number through this setting.

Fast Start

This setting allows you to enable/disable the "fast start" feature.

Early Start

Here you can switch the early start feature of the H.323 stack on or off.

H.245 Tunneling

Through this setting, users can turn H.245 tunneling on or off.

H.450 Services

With this blanket setting, you can start or stop the H.450 services.

External line prefix

Enter the external line prefix (e.g., 00) for outgoing calls. When you dial, it will be replaced by the gateway prefix you entered (e.g. *5). If, for example, you want to call *51234 you dial 001234 for going over the gateway.

Gateway prefix

The gateway prefix is the Alias with which the gateway is registered with the gatekeeper. When the gatekeeper receives a call starting with the gateway prefix, it knows that the call has to be routed to the gateway.

Status

System Information
Here you find information regarding phone type, MAC Address, IP Address, firmware version, boot loader and firmware URLs.

Log
Dependent on a selectable log level the log messages are shown here.

SIP Trace
A quite helpful feature to display the SIP signaling.

UPnP Trace
You can discover the UPnP conversation between the phone and other devices here.

Memory

See the current memory usage of your phone.

DNS Cache

An option to look into the current DNS cache.

PCAP Trace

Create packet traces from current network traffic right on your phone!
This is a really powerful tool to find out what is going on in the network
around your phone.

Settings

Displays all settings of your phone including their current values.

7.   Appendix

Standard Conformance

Name and address of manufacturer

snom technology AG
Pascalstraße 10B
10587 Berlin

snom technology AG assures that the product

Type: VoIP Phone

Model: snom 220

conforms to the following standards:
EMC standard 89/336/EWG incl. all appendices
Low voltage standard 73 / 23 / EWG

Safety Standards:

EN 60950 1992 incl. all appendices

Electromagnetic Standards:
EN 55022 / 9.98 Class B
EN 55024 / 9.98
EN 61000-3-2/1995+A1/1998+A2/1998+A14 /2000
EN 61000-3-3/1.95

Place, date   Dr. Christian Stredicke
Berlin, 18 August 2004   CEO

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