IP Phones DBC 43x and DBC 44x

MAINTENANCE INSTRUCTIONS

NOTICE

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1 GENERAL

This document is to be used by service personnel when maintaining the IP phones DBC 433 01 (Mitel 7433), DBC 434 01 (Mitel 7434), DBC 444 01 (Mitel 7444), and DBC 446 01 (Mitel 7446).

> Hardware faults in DBC 43x or DBC 44x should not be repaired locally, except for replacement of parts listed in the ordering information for Telephones and Peripheral Equipment. The purpose of the following instructions is to decide whether there is a hardware fault in the IP phone or not.
> If a hardware fault occurs in DBC 43x or DBC 44x, the unit should be returned to Mitel Global Service Logistics Centre.

If there is a fault in the software of the phone, the software can be updated on site, see *Installation Instructions for DBC 433, DBC 434, and DBC 444*.

For information about spare parts, see *Ordering information for Telephones and Peripheral Equipment*.

2 SELF-TEST

2.1 EXECUTE THE SELF-TEST

It is possible to initiate the phone's self-test by pressing and holding several keys simultaneously for one second, see below. The LEDs are lit and the tone ringer makes a sound for each key pressing.

- For DBC 433, DBC 434 and DBC 444, press , , *, and 4.
- For DBC 446, press C, *, and 4.

To exit the self-test, press the # key.

2.1.1 DBC 43X SELF-TEST

The following parts are included in the test:

- All LEDs are lit.
- The back light is lit (valid only for DBC 434).
- Software versions are displayed.
- If errors have occurred during loading of the configuration file, an error message is displayed.
- The LCD display enters test mode. To verify that the pixels in the display are flawless, press (all pixels are set to black).

In addition, the following objects can be tested: keys, hook switch, tone ringer, display and speech transmission, see 2.2 Keys, Hook Switch And Tone Ringer Test on page 5, and 2.3 Local Speech and Transmission Test on page 5.

2.1.2 DBC 444 SELF-TEST

The following parts are included in the test:

- LEDs are lit
- A number of different test modes can be selected:
  1) Firmware check
  2) LCD test
  3) Backlight test
  4) LED test
  5) Key test
  6) Aging test
- If an error has been detected in the configuration file, an error message is displayed in the Firmware check test mode.

The following objects can also be tested: hook switch, tone ringer, and speech transmission. For more information, see 2.2 Keys, Hook Switch And Tone Ringer Test on page 5, and 2.3 Local Speech and Transmission Test on page 5.

2.1.3 DBC 446 SELF-TEST

The following parts are included in the test:

- LEDs are lit
- A number of different test modes can be selected:
  1) Firmware check
  2) LCD test
  3) Backlight test
  4) LED test
  5) Key test
  6) Touch screen test
  7) USB test (requires a USB memory stick)
  8) Aging test
- If an error has been detected in the configuration file, an error message is displayed in the Firmware check test mode.

The following objects can also be tested: hook switch, tone ringer, and speech transmission. For more information, see 2.2 Keys, Hook Switch And Tone Ringer Test on page 5, and 2.3 Local Speech and Transmission Test on page 5.

2.2 KEYS, HOOK SWITCH AND TONE RINGER TEST

In self-test mode, it is possible to test the keys by pressing them one at a time. Each keystroke should generate a tone signal.

Note: In the DBC 444 and DBC 446 phones, it is possible to test the keys in the *Key test mode*.

A tone signal is generated when the handset is lifted and then replaced.

It is possible to change the volume of the tone ringer by pressing the volume keys marked **+** and **-** . The new volume level is stored when the self-test mode is exited.

2.3 LOCAL SPEECH AND TRANSMISSION TEST

The following section describes functions performed in self-test mode.

2.3.1 HANDSET FUNCTION

It is possible to lift the handset to activate the handset mode. The microphone signal in the handset is sent via the audio circuit and is looped back in the DSP to the handset receiver.

To test the handset transmission in self-test mode, do the following:

1. Blow into the handset microphone.
2. Listen for the sound in the handset receiver.

2.3.2 HANDSFREE MICROPHONE

Note: Handsfree microphone is not available for DBC 433.

To test the handsfree microphone in self-test mode, do the following:

1. Press the loudspeaker key.
2. Keep the handset on hook.
3. Knock near the handsfree microphone.
4. Listen to the knocking sound in the loudspeaker.

