Datacard® *Smart Card Module*

SmartWare Coupler Update Guide

April 2009

Part No. 539215-003, Rev A

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Revision Log

SmartWare Couple Update Guide

Revision	Date	Description of Changes
A	April 2009	First release of this document. Earlier versions were 539215-001 and -002.

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Introduction

The Datacard® Smart Card modules and key reader boxes can use couplers that are manufactured by SmartWare. These couplers incorporate a modular software architecture that allows SmartWare, Datacard, and user-developed applications to be loaded onto the couplers. While the couplers that are installed in your Smart Card module or SDK box were loaded and configured at the time of manufacture, there will be periodic updates to the software components that need to be installed on the coupler and, depending on the Smart Card module, you will most likely need to change the configuration of the coupler.

Depending on the equipment into which your SmartWare coupler is installed, there may be more than one way to update or configure operations. This manual describes how to configure and update your SmartWare couplers using a tool called SmartCfg, developed by SmartWare.

Introduction to the SmartWare Components

SmartWare couplers or key readers contain the following components created by SmartWare.

Boot: This component handles booting the coupler.

Safe (if installed): This component is a backup version of the operating system that is used in case the operating system is not available. Starting with release v2r22j of the MLOS, this component has been eliminated and is part of MLOS.

MLOS: This component is the coupler operating system.

Card Object: This component handles communication between the coupler and the card.

Each coupler also contains the following Datacard component:

SCIPSII: This component communicates between the coupler and the module as well as the Personalization Manager (SCS or APM with the APM Adaptor installed). It must be present for a production usable IP address to be assigned to the coupler (except for PB6500 where the IP Base and Node ID values are statically set in MLOS.ini).

If SCIPSII is not loaded and the couplers are installed in a rack module, the rack will set the couplers to the recovery IP's (192.168.0.x where x is the slot number + 80). See the Recovery Procedure section for information on working with the couplers in this state.

Introduction to Node ID, IP Base, and IP Addressing

SmartWare uses a Node ID and an IP base address to "calculate" an IP address for a coupler. The Node ID is added to the base IP address to determine the IP address of the coupler. For example:

IP Base Address = 172.27.3.0

Node ID = 8

Would result in an IP Address of 172.27.3.8

You must follow this rule when using SmartCfg as well as when configuring the SmartWare couplers.

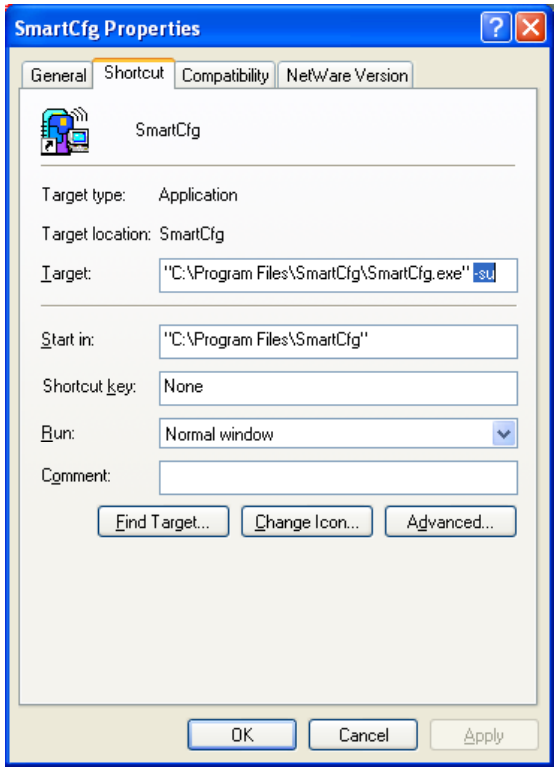
Installing SmartCfg

SmartCfg may be installed on the Controller PC at the time of manufacture. If it is not, you will need to install it on a PC that is running a supported Windows operating system and has TCP/IP access to the couplers. Typically it is most convenient to install SmartCfg on the Controller PC.

Use the following procedure to install SmartCfg.

1. Locate the SmartCfg installation files on the Smart Card Tools and Components CD (\common\smartcfg).
2. Run the **SmartCfgSetup_xxxxx.exe** program and accept all defaults, where xxxxx represents the current version of the SmartCfg application (e.g. SmartCfgSetup_v4r15b.exe).
3. Change the operating mode to "superuser."
   A. Locate the shortcut for the SmartCfg file icon on the desktop or the shortcut you will use to execute SmartCfg.
   B. Right-click on the icon and select **Properties**.
   C. Click the Shortcut tab.

D. In the Target box, add **-su** to the end of the string outside the quotation marks as shown in the following example window.



E. Click **OK** to save the changes.

F. Repeat steps A through E for any other shortcuts for SmartCfg.

Configuring SmartCfg for Smart Card Systems

You must configure SmartCfg before using it to communicate with the couplers.

