Datacard® Smart Card

SmartWare Coupler Update Guide

April 2006

Part No. 539215-002, Rev D

Liability Statement

This product has been built to the high standards of Datacard Group. Please do not attempt to operate or repair this equipment without adequate training. Any use, operation, or repair in contravention of this document is at your own risk. By acceptance of this system you hereby assume all liability consequent to your use or misuse of this equipment. Datacard assumes no liability for incidental, special, or consequential damage of any kind. Equipment specifications, applications, and options are subject to change at the sole discretion of Datacard without notice.

Proprietary Notice

Trademark Acknowledgments

Datacard Group
11111 Bren Road West
Minnetonka, MN 55343-9015
Phone: 952-933-1223
Fax: 952-933-7971
www.datacard.com

Contents

Revision Log

SmartWare Coupler Upgrade Guide

Revision	Date	Description of Changes
A	June 2004	First release of this document.
B	October 2004	Updated various topics.
C	July 2005	Updated for SCPM v3.3 release.
D	April 2006	Added Affina branding information. Merged all smart card systems into one document.

Introduction

The Datacard® Contactless Smart Card modules, the Datacard® 9000 Series 11-Station module, and the UltraSmart Test Box use couplers that are manufactured by SmartWare. These couplers incorporate a modular software architecture that allows SmartWare, Datacard, and user-developed components 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

Each of the Datacard Smart Card modules, or the SDK box using SmartWare couplers, contains the following SmartWare components.

- **Boot**: This component handles booting the coupler.
- **Safe**: This component is a backup version of the operating system that is used in case the operating system is not available.
- **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.

- **CommandHandler**: This component communicates between the coupler and the systems controller software. It must be present for an IP address to be assigned to the coupler, except in the case of the Datacard 9000 Series Contactless module.

At run-time, an additional user component is downloaded to the coupler. Datacard uses the following user components with Affina® Personalization Manager or Smart Card Personalization Manager (SCPM) products.

- **SCPMUS.SRE:** This component communicates between the contactless coupler and Personalization Manager software.

- **SCPM.SRE:** This component communicates between the Datacard 9000 Series 11-station contact coupler and Personalization Manager software.

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

IP Address = 172.27.3.8

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

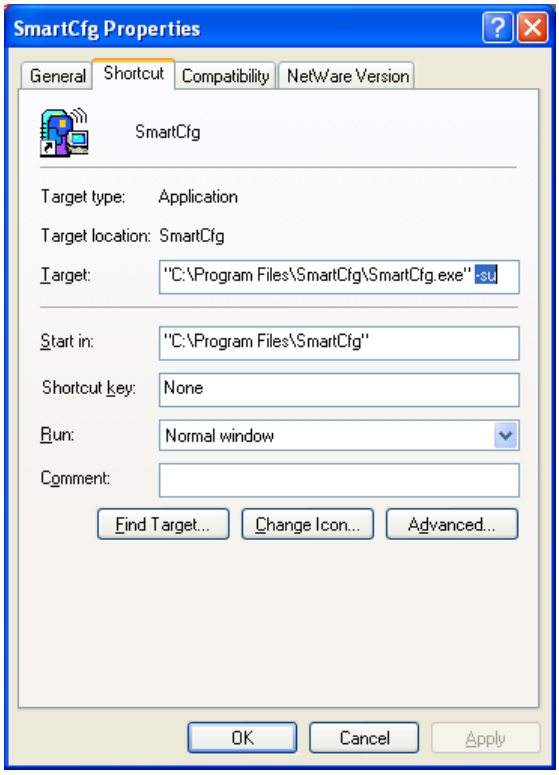
Installing SmartCfg

Depending on the type of Datacard equipment your SmartWare couplers are used with, 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 Windows operating system.

Use the following procedure to install SmartCfg.

1. Locate the SmartCfg installation files on either the Affina Issuance CD or the Smart Card Tools and Components CD.
2. Run the SETUP.EXE program and accept all defaults.
3. Change the operating mode to "superuser."
   A. Locate the shortcut for the SmartCfg file icon on the desktop.
   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 as shown in the example below.



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

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

Configuring SmartCfg

You must configure SmartCfg before using it to communicate with the couplers. There are three steps to configuring SmartCfg.

1. Determine the IP base address and node ID range of the couplers you want to connect to.

   A. Refer to "Introduction to Node ID, IP Base, and IP Addressing" on page 2 for background information. You must know the IP base address and node ID range of the couplers so that you can set a correct IP address on the PC that is running SmartCfg.

   B. On Maxsys/MX6000 systems, use an IP Base of **172.27.*x*.0** where *x* represents the module number you must update. For example, if a contactless module is module 4 in the system, the IP Base is 172.27.4.0. The Node ID range for the couplers is 1 to 11.