2.3.3 VOLUME CONTROL

The volume of each transmission mode can be changed by pressing the volume keys marked **+** and **-** . If the volume is adjusted when the phone is in the test mode, the volume selected will be retained upon exiting the test mode.

2.3.4 MUTE FUNCTION

It is possible to test the mute function by pressing the key  while blowing into the microphone and checking that the sound is muted in the handset receiver or loud-speaker.

3 RESTART THE PHONE

3.1 DBC 433, DBC 434, AND DBC 444

It is possible to restart the phone manually by pressing and holding the key until the dialog message **Restart the phone?** is displayed, and then pressing **Yes**. This is called a software restart.

Note: If a lock up problem is to be isolated, it is useful to enter the SSH command showLog, see section 4.1.3.3 Print Recent Events on page 11. The log will be kept after the software restart.

If the software restart does not restart the phone, perform a power restart.

- For DBC 434 and DBC 444, switch off the power by pressing and holding for a couple of seconds.
- For DBC 433, switch off the power by disconnecting the phone from the power supply and then reconnecting it.

When a power restart is performed using any of the methods above, the log file initiated by ShowLog is lost. The log initiated by ShowFlashLog is available after power restart. See 4.1.3.4 Print Events From the Flash Memory on page 11.

3.2 DBC 446

It is possible to restart the phone manually by pressing the keys **C** (Clear key), **#** and **mute** simultaneously for 1 second. This is called a software restart.

Note: If a lock up problem is to be isolated, it is useful to enter the SSH command showLog, see 4.1.3.3 Print Recent Events on page 11. The log will be kept after the software restart.

If the software restart does not restart the phone, perform a power restart.

- To keep the log after restart, restart the phone with the reset button.

  The reset button is located at the back of the phone, just above the connectors. Press the reset button by inserting a thin object, such as a screwdriver, into one of the hollows for the foot consoles, see 1 Position of reset button on the DBC 446 phones on page 8. This is called a hardware restart.
- To discard the log after restart, restart the phone by performing a power restart.

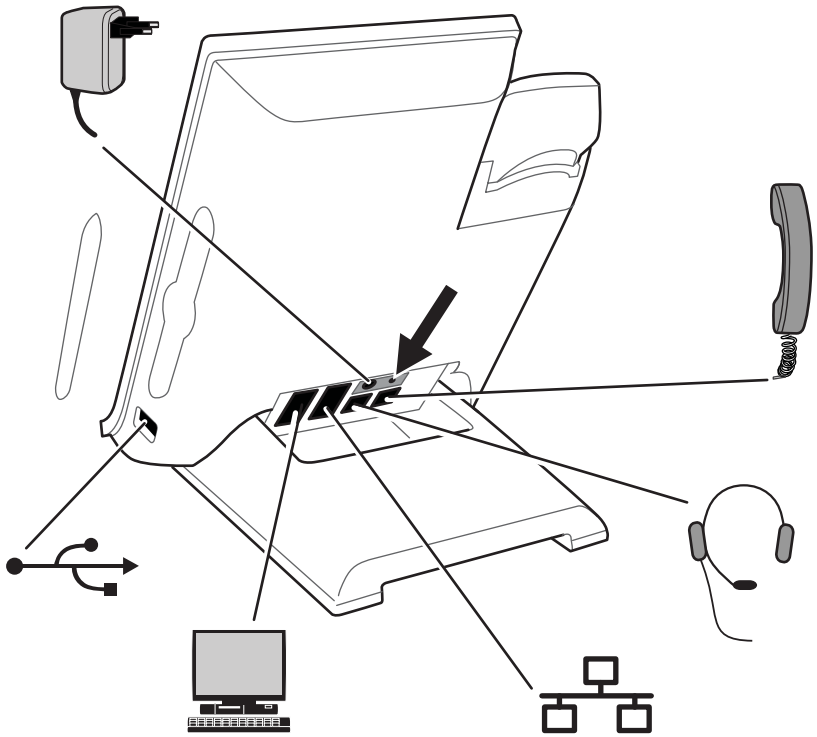

Figure 1: Position of reset button on the DBC 446 phones

4 LOG ON TO THE IP PHONE FROM A PC

For maintenance and fault locating purposes, it is possible to log on to the IP phone in two ways:

- SSH, see 4.1 SSH on page 9. Use the SSH window in a PC and enter the phone's IP address.