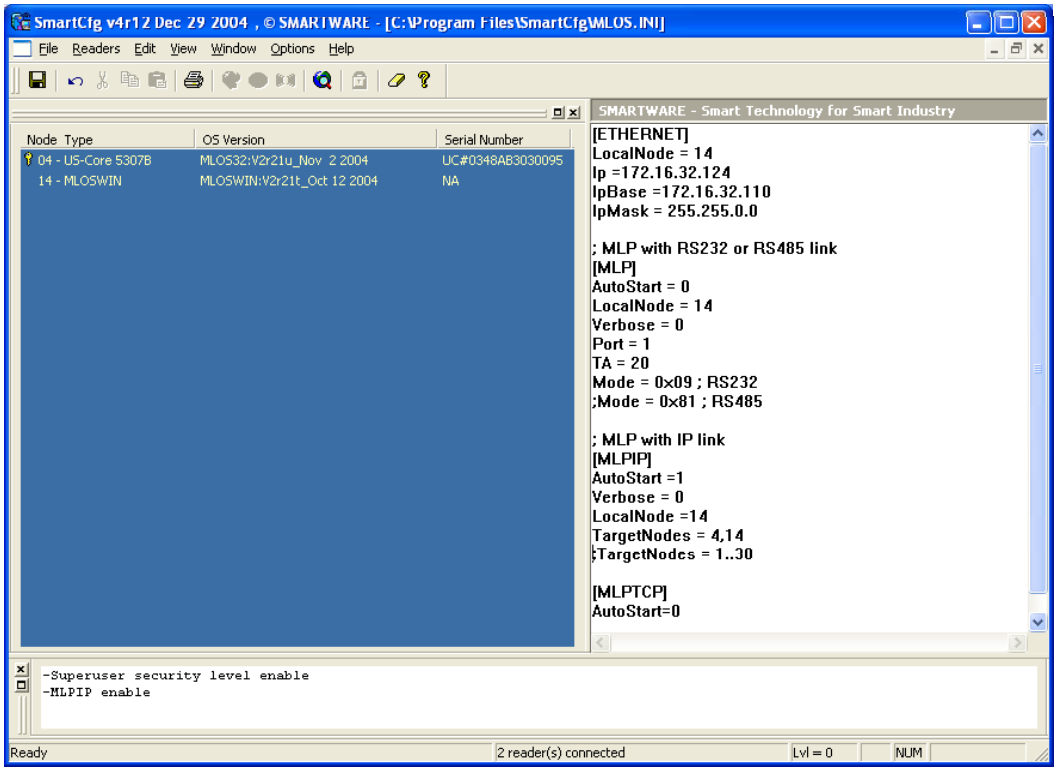
Do not confuse the local MLOS.ini (SmartCfg) with the actual coupler's MLOS.ini file. The local MLOS.ini file is used to configure SmartCfg to communicate with the couplers. The coupler's MLOS.ini is used to configure how the couplers communicate with everything else. Refer to Introduction to Node ID, IP Base, and IP Addressing for background information.

Do not modify any settings or sections in the MLOS.ini file other than those described below without prior knowledge or instruction. This could result in a loss of communication to the coupler.

1. Start SmartCfg.
2. If the MLOSWIN Configuration Wizard starts, click **No**.

Do not confuse the local MLOS.ini (SmartCfg) with the actual coupler's MLOS.ini file. The local MLOS.ini file is used to configure SmartCfg to communicate with the couplers. The coupler's MLOS.ini is used to configure how the couplers communicate with everything else.

3. From the main menu of SmartCfg, select **Options | Local Mlos.ini | Edit MLOS.ini configuration file**. The MLOS.ini file will open in the right pane of the tool. A sample file is shown.



4. Change the parameter "IP =" to the IP address of the PC running SmartCfg that is used to communicate with the couplers. If SmartCfg is installed on the Controller PC, the IP address will be 172.27.0.254 and the setting would resemble:

   IP = 172.27.0.254

5. Change each of the "LocalNode =" parameters to match the Node ID of the PC SmartCfg is installed on. Typically the local node will be the last octet of the IP address in step 4. If SmartCfg is installed on the Controller PC, the Node ID will be 254 unless the recovery address is used. The entries should look like the following with the Node ID number for your system listed.

   LocalNode = 254

6. Change the parameter "IpBase =" to match the IP base address of your couplers. On Maxsys/MX Series/PB6500 systems, if the coupler IP has not been overridden or a non-standard IP used, the IP Base will be 172.27.x.0 where x represents the module number the coupler(s) to be updated are

installed. For example, if a Smart Card module is module 4 in the system (Controller is 0), the IP Base is 172.27.4.0 and the setting would look like:

IpBase = 172.27.4.0

7. In the [ETHERNET] section, add the parameter "IPMask = xxx.xxx.xxx.xxx" where xxx.xxx.xxx.xxx is a valid subnet mask for your network. On Maxsys/MX Series/PB6500 systems, the IP Mask is typically 255.255.0.0 and the entry would resemble:

   IPMask = 255.255.0.0

8. In the [MLPIP] section, change the parameter "TargetNodes =" if the nodes listed are not in the range of nodes for your couplers. If you want to list each node ID, type the list as "1,2,3". If you want a range, type the list as "1..30". If you want a mix, type the list as "1,2,5..25". A common entry to list the couplers for most modules would look like:

   TargetNodes = 1..11

9. Close the MLOS.ini window and click **Yes** to save the changes.
10. A dialog window will appear stating: "Do you want to apply now new changes?" Click **Yes**. SmartCfg will scan for the couplers.
11. From the main menu select **Options|Edit SmartCfg configuration file** (SmartCfg.ini). The SmartCfg.ini file will open in the right pane of the tool.
12. In the [CFG] section, change the parameter "ReaderMax=19" to "ReaderMax=255". This will allow SmartCfg to look for node IDs larger than 19.
13. Close the SmartCfg window and click **Yes** to save the changes.
14. A dialog window prompts: "Do you want to apply new changes now?" Click **Yes**.
15. You should see the couplers that are within the parameters/network you have set in the SmartCfg Mlos.ini file. They will be listed as "US-Core" or "MX-Core" depending on the Smart Card module you are using and preceded by their node ID. If you do not see the couplers, click the **Detect target(s)** icon to try to find them. If you still do not see the couplers, repeat these steps and verify your communication parameters and/or that the couplers are powered on and respond to PING on the expected IP address.