2. Calculate the IP address of the PC running SmartCfg to an IP address within the coupler network.

   A. Choose a node ID that is not in use (example: 14).

   B. On Maxsys/MX6000 systems, the IP is always **172.27.0.254**, so enter that value and continue at step 3. For other systems, add the node ID to the IP base (example: IP base 172.27.3.0 + 14 = IP address 172.27.3.14).

   C. Set the IP address of the PC (example: 172.27.3.14).

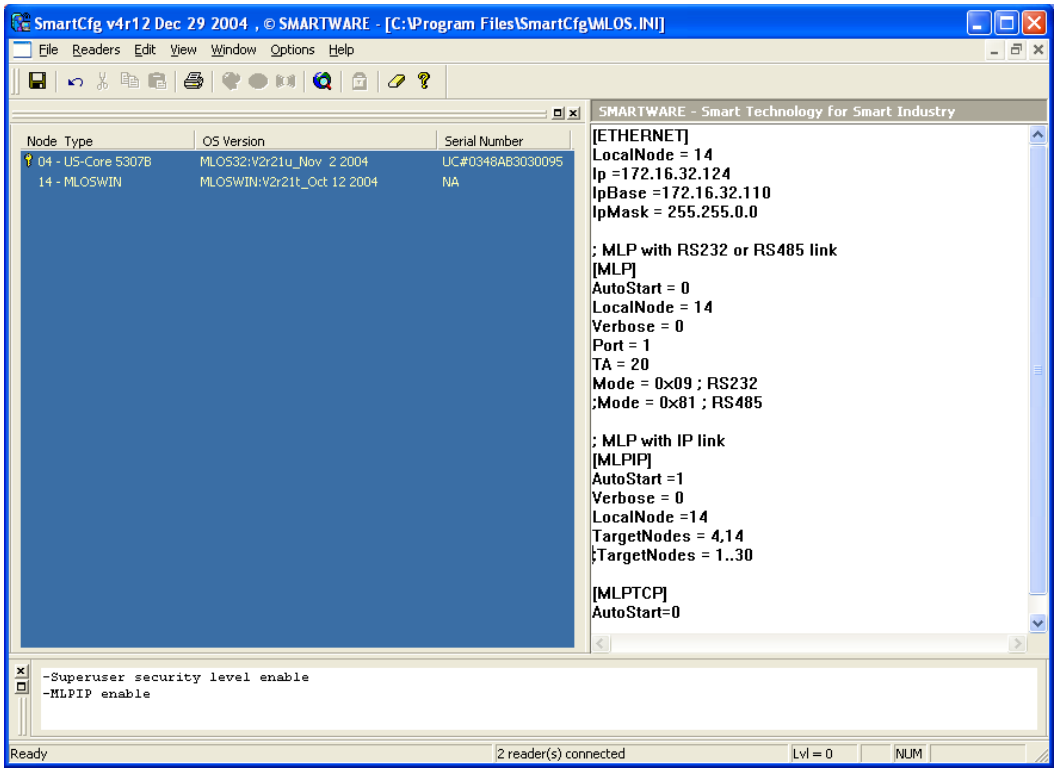
3. Configure the Local MLOS.ini file and the SmartCfg.ini within SmartCfg.

   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.

   A. Start SmartCfg.

   B. If the MLOSWIN Configuration Wizard starts, click **Cancel**.

   C. 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 below.



D. Change each of the "LocalNode =" parameters to match the Node ID chosen in step 2A.

E. Change the parameter "IpBase =" to match the IP base address of your couplers.

F. Change the parameter "Ip =" to the IP address of the PC running SmartCfg.

G. 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/MX6000 systems, the IP Mask is typically **255.255.0.0**.

H. 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".

I. Close the Mlos.ini window and click **Yes** to save the changes.

J. 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.

K. In the [CFG] section, change the parameter "ReaderMax=19" to "ReaderMax=255". This will allow SmartCfg to look for node IDs larger than 19.

L. Close the SmartCfg window and click **Yes** to save the changes.

M. 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. If you still do not see the couplers, repeat these steps and verify your communication parameters and/or that the couplers are powered on.

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 modules (such as Maxsys and MX6000 systems) should not be configured because the node ID is automatically assigned to its position. For example, a coupler installed in slot 1 (or station 1) has a node ID of 1. MLOS.ini should be left as is, and this section can be skipped for such systems. 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. These settings may need to be changed to suit your implementation needs. The following procedure should be done once for each new coupler you want to reconfigure. You should not need to configure the coupler again unless you change your network, move the coupler to a different network, or change the slot the coupler is plugged into (rack style Smart Card modules only).

On the Datacard 9000 Series contactless module, 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.

