Recovery Installation Paper

February 2007
Build # 5

1 Introduction

This document describes a Recovery Installation, a useful procedure that resets the eLux configuration and firmware to the factory-delivered state.

You need to perform a recovery in case:

- eLux NG does not boot
- the password for LocalLogin has been changed and forgotten
- the flash card of the thin client is empty, i.e. does not contain an image
- the operating system on the flash is to be replaced by eLux NG
- a factory reset on the image on the flash is required
- an update from eLux 1.1 to eLux NG is required, whereas there are alternatives
- a message is shown during an update requesting a recovery.

A recovery overwrites the contents of the flash or the harddisk and installs the eLux NG software. It cannot be undone!

A recovery installation can be performed in 2 different ways:

- via USB stick, if the hardware supports the boot from USB mass storage devices.
- via network or RIS, if PXE is supported.

2 Recovery via USB Stick

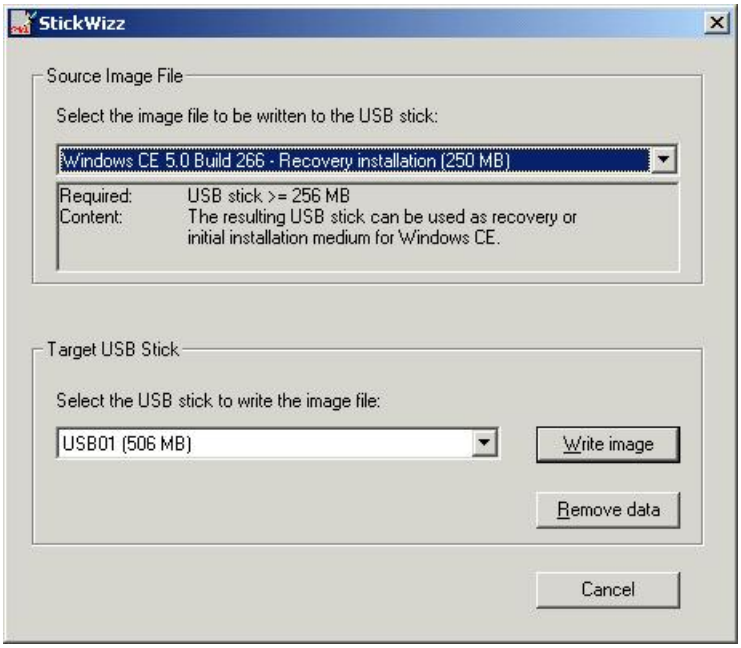
A recovery installation on FUTRO Thin Clients may be performed via USB Stick to install **eLux®NG** or **Windows CE®.**

Requirements:

- a Windows PC
- a USB Stick >= 256 MB

2.1 Preparing the Recovery via USB Stick

- From the FUTRO CD coming with your hardware please select the menu option "Recovery via USB Stick". In the next step select whether you wish to install **eLux NG** or **Windows CE**.
    - **As an alternative** (in case the CD is not available) you find a zip file in the download area of www.myelux.com: "CD-ROM / USB-Stick Images", category "FUTRO USB-Stick Images", which contains all required files for a recovery installation via USB stick.
    - Download the zip file on a Windows PC and unzip it into a /tmp directory.
    - Attach the USB Stick to the Windows PC.
    - Start the file **stickwizz.exe** to open the following dialog. This StickWizz dialog offers you the image to be written to the USB Stick.
- In the bottom area of the dialog please select the adequate USB Stick and click on **Write Image.**

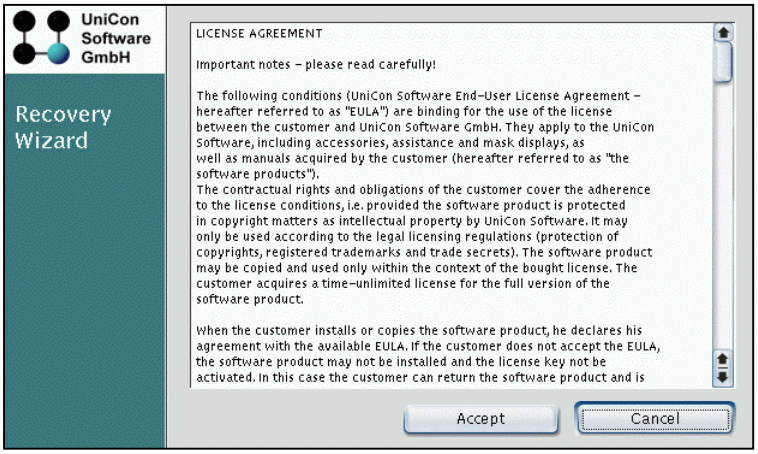


Example: StickWizz with source image file for Windows CE

The USB Stick now contains all the files required for a recovery installation at the Thin Client.