To configure the basic communication parameters within SmartCfg, you can also use the MLOSWIN Configuration Wizard. However, this wizard does not give you the ability to change all parameters in the Mlos.ini file. If you choose to use the wizard, be certain to check MLPIP as the protocol.

Configuring a SmartWare Coupler

Rack style managed modules (such as Maxsys and MX Series systems) are configured automatically based on its position in the rack. For example, a coupler installed in slot 1 (or station 1) has a node ID of 1. The MLOS.ini can be left as set at the factory, and this section skipped for such systems unless the Gateway IP needs to be configured. If the Gateway IP does need to be configured, only steps 1, 2, 6, and 7 need to be followed. A copy of the MLOS.INI contents as shipped from the factory is provided on the Smart Card Tools and Components CD-ROM.

When the coupler left the factory, it was configured with default settings. On the PB6500 system, you must choose a node ID for each coupler. The IP base must be consistent with all couplers in the network. The IP address of the coupler will be the IP base + the node ID. For example:

IP Base Address = 172.27.3.0

Node ID = 4

IP Address = 172.27.3.4

Follow the procedure below to configure the couplers in non-rack systems (PB6500) or steps 1, 2, 6, and 7 if you are adding a Gateway IP to a rack system.

1. Connect to the coupler(s) using SmartCfg. See Configuring SmartCfg for Smart Card Systems for details on setting SmartCfg to the correct communication parameters.
2. Select the coupler you wish to configure, right-click, and then select **Edit MLOS.INI**. The coupler's MLOS.ini file is displayed in the right pane of SmartCfg.

   Do not confuse the local MLOS.ini (SmartCfg) with the actual coupler's MLOS.ini file. The local MLOS.ini file is used to configure SmartCfg to communicate with the couplers. The coupler's MLOS.ini is used to configure how the couplers communicate with everything else.
3. Change each of the "LocalNode =" parameters to match the Node ID chosen for this coupler.
4. Change the parameter "IPBase =" to match the IP base address of your couplers.
5. Change the parameter "IPMask = xxx.xxx.xxx.xxx" where xxx.xxx.xxx.xxx is a valid subnet mask for your network.
6. Change the parameter "IPGate =" to the gateway you are using. If not using a gateway, use 0.0.0.0. If using a gateway, the address typically 172.27.0.254.
7. Close the MLOS.ini window and click **Yes** to save the changes. A dialog may appear warning that serial communication will be disabled and asking if you

want to continue. Click **Yes**. A dialog window will appear asking if you want to reboot the coupler. Click **No**.

8. With the coupler still selected, right-click and then select **Edit User.ini.** The couplers User.ini file is displayed in the right pane of SmartCfg. Add the following to the file.

   [DATACARD]

   StationType = PB

   HostIP = 172.27.0.x where the x is the position of the module.

   Example: For a module at position 6,

   HostIP = 172.27.0.6

9. Close the User.ini window and click **Yes** to save the changes.

10. Depending on which Smart Card module your coupler is installed in, you may lose communication to the coupler at this point. This is okay, but you will need to reboot your system once you are finished configuring all couplers. Repeat steps 2 through 9 for each coupler you need to configure.

Updating a SmartWare Coupler or Key Reader

When your coupler was shipped from the factory, it was installed with the latest released SmartWare and Datacard software components. Depending on your implementation, you may need to change these components to match the current versions you are using. Also, there are periodic updates to one or more of these components.

Please follow the procedure below to update a SmartWare coupler.

You must complete the steps in this procedure without interruption. Should a power-cycle occur during this process, the coupler will become disabled and special service procedures will be required to restore the coupler to a working state.