  A complete set of commands and log functions can be used via SSH.

- The web server in the phone. Enter the phone's web address or IP address in the address field of a web browser on your PC, see 4.2.1 Access the Web Interface With the Web Address (URL) on page 12.

  Only a limited set of commands and functions, and no continuous log functions, can be used via the web server.

4.1 SSH

From a PC the system administrator can access the phone using SHH (Secure Shell). There are several freeware clients, such as PuTTY for PCs with Windows®.

Note: The default encryption keys cannot be changed.

To log on to SHH, do the following:

1. Open an SSH session and enter the phone IP address. The commands are case sensitive.

   Note: To view the phone's IP address, see 4.1.1 Viewing the Phone IP Address on page 9.

2. Enter the login details:

   Login: "admin"

   Password (default): "Telephone"

3. Enter the desired command.

   Note: To view available commands, see 4.1.2 Commands on page 10.

4. Select the desired log level of printouts.

The procedure for changing password, see *Installation Instructions for DBC 433, DBC 434, and DBC 444*.

4.1.1 VIEWING THE PHONE IP ADDRESS

To view the phone's IP address, do the following:

For DBC 433 and DBC 434:

1. Press  and enter the administrator mode.
2. Select **Administrator** and **Network**.
3. Scroll down to **IP add**.

For DBC 444:

1. Press  and enter the administrator mode.

2. Select **Administrator** and **Network**.

For DBC 446:

1. Select **Settings** and **Administrator Settings**.
2. Select **Network**.

4.1.2 COMMANDS

To view a list with the available commands and their explanation, enter the command **Help**.

4.1.3 EVENT LOGS

It is possible to obtain a log file of events, which are printed from either the application software or the operating system, see below.

- **From the application software.** The events are printed from different modules in the application.
- **From the operating system.** The events are stored in the run-time error record log, and in the post-mortem event log.

The log file can be attached to a fault report, and it can be analyzed by the level three support. The log should not be interpreted by maintenance personnel.

It is possible to select the level of events from the different parts of the software in the phone.

setWAPDebugLevel 0-4
The events that occur in the WAP module in the phone. This module handles services and display messages. This command is only valid when the gate-keeper supports WAP.

setUIDebugLevel 0-4
The events that occur in the user interface module in the phone.

setH323DebugLevel 0-4
The events that occur in the H.323 stack module in the phone.

setRTPDebugLevel 0-3
The events that occur in the voice (media stream) module in the phone.

setWEBDebugLevel 0-3
The events that occur in the web server.

setOMDDebugLevel 0-3
The events that occur in OMD mode.

Typically, the levels of stored events have he following meaning:

0 = No events are printed, 1 = Messages that most likely are errors are printed, 2 = Major events are printed, 3 = Minor and major events are printed, 4 = All events are printed.

For a detailed description, enter the command **Help**.

These commands work through the web server interface as well.

4.1.3.1 Print the Phone's IP Addresses And Status

To print the IP addresses and the status for the phone, enter the following command:

phoneStatShow

4.1.3.2 View Events As They Occur

Log on via SSH as described above. The events are displayed as they occur in the phone.

4.1.3.3 Print Recent Events

It is possible to retrieve the most recent events in the phone. These can be events that occurred before logging on to the phone with SSH. The event log offers 4000 lines and is obtained by opening a log file in the PC, logging on the phone and entering the following SSH command:

showLog

The log is kept even when the phone is restarted, but is lost after a power loss. The command works through the web server as well, see Section 4.2.2 Use the Functions In the Web Interface on page 14.

4.1.3.4 Print Events From the Flash Memory

The watchdog function (see Section 7 Watchdog on page 18) can store the last events in the flash memory before the phone is restarted. The command for printing the log from the flash memory is

showFlashLog

Data in this log is available even after power restart or failure.

The log is overwritten next time the watchdog is activated.

4.1.3.5 Run-time Error Record Log

This log shows the run-time error records (up to the last 7) detected by the operating system. The log is cleared at power restart. Examples of recorded events are bound-check errors, violations of memory blocks and pointer arithmetic errors. The command for printing the log is

edrShow

4.1.3.6 Post-mortem Event Log

This log contains the function calls to the operating system in the phone. In this log it is possible to analyze all operating systems calls from the application before a crash occurred in the phone. This log is saved even after a restart of the phone, but not after power loss.