1. Connect to the coupler(s) using SmartCfg. See "Configuring SmartCfg" on page 3 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.
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 "Ip =" to the IP address of the coupler.

6. Change the parameter “IpMask = xxx.xxx.xxx.xxx” where xxx.xxx.xxx.xxx is a valid subnet mask for your network.
7. Change the parameter “IpGate =” to the gateway you are using. If not using a gateway, use 0.0.0.0.
8. Close the Mlos.ini window and click **Yes** to save the changes.
9. 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 8 for each coupler you need to configure.

Extracting Updated Components from the CD

Before the components can be downloaded to the coupler, the updated files must be extracted from the Smart Card Tools and Components CD-ROM.

The following naming convention is used for SmartWare updates:

- *Object_Version*.exe where *Object* is the name of the object and *Version* is the version of the object.

For example, MLOS_v2R21u.exe includes MLOS version 2r21u in a self-extracting zip file. Double-clicking the file runs the setup utility that extracts the files and creates a default directory structure in the Controller PC's root directory. In this structure, the folder name for each object includes the version number. The SmartCfg application reads this directory structure and automatically makes these file available for loading to the SmartWare couplers once they've been extracted.

Command Handler updates are always named CMDHANDLERPPF.sre, and the version of Command Handler is included in the DCCVersions.txt file. Command Handler may be updated directly from the CD-ROM or copied to a directory on the Controller PC using the convention described above; for example, C:\CmdHandler\v3r3051.

Use the following procedure to extract the updated components from the CD-ROM to the Controller PC.

1. Browse to the folder on the Smart Card Tools and Components CD-ROM called **UltraSmart.**
2. Double-click on the component you wish to extract.
3. Click **Accept** to accept the license agreement.
4. Click **Install** to extract the file.

5. Repeat steps 2 through 4 for each of the components contained on the CD-ROM.

Updating a SmartWare Coupler

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 at anytime while performing this procedure.

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

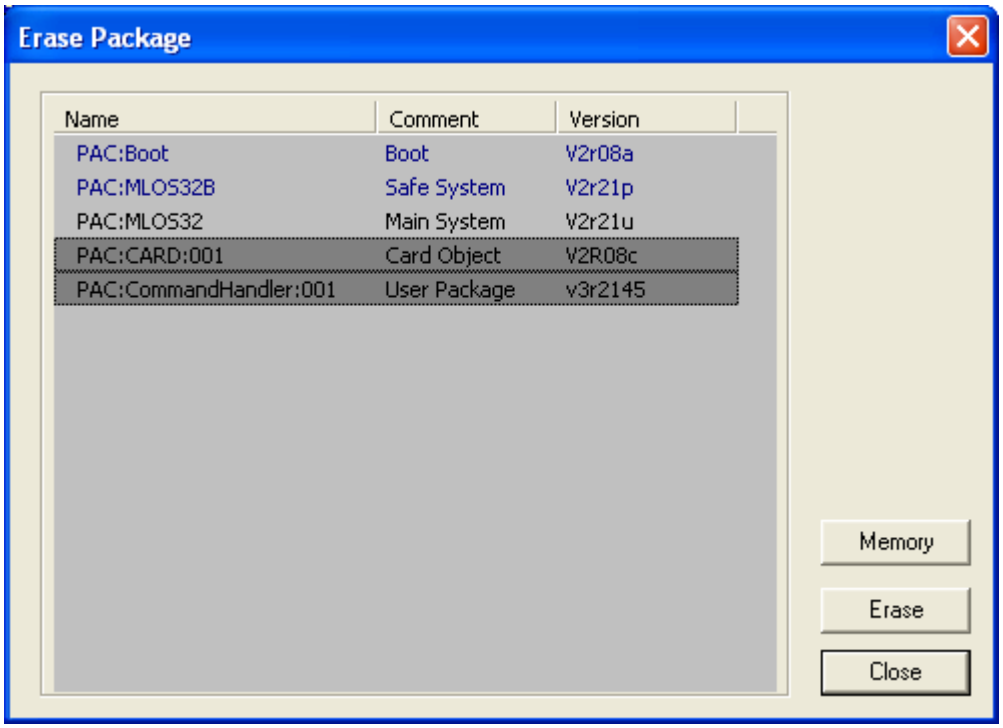
   If your Smart Card Tools and Components CD contains a self-extracting file, please see "Extracting Updated Components from the CD" on page 7.

2. Connect to the coupler(s) using SmartCfg. See "Configuring SmartCfg" on page 3 for details on setting SmartCfg to the correct communication parameters.

3. If you will be loading an updated Command Handler and/or Card Object, you must first erase the current version of Command Handler and/or the Card Object.