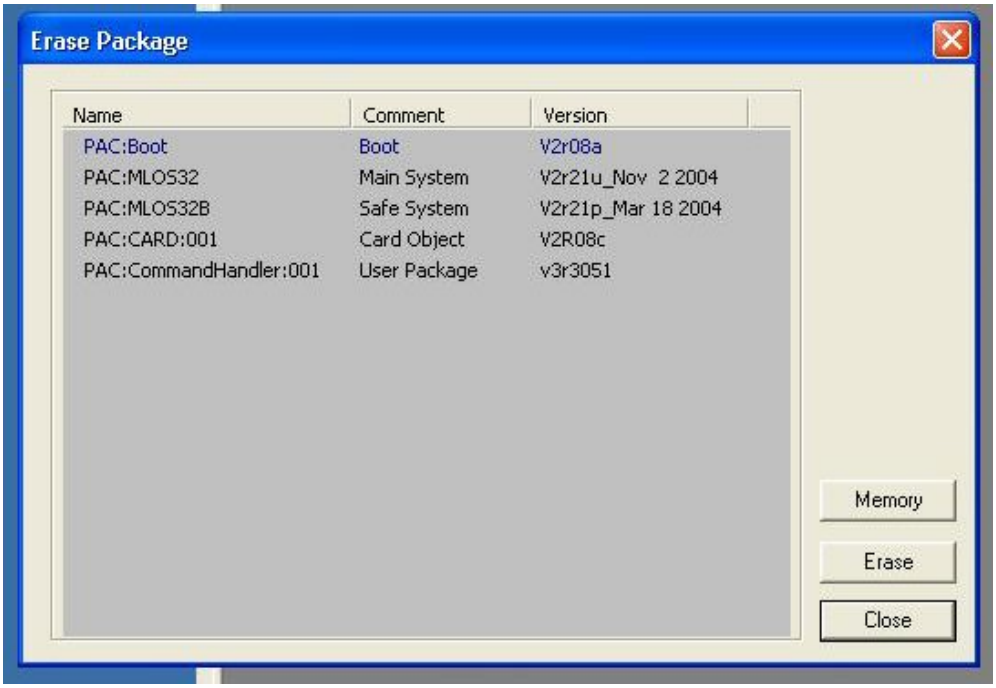
Do not perform or initiate a “scan” process unless a step requested that a reboot be done.

1. Locate the Smart Card Tools and Components CD for your Smart Card module.

2. Connect to the coupler(s) using SmartCfg. See Configuring SmartCfg for Smart Card Systems for details on setting SmartCfg to the correct communication parameters.

3. To see if a particular component is loaded, or versions, select a coupler, right-click, and select **Erase Packages**. The Erase Packages window opens. If the

MLOS (Main System) version is earlier than 23h, the coupler will have a “Safe System” loaded on it. If the “Safe System” is loaded, go to step 4; otherwise, go to step 18.



If an error occurs during any of these steps, try the task again without rebooting the coupler.

4. If the coupler has the command handler loaded, remove it. See the Remove Component section.

The “Safe System” will need to be removed. Follow these directions precisely. Failure to do so will result in the coupler becoming disabled and special service procedures will be required to restore the coupler to a working state.

5. If the coupler has the card object loaded, remove it. See the Remove Component section.

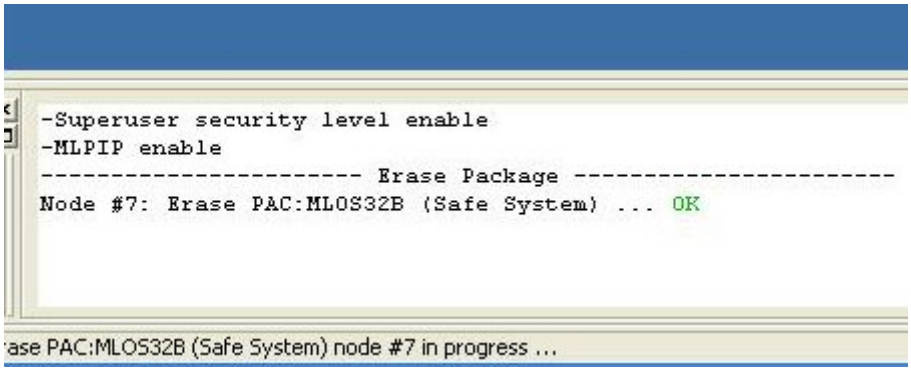
6. Check the boot version against the version in the release notes of the Smart Card Tools and Components CD. If there is a newer version on the CD update it. See Load Component section. **DO NOT REBOOT THE COUPLER!**

7. Check and load the MLOS version against the release notes of the Smart Card Tools and Components CD. See the Loading Component section. **REBOOT THE COUPLER by power cycling the system!**

8. If you are running on a Maxsys or MX system, you will need to set SmartCfg into recovery mode to see the coupler after the reboot. See the Recovery Procedure section for setting the SmartCfg.

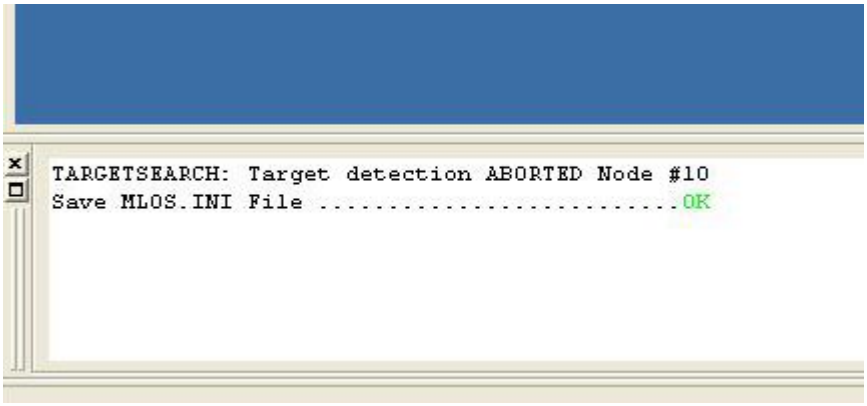
9. Verify that the correct version of MLOS is reported.
10. Erase the Safe, if present.
    A. Select the coupler(s), right-click, and select **Erase Packages**. The Erase Packages window opens.
    B. Select ***Safe System*** and click **Erase.**
    C. Click **Yes** at the confirmation dialog boxes, and then click **Close**.