Log on to the phone as described in section above. Start the post-mortem log by entering the following SSH command:

startEventLog

After this it is possible to log off and wait until the problem in the phone occurs. To up-load the post-mortem log to the PC:

1. Install and start the program **EventReceive** on the PC. Please contact Service Support Plaza to obtain this program.

2. Log on to the phone via SSH
3. Stop the log and upload the log to the PC by typing the command **startEventUpload “IP address of the PC”**.

   Example: startEventUpload “153.81.8.140”
4. In the GUI of **EventReceive**,it is possible to press **Setup** to select where to save the log file with the file extension **.wvr**
5. Send the file to Mitel; they have the special program required to open the file.

4.2 WEB SERVER

It is possible to access the IP phone from a web browser and view the following features:

- Debug log. Display 4000 lines of the most recent events in the phone.
- Debug level. Select the level of events from the different parts of the software in the phone, see Section 4.1.3 Event Logs on page 10. This must be chosen before the trace (debug log) is done.
- Settings - User type mode. The following values can be used:
  - Free user. Any user can log on and log off.
  - Permanent user. A default number is used.
  - Temporary user. Same as permanent user, but a temporary user can also log on with his or her extension number
- Settings - View and change network addresses: the phone’s IP address, subnet mask, default gateway, sw server, if DHCP should be used or not and if the software server address received via DHCP should be used or not. The phone will restart if anything is changed here.
- Settings - View and change if automatic gatekeeper discovery should be used.
- Settings - View and change the gatekeeper IP address(es).
- Settings - Show voice quality of service (QoS) values.
- Settings - Show the phone’s configuration.
- Settings - View and change the shortcut keys.
- Settings - View and change the tone ringer character.
- Settings - If the phone should be used as an operator media device.
- Restart the phone.

4.2.1 ACCESS THE WEB INTERFACE WITH THE WEB ADDRESS (URL)

The IP address or the web address (URL) must be entered in the address field of the web browser in the PC. The web address is the host and domain name received from the DHCP server.

To view the phone’s IP address or web address depends on the phone model, see below.

4.2.1.1 *View the IP Address In DBC 43x and DBC 44x*

1. To view the phone's IP address, do the following:
   - For DBC 433 and DBC 434:
   1) Press and enter the administrator mode.
   2) Select **Administrator** and **Network**.
   3) Scroll down to **IP add.**
   - For DBC 444:
   1) Press and enter the administrator mode.
   2) Select **Administrator** and **Network**.
   - For DBC 446:
   1) Select **Settings** and **Administrator Settings**.
   2) Select **Network**.
2. The web address is the second item in the list in the figure below, and the IP address is the third item.