2.2 Performing the Recovery via USB Stick

- Please attach the USB Stick to the FUTRO **before** switching it on.
- Switch the FUTRO on and open the BIOS setup by pressing the <F2> key during startup. The BIOS setup will differ depending on the type of FUTRO:
  - **Futro S300**:
    - Choose the **Boot** menu and the submenu **IDE boot order**
    - Select your type of memory bird from the list.
    - Select the **Exit** menu and submenu **Save and Exit**.
    - Click "OK" to confirm.
  - **Futro S400**:
    - Select **Advanced Bios Features** and press <Enter>.
    - Change the list to these settings:
      First boot device [USB-CDROM]
      Second boot device [USB-HDD]
      Third boot device [HDD]
    - Press <F10>
    - Press <Enter> to **Save to CMOS and Exit**.
  - **Futro A230:**
    No BIOS features need to be set.
- The client now loads the operating system from the memory bird.
- A wizard starts up. Please **accept** the license agreement.



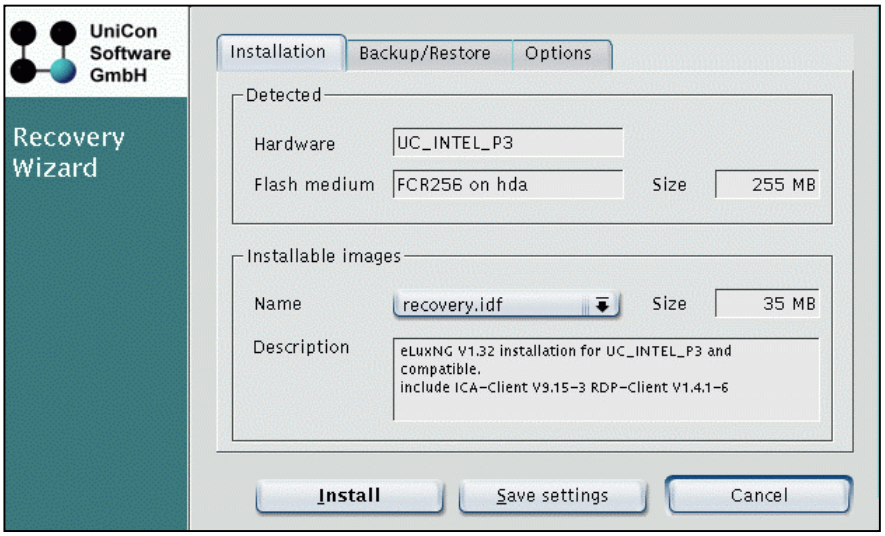
NOTE: If a window shows up with the message "The detected hardware differs from the last installation", press <Enter>.

The following dialog contains 3 tabs:

- Installation
- Backup/Restore: optional
- Options: optional

2.2.1 The Installation Tab

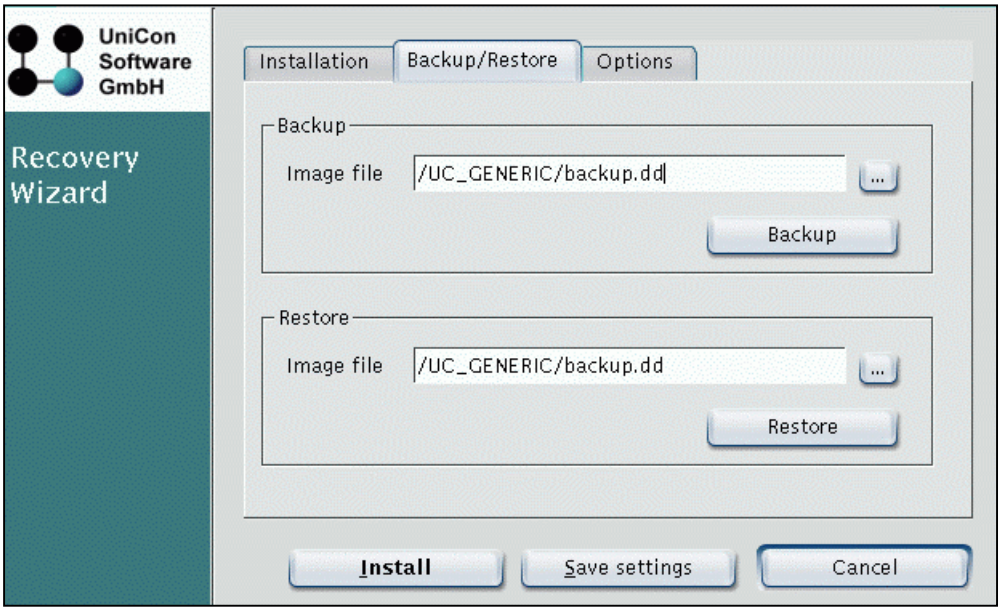
- The hardware, flash and flash size of the Thin Client are detected automatically. Also, the installable images and their size are offered by default.
- If you do not want to set any options, such as a keyboard layout, you can click **Install** in the **Installation** tab to start the recovery installation.



- If the recovery installation has been successful, the Thin Client shuts down. Please dismount the USB Stick and restart the Thin Client.

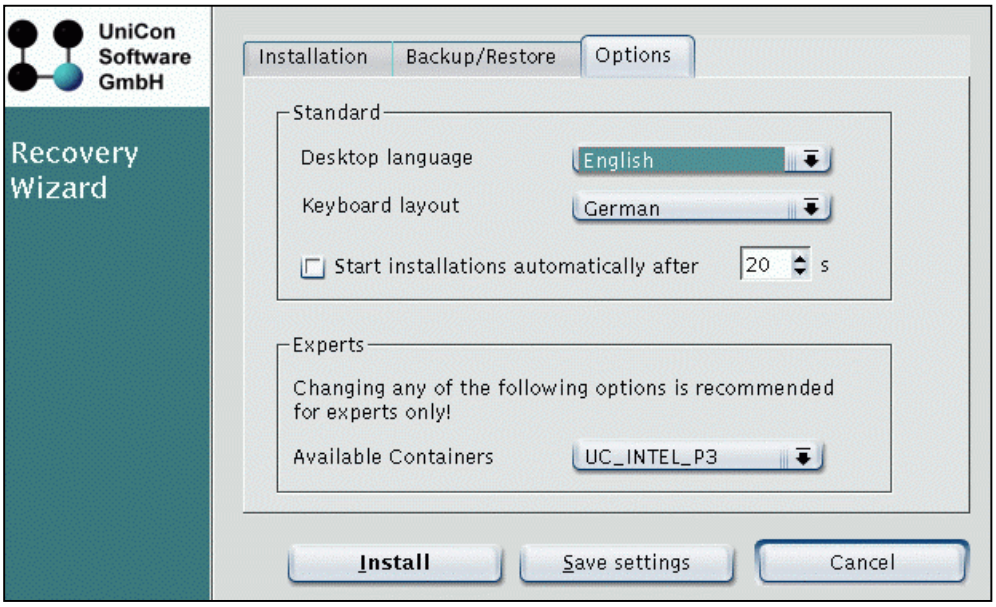
2.2.2 The Backup/Restore Tab

- This is an optional function and is meant to save your previous image **before** performing a recovery installation. It can be restored again.



2.2.3 The Options Tab

- Defaults can be set for desktop language and keyboard layout.
- A start time can be set to start the recovery installation automatically.
- Click **Save Settings** to save these on the USB Stick.
- Click **Install** to perform the recovery installation.



- If the recovery installation has been successful, the Thin Client shuts down. Please dismount the USB Stick and restart the Thin Client.

3 Recovery via Network (PXE)

A recovery via network requires that the BIOS of the client and the BIOS of the client's network card support PXE (Pre-Execution Boot).