You should see a green **OK** at the bottom of the window for each of the components you are deleting for each coupler. See example below.



11. Reboot the coupler by power cycling the system.
12. Load the Card Object from the Smart Card Tools and Components CD. See the Loading Component section.
13. Reboot the coupler by power cycling the system.
14. Load SCIPSII from the Smart Card Tools and Components CD. See the Loading Component section.
15. Update the MLOS.ini. Select the coupler(s), right-click, and then select **edit MLOS.ini**. You can either add the following lines to the end of the file, if they do not already exist or copy the MLOS.INI from the Smart Card Tools and Components CD to the window making sure to update IP and node information if necessary.

    [NETWORK]
    ARPTime = 0xFFFFFFFF
    ARPMode = Off
16. Close the window and click **Yes** to save changes.



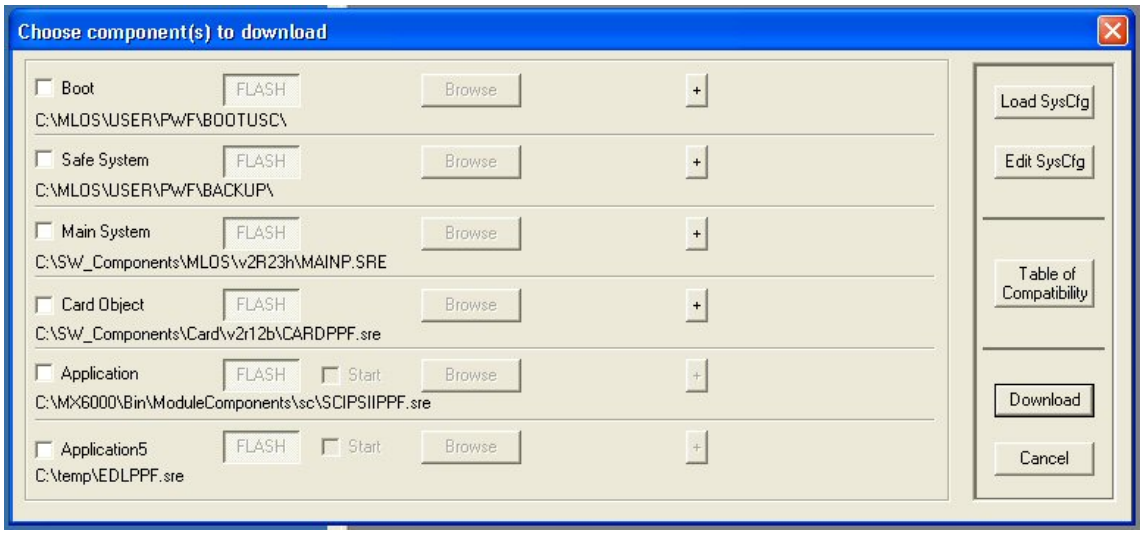
17. Reboot the coupler by power cycling the system. Go to step 20.
18. Load the updated component(s).
    - If you will be loading an updated MLOS, you will need to erase the Command Handler (if loaded) or SCIPSII (if loaded) and the Card Object (if loaded). See the Remove Component section. You can then load the MLOS. See the Loading Component section.
    - If you will be loading an updated Card Object, you must first erase the current version of Command Handler or SCIPSII and the Card Object. See the Remove Component section for more information on erasing components.
    - If you will be loading an updated SCIPSII, you must first erase the current version of Command Handler or SCIPSII. See the Remove Component section for more information on erasing components.
    - See the Loading Component section.
19. If your couplers are for rack style Smart Card modules (Maxsys or MX Series), click **No** at the reboot prompt. For all other modules, click **Yes** to reboot the readers.
20. Take SmartCfg out of recovery mode if it is in it and start at step 3 for remaining couplers; otherwise, go to step 21.
21. Verify loaded components on all couplers. See the Verifying the Update section.

Loading Component

Unless otherwise indicated in release notes for a particular component, you should load components in this order:

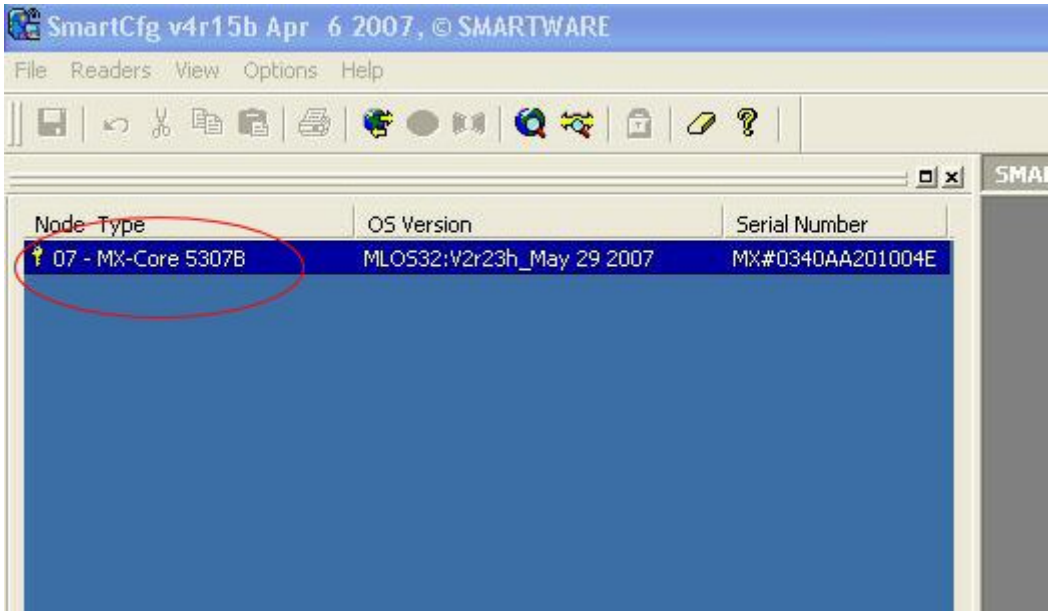
- Boot
- MLOS (main)
- Card Object
- SCIPSII