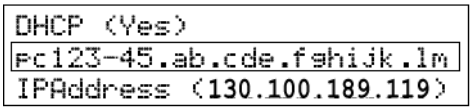

Figure 2: The Phone Web Address

3. The following page will be displayed in the web browser:

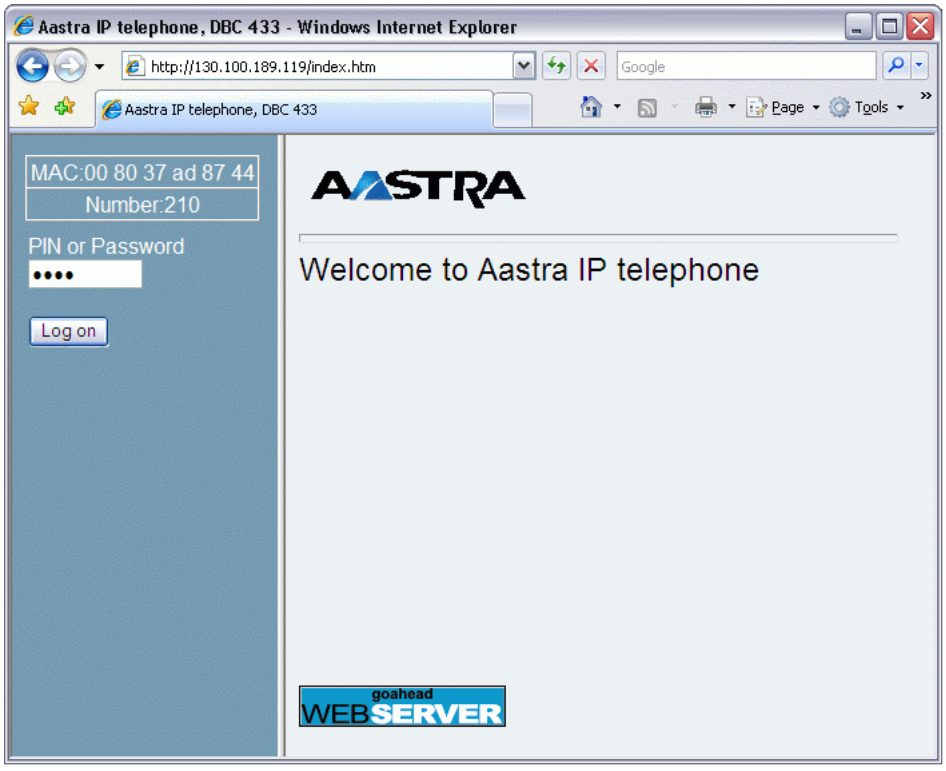

Figure 3: Web Interface Log On Page

If a web page that has been accessed previously fails to open, check the web address or IP address on the phone display. If the phone has been disconnected from the LAN for a few days, the web address or IP address may have changed.

For a description of the functions in the web interface, see 4.2.2 Use the Functions In the Web Interface on page 14.

Note: If the page is not shown, a change in the proxy settings in the web browser in the PC may be needed.

4.2.2 USE THE FUNCTIONS IN THE WEB INTERFACE

To use the functions in the web interface, do the following:

1. Log on to the phone using the administrator password. The default administrator password is **Telephone** (case sensitive). The password can be changed, see *Installation Instructions for DBC 433, DBC 434, and DBC 444.*
2. Click on the **Log on** button.

   The following menu is displayed:

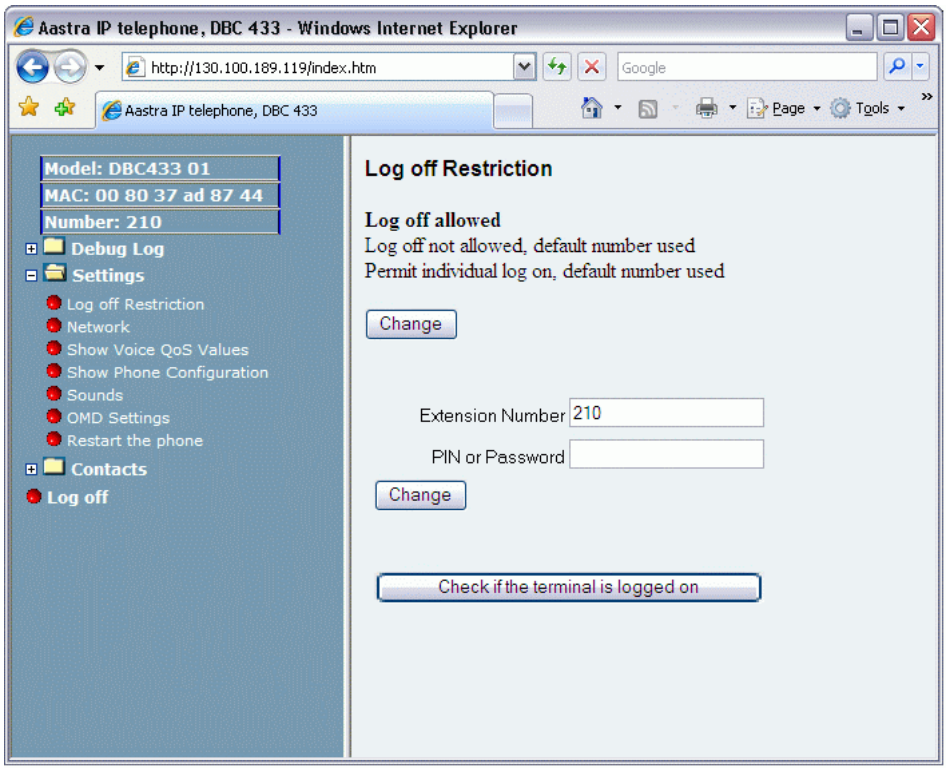

Figure 4: Web Interface

3. Click on the plus signs (+) to view the sub menus, and then click on the desired function to select it.

4.2.2.1 Show QoS Values

When **Show Voice QoS Values** is selected, the following statistics are displayed for the last ten calls.

- **B-Party Phone number**. The phone number of the remote party.