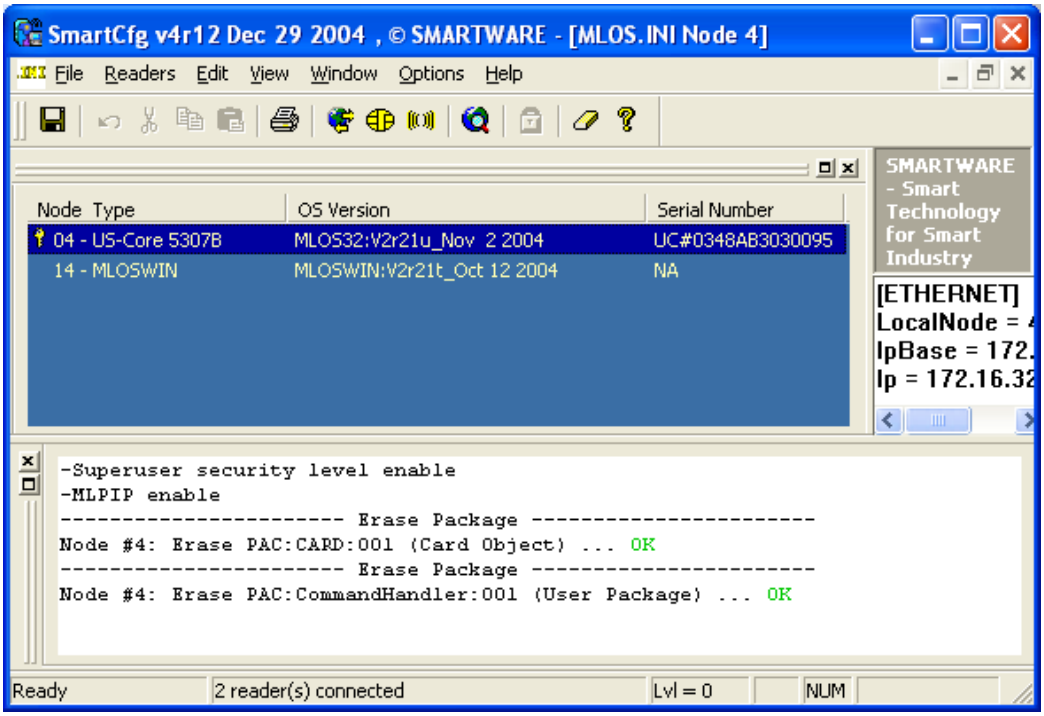
   A. Select the coupler(s), right-click, and select **Erase Packages**. The Erase Packages window opens.

   B. Select the Card Object and/or Command Handler and click **Erase.**



C. 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 example below.



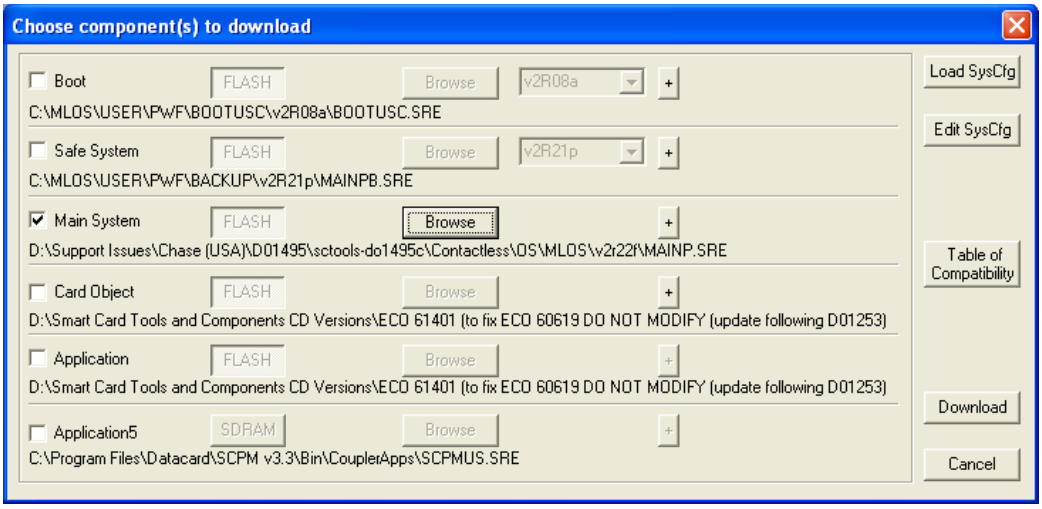
4. Load the updated component(s).

   A. Select the coupler(s), right-click, and then select **Load Packages**. The Load Packages window opens.

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

   - Boot
   - Safe System
   - MLOS (main)
   - Card Object
   - Command Handler