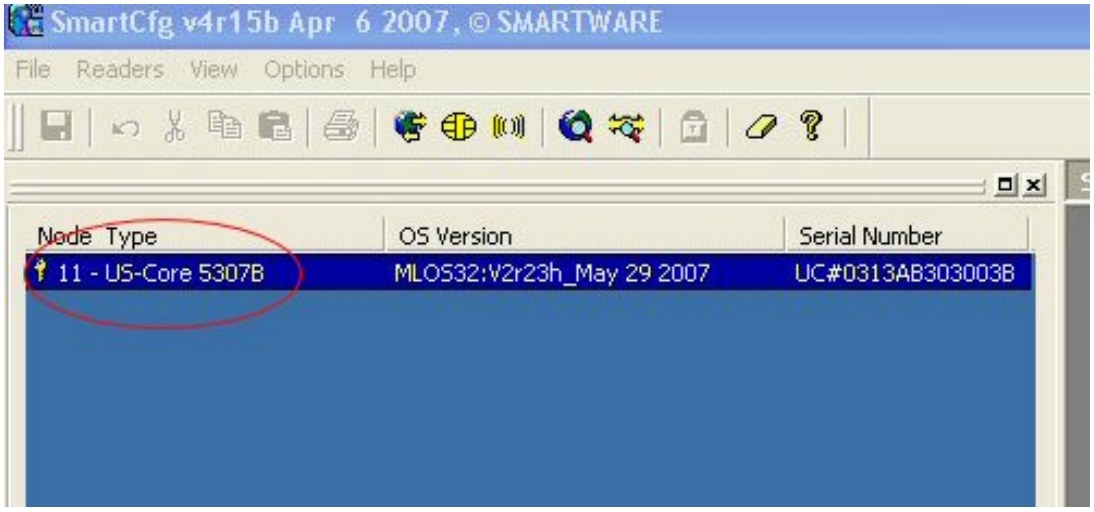
1. Select the coupler(s), right-click, and then select **Load Package(s)**. The **Choose component(s) to download** dialog opens.



2. Select the check box for the component you wish to load. Browse to the proper location and select the file. See the following for location on the Smart Card Tools and Components CD for the various components.

For boot you need to know which coupler you have as well as the version of the boot. Look at the main SmartCfg window to determine the coupler type.





For coupler type MX-CORE (\Common\BOOT\ BOOTMXC.SRE)

For coupler type US-CORE (\Common\BOOT\bootusc\ BOOTUSC.SRE).

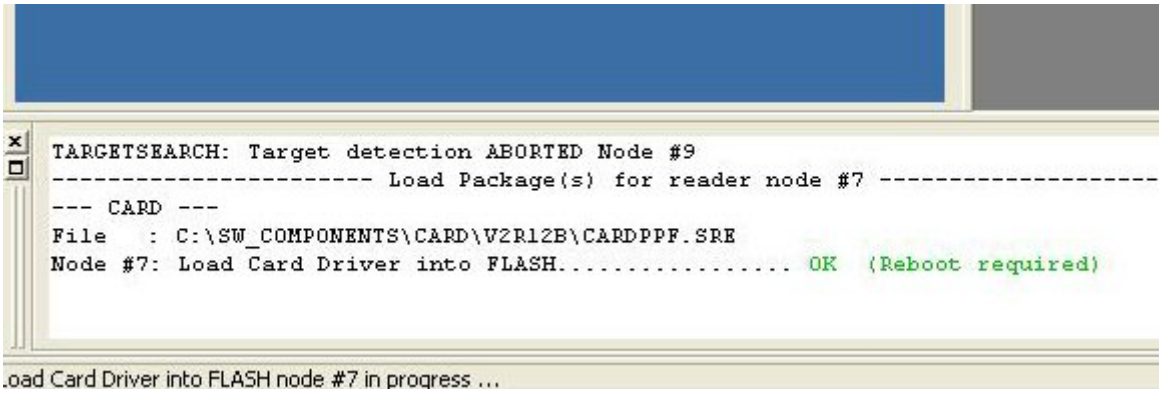
MLOS (\Common\MLOS\MAINP.SRE)

Card object (\Common\CARD\CARDPPF.SRE)

Application (\Common\SCIPSII\SCIPSIIPPF.SRE)

3. Press the **Download** button.
4. Verify the correct file to be downloaded is listed in the **SmartCfg** confirmation dialog and click the **Yes** button.