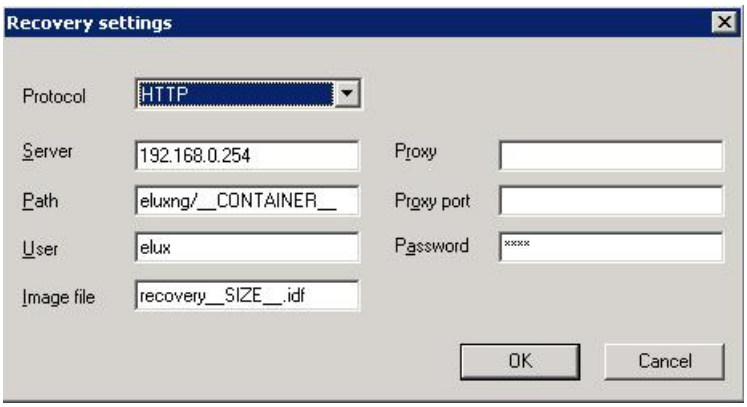
3.1 Required Components for the LAN Recovery (PXE)

- A Thin Client with BIOS supporting the Pre-Execution Boot Environment (PXE)
- A Local Area Network (LAN) connection
- The eLux NG CD-ROM with "Software & Tools", either coming with the hardware or to be downloaded from www.myelux.com.
- A DHCP Server for Windows 2000 or Windows Server 2003.
- An FTP or HTTP Server
- The TFTP Server included in the eLux NG "Software & Tools" CD from UniCon Software

3.2 Preparing the LAN Recovery (PXE)

Scout Enterprise provides all the required components to perform a recovery installation via network in an easy and comfortable way.
If you do not already use Scout Enterprise (or the previous version Scout NG), please follow the installation instructions in chapter 2.5 of our "Scout Enterprise Administrator's Guide". Select the recovery components during the install procedure.
Besides, a TFTP server is being installed (by default the installation directory is: …/UniCon/scoutng/tftpd), which is integrated into your system as a service. Please make sure that no other TFTP server is running on your system at the same time, because the recovery would not work in this case.

1. Edit the recovery settings in Scout via the menu
   Options > **Recovery settings**



Protocol:	FTP or HTTP Use one of the FTP or HTTP servers existing in your network. If your network should not provide any of these, use the Apache HTTP server integrated on the eLux NG CD-ROM (free).
Server:	IP address of the FTP or HTTP servers
Path:	Default: __CONTAINER__ (see our description of the container macro below)
User:	Even if your server does not request a user name or password, these fields must be filled – enter `elux` (uncapitalzed). An FTP password allows for symbols – e.g. @ for the anonymous FTP login.
Image file:	Default: __SIZE__ (see our description of the size macro below)
Proxy:	IP address of the proxy server. If there is none, leave it blank.

Proxy port: Port of the proxy server. If there is none, leave it blank.

Password: Even if your server does not request a user name or password, these fields must be filled – enter `elux` (uncapitalzed)`.` An FTP password allows for symbols – e.g. @ for the anonymous FTP login.

- **Container Macro**

The device hardware is automatically detected during the recovery process. The text __CONTAINER__in the **Path** field of the **Recovery settings** dialog box represents a macro that will automatically be replaced with the standard container name for that hardware. This greatly eases configuration and is especially useful for networks with more than one hardware platform. You must use containers with standard names.

As an administrator, naturally you can replace this text with a different text. In this case, the text in the **Path** field must be the actual container name.

- **Size Macro**

The device hardware is automatically detected during the recovery process. The text __SIZE__" in the **Image file** field of the **Recovery settings** dialog box represents a macro that will automatically be replaced with text corresponding to the size of the Thin Client's flash card as follows:

Text	Flash size (MB)
small"	32
medium"	96
large"	128
xxl"	256 or greater

For example, if a 32-MB flash card is detected, the recovery IDF "recoverysmall.idf" will be installed, if a 96-MB flash card is detected, the recovery IDF "recoverymedium.idf" will be installed, etc. If a harddisk is detected, the recovery IDF "recoveryxxl.idf" will be installed.

This greatly eases configuration and is especially useful for networks with different sizes of flash cards.

As administrator, naturally you can replace this text with the actual name of the recovery IDF. In this case, you lose the dynamic recognition of the macro. The size of the recovery IDF must equal to or less than the size of the flash card.

2. Finally, you have to configure your **DHCP Server** to provide the bootfile name and the address of the boot server (TFTP server):
   - Logon to your PC as administrator
   - Open the DHCP Manager.
     Start > **Programs** > **Administrative Tools** > **DHCP**
   - In the DHCP manager, go to the dialog box for configuring options.