- **Call Start Time**. Date and time of when the call started.
- **Call Duration**. The duration in seconds of the call.
- **Other Endpoint IP Address**. The IP address of the remote IP phone for non-gateway calls; the IP address of the gateway for gateway calls.
- **Used Codec**. The voice codec used in the call.
- **Cumulative Packets Lost**. The total number of lost incoming packets during the call. The value should be less than about 40 packets for a normal call (1 minute).
- **Delay**. The RTCP end-to-end round trip delay divided by two, in milliseconds. Example: If the delay is 100 ms from the phone to the gateway, and 80 ms from the gateway to the phone, the displayed value will be (100 + 80)/2 = 90 ms. The average value should be less than 50 ms, and the maximum value should be less than 250 ms.
- **Jitter**. Displayed in milliseconds, according to the H.460.9 standard. The average value should be less than 90 ms and the maximum value should be less than 200 ms.
- **Packet Loss Rate**. The number of incoming packets lost per second. The maximum value should be less than 1 packet/s.

If the maximum or average values are exceeded in the last 4 bullets above, there is most likely a problem in the LAN.

4.2.2.2 View the Phone Configuration

When **Show Phone Configuration** is selected, the configuration of the phone is displayed.

- The data below the heading **Configuration file** displays the entire configuration file, but without comments.
- The data below the heading **Status** displays additional information such as the current versions, the phone number, the software server, and the domain name from DHCP.

4.2.2.3 Delete Personal Contacts

The function for the sub menu in the **Task** folder deletes all entries in the personal contacts. If **OK** is selected when the warning dialog window is displayed, the phone book will be erased permanently.

Note: This function is useful when a phone should be prepared for use by new end-user.

5 RESET OF DATA SETTINGS

5.1 FACTORY DEFAULT

To set the phone to factory default, do the following:

1. Log off.
2. Enter administrator mode. See 6 Administrator Mode on page 17
3. Press and hold , , *, and 9 for 1 second.

   The following data will be set:

   - Use DHCP
   - Retrieve the IP address to the software server automatically (from DHCP or DNS SRV resource records)
   - Automatic VLAN detection
   - Automatic detection of LAN access control according to IEEE802.1x
   - User specific data that are stored in the phone (for example, call lists, contacts, and shortcut keys), are erased.
   - All numbers that are associated with function keys, are erased.
   - All function keys are placed on the default positions, see the description for *CONFIGURATION FILE FOR DBC 44X and DBC 43X*.

5.2 RESET OF NETWORK SETTINGS

From the web interface it is possible to reset the network settings. Press:

Settings > Network > Reset Network Setting

The following data will be reset:

- Use DHCP.
- Retrieve the IP address to the software server automatically (from DHCP or DNS SRV resource records).
- The current VLAN settings will be erased. Automatic VLAN detection will be enabled.
- Automatic detection of LAN access control according to IEEE802.1x.
- Automatic gatekeeper discovery.

6 ADMINISTRATOR MODE

The administrator mode is used mainly when IP settings are to be changed.

To enter the administrator mode, do the following:

1. Press and hold  ,  , *, and **5** for 1-2 seconds.
2. If required, enter the administrator password (the use of administrator passwords is configured in the configuration file).

   One ringing signal is heard to indicate that this mode is entered.
3. Select **Administrator**.

To exit the administrator mode, do the following:

1. Press  , select **Administrator** and press **Select**.
2. Select **Log off Administrator** and press **Select**. Use the navigation keys.

Note: After a period of inactivity, the administrator mode is terminated automatically

7 WATCHDOG

There is a hardware and software watchdog function that helps avoid lock-up of the phone.

If the watchdog function is activated, the last 1,600 lines of the event log are stored in the flash memory, and the phone is restarted.

For information on how to print a log from the flash memory, see Section 4.1.3.4 Print Events From the Flash Memory on page 11.

8 IP PHONE ADMINISTRATOR

The tool *IP Phone Administrator* is used to monitor the DBC 43x phones in the network. The tool is used for the following:

- Find the IP address of the IP phones.
- Get an overview of all registered and non-registered phones
- View the firmware version in both registered and non-registered IP phones

IP Phone Administrator exists as a standalone application (product number CXC 109 0050), and as a task in MX-ONE Service Node Manager. For more information, see *Installation Instructions for DBC 433, DBC 434, and DBC 444*.