You should see a green OK for each of the components you are loading for each coupler. See picture below for an example if you were only loading the Card Object.

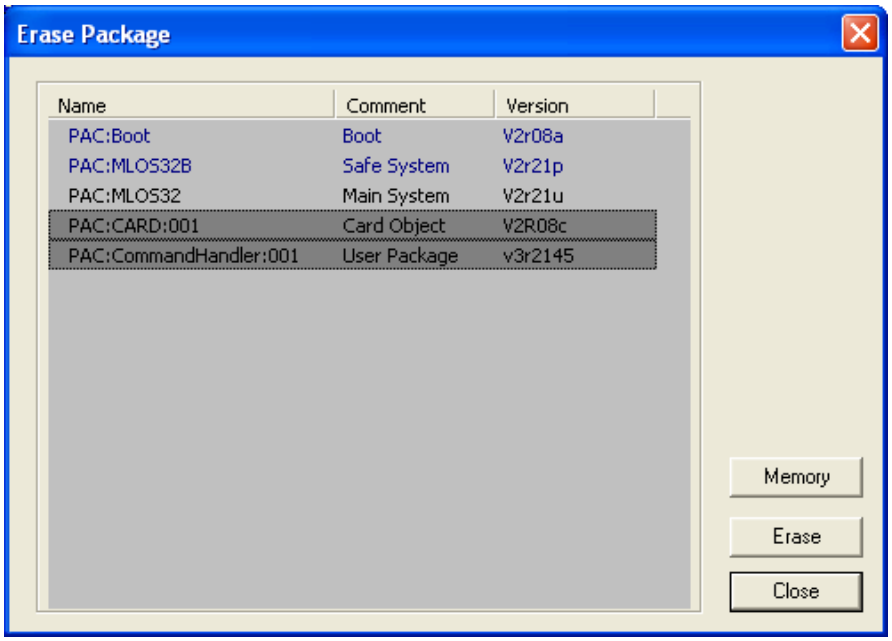


5. Click the **No** button for the **Reboot readers** dialog.

Remove Component

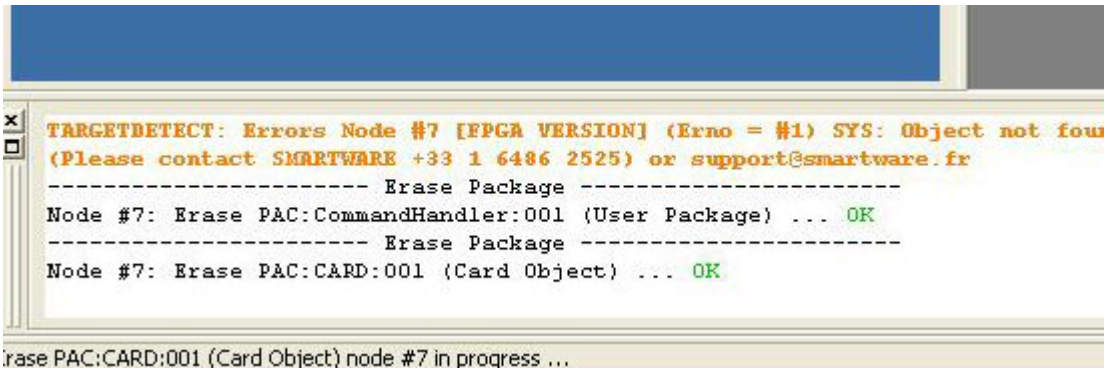
Never delete the boot.

1. Select the coupler, right-click, and select **Erase Packages**. The Erase Packages window opens.
2. Select the component(s) you wish to erase and click **Erase.**



3. Click **Yes** at the confirmation dialog boxes and then click **Close**.

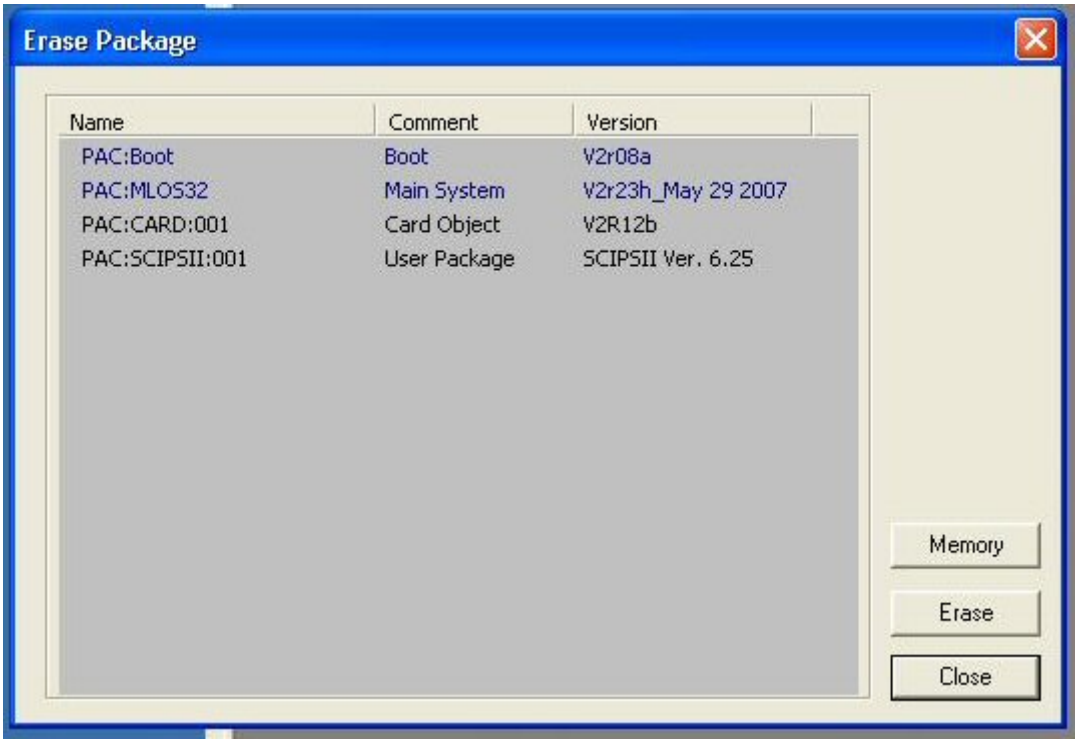
You should see a green OK for each of the components you are deleting for each coupler. See pictures below for some examples.