     Click to select either the server options, scope options or a reservation. In the **Action** menu select **Configure**. In the **Options** dialog box go to the **General** tab. (Alternatively: **Advanced** tab > select **DHCP Standard options** from the **Vendor class** drop-down list.)
   - Configure the following options:

     003 Router: Enter one or more router IP addresses
     006 DNS Servers: Enter the DNS server IP address
     015 Domain Name: Enter the DNS domain name
     066 Boot Server Host Name: Enter the IP address of the TFTP server
     067 Bootfile Name: Enter **`pxelinux.0`**

- This completes the DHCP server configuration. These settings can remain on the DHCP server without affecting normal network operation.

3.3 Performing the LAN Recovery (PXE)

A recovery is initiated client-side. Initiate the recovery procedure via PXE by booting the client via LAN. If the client should not boot via network, please check if the First Bootdevice in the BIOS has been set to LAN. Many clients provide a boot menu where you can select the medium to boot from.

See the documentation included with your Thin Client to see what situation applies to you.

- A message appears. Choose one of the following (keyboard is by default English):
  - **Platform-specific container** (optional) Installs the container for this hardware platform. This option is displayed only if one of the following hardware was successfully detected:
  - **Processor Container**

Intel Pentium III (or compatible)	*UC_INTEL_P3*
Geode	*UC_GEODE_P1*
Via	*UC_VIA*
Transmeta Crusoe	*UC_TRANSMETA*

  - **Generic container** Installs the PC container (UC_PC).
  - **Quit** Allows you to cancel the procedure.
- The recovery starts. Do not turn off the Thin Client off during a recovery!
- After a successful boot, a “Success” message appears and the Thin Client restarts.

4 Recovery via RIS

This manual describes briefly the installation of eLux via RIS server (Microsoft Remote Installation Service) to a PXE (Pre execution Environment) bootable Thin Client or PC. Please consider that the eLux containers must be available vie HTTP/FTP for the recovery via RIS to succeed.

4.1 Required Software Components

Microsoft Windows 2003 Server

- DNS Server
- DHCP Server
- Active Directory Domain
- RIS Server Installation
- HTTP/FTP Server, mostly provided by installing Scout NG or Scout Enterprise

UniCon Software GmbH

- eLux idf Recovery Files (http://www.myelux.com/)
- eLux Packages (http://www.myelux.com/)
- eLux RIS Recovery zip File

emBOOT

- RIS Menu Editor Version 2.0 (http://www.emboot.com/downloads.htm)

4.2 RIS Server File Structure

During the standard installation of the RIS server a folder named „RemoteInstall“ is created. To provide the required eLux files the "eLux RIS Recovery.zip" must be stored on the directory D:\RemoteIntall\tmp. The zip file can be obtained from UniCon Software on request.

4.3 Defining an eLux RIS Image via the RIS Menu Editor

Start the program **risme.exe** - source: http://www.emboot.com/downloads.htm - and create a RIS boot menu entry for the eLux image. To do this, please select **Add** and then **Single menu** and **image file**. Define the file **pxelinux.0** from D:\RemoteIntall\tmp as eLux bootfile, name the image and enter a description, if desired. When concluding the image creation the configuration is summarized and displayed. Confirm with **OK** and close the program **risme.exe**.

4.4 Moving the eLux Image Files into the RIS Installation Directory

Having defined the eLux boot menu entry for the RIS server, additional folders in the RIS directory "RemoteInstall" are created. Please copy the following eLux files from **D:\RemoteInstall\tmp** into **D:\RemoteInstall\Setup\English\Tools\ emBoot\i386**:

- elux.cfg
- elux.msg
- eluxfddisk.gz
- eluxng.krn
- eluxng.lss
- eluxngdisk.gz
- pxelinux.0

4.5 Providing eluxng.des to the Root Directory of the TFTP Servers

Copy the file **D:\RemoteInstall\tmp\eluxng.des** into the folder **D:\RemoteInstall**. Only a UNIX editor can be used to edit the file. Adjust the eLux URL to your update environment.

4.6 Configuration of the Default Domain Policy

In order to allow the user access to the eLux RIS Recovery Image via RIS, the access to the tools must be defined. To do this, please open the Group Policy Object of the Default Domain Policy and in **User Configuration** > **Windows Settings** in the **Remote Installation Service** settings switch the button **Tools** to **enabled**.