Verifying the Update

To verify that the update was successful or to read out the version of the components that are loaded to the coupler, follow the procedure below.

1. Connect to the coupler(s) using SmartCfg. See Configuring SmartCfg for Smart Card Systems for details on setting SmartCfg to the correct communication parameters.
2. Select the coupler, right-click, and select **Erase Packages**. The Erase Packages window opens and displays the current versions that are loaded.



3. Close the window when you have verified the versions against the release notes version on the Smart Card Tools and Components CD.

Configuring Key Readers

1. Connect to the key reader using SmartCfg. See Configuring SmartCfg for Smart Card Systems for details on setting SmartCfg to the correct communication parameters.
2. Select the key reader you wish to configure, right-click, and then select **Edit MLOS.INI**. The coupler's MLOS.ini file is displayed in the right pane of SmartCfg.

Do not confuse the local MLOS.ini (SmartCfg) with the actual coupler's MLOS.ini file. The local MLOS.ini file is used to configure SmartCfg to communicate with the couplers. The coupler's MLOS.ini is used to configure how the couplers communicate with everything else.

Example MLOS.ini located at \INI Files\Keyreader.

3. Change the "LocalNode =" parameters to match the Node ID chosen for this key reader.
4. Change the parameter "IPBase =" to match the IP base address of your key reader.
5. Change the parameter "IPMask = xxx.xxx.xxx.xxx" where xxx.xxx.xxx.xxx is a valid subnet mask for your network.
6. Change the parameter "IPGate =" to the gateway you are using. If not using a gateway, use 0.0.0.0. If using a gateway, the address is typically 172.27.0.254.
7. Close the MLOS.ini window and click **Yes** to save the changes. A dialog may appear warning that serial communication will be disabled and asking if you want to continue. Click **Yes**. A dialog window will appear asking if you want to reboot the coupler; click **No**.
8. With the key reader selected, right-click and then select **Edit User.ini.** The key reader's User.ini file is displayed in the right pane of SmartCfg. Add the following to the file.

   Example User.ini located at \INI Files\Keyreader.

   [DATACARD]

   StationType = Key
9. Close the User.ini window and click **Yes** to save the changes.
10. Click the **Yes** button at the **Reboot readers** dialog.

Recovery Procedure

For the rack style Smart Card modules, the IP addresses are assigned automatically at boot up. It is possible that the coupler will "lose" its IP address. This would make the coupler "invisible" to the system and to SmartCfg. You can still connect to a coupler in this state with SmartCfg, but you must configure it differently. The IP base of the coupler will be 192.168.0.80. The node ID should then be 1 for a coupler in station 1; therefore, its IP address would be 192.168.0.81. If the coupler cannot be seen following this format, it is still in the 192.168.0.xxx range, but will need to be "found" with SmartCfg.

Follow the procedure below:

1. Configure the system that SmartCfg is installed to have an IP address of 192.168.0.100 on NIC connected to the module bus. If on a Maxsys, MX Series, or PB6500 system, add a second IP address to the module bus NIC. This NIC always has 172.27.0.254 as its first address. You must delete this second IP prior to card operation; otherwise, key reader operation may be affected.

2. Perform the steps in Configuring SmartCfg for Smart Card Systems with the following settings:

   IP base = 192.168.0.80

   Node ID = 20

   TargetNodes = 1..175

   The target node setting will allow for all possible node IDs (couplers) to be seen.

3. You can now perform whatever updates are necessary.

4. When the update is successful, perform the steps in Configuring SmartCfg for Smart Card Systems section.

5. Remove the 192.168.0.100 IP address. If it was configured as a second IP address, it can just be deleted. Otherwise restore the normal IP address.

Configuring a Coupler or Key Reader for Earlier CIS Versions

If you need a coupler or key reader to function with Maxsys/MX Series/PB6500 controller software versions 5.2 or earlier, it will need to be re-configured. See the Datacard website or the PartnerPage downloading Smart Card Components section to obtain the directions and components to re-configure the coupler and/or key reader.