4.7 Initiating the RIS Recovery

The recovery is initiated client-side. The method used to initiate a recovery depends on your hardware platform.
Some – but not all – hardware platforms require you to first set remote boot to PXE in the Thin Client's BIOS and then call PXE from the boot menu.
Other hardware platforms offer a simpler possibility: you initiate a recovery simply by pressing a function key upon boot.
See the documentation included with your Thin Client to see what situation applies to you.

- To configure the protocol on the Thin Client:
  - Upon boot, press the function key that opens BIOS for your hardware platform. See the documentation that was included with the Thin Client if you are unsure.
  - Set "LAN remote boot" to PXE.
  - Save your settings and exit BIOS.
- To select the protocol from the Thin Client boot menu:
  - Upon boot, press the function key that opens the boot menu for your hardware platform. See the documentation that was included with the Thin Client if you are unsure.
  - Select PXE and press ENTER.

5 Troubleshooting

In general we recommend to consult the server log files for troubleshooting during a recovery procedure: …`/UniCon/scoutng/tftpd/tftpd.log` (setting DEBUG=5 for TFTP), rsp. the DHCP server log file.

During a recovery, package installation will be displayed graphically. You can press CTRL – ALT – F4 to leave graphics mode and switch to a text screen. This is useful for troubleshooting, to view any error messages that may be displayed.

Problem: After beginning a PXE recovery, a DHCP time-out occurs and the terminal just boots.

Solution: The DHCP server failed to respond. Check the network connection. Check the DHCP server's log file for the client to receive an IP address. Adapt DHCP Server settings if necessary.

Problem: The terminal begins a PXE recovery, then boots normally or displays a TFTP time-out error:
`TFTP open timeout`

Solution: The TFTP server failed to respond. Check if the TFTP server is available. Check the log file of the TFTPD daemon. Check the router/gateway and boot server settings for DHCP/BootP.

Problem: After beginning a PXE recovery, the following message is displayed:
`TFTP Error – File not found`
and the terminal just boots.

Solution: The TFTP server failed to send the bootfile (pxelinux.0). Check bootfile settings for your DHCP server and TFTP server log. Check access rights for the TFTP server's root directory.

Problem: Recovery stops. The screen is black and displays:
`could not find kernel image: linux`
`boot:`

Solution: The TFTP server failed to provide elux.cfg. Check the TFTP server log. Check access rights for recovery files. If necessary, copy this file from the recovery folder on the eLux NG CD to the TFTP server root directory.

Problem: Recovery stops. The screen is black and displays:
`could not find ramdisk image: eluxngdisk.gz`
`boot:`

Solution: The TFTP server failed to provide eluxngdisk.gz. Check the TFTP server log. Check access rights for recovery files. If necessary, copy this file from the recovery folder on the eLux NG CD to the TFTP server root directory.

Problem: Recovery hangs. The screen displays:
`ec = 406`
`...`
`elux-library....`
or it displays:
`failed` http://user:password@webserver
or
`failed` ftp://user:password@ftpserver

Solution: Transfer of the recovery IDF via FTP or HTTP server has failed. Wait for the FTP or HTTP time-out to occur. Check the address shown in:

`failed` http://user:passwort@webserver
or
`failed` ftp://user:passwort@ftpserver

Change the parameters in the file eluxng.des to refer to the correct address and make sure the recovery IDFs are available at this address. If necessary, copy the recovery files from the eLux NG CD to the recovery server root directory. The recovery would not work without these files.
Recovery files must be transferred as plain text. If you are using the Microsoft Internet Information server 6.0 or later, set MIME entry types as described in section 3.6.4. "Microsoft Internet Information Service" of the eLux NG Administator's Guide.
Verify that the file eluxng.des is a UNIX text file. If you have saved the file using a non-UNIX compatible text editor, such as WordPad for Windows, you may have corrupted the file. Open the FTP or HTTP server log file. If you see a line with the recovery file name (such as `recoverysmall.idf`) followed by an indecipherable character, the file format is no longer UNIX. Use an appropriate editor to save eluxng.des as a UNIX text file. If you use Scout NG, you can delete eluxng.des, run the Scout NG setup program and select “Repair”. A new eluxng.des file in the correct format will automatically be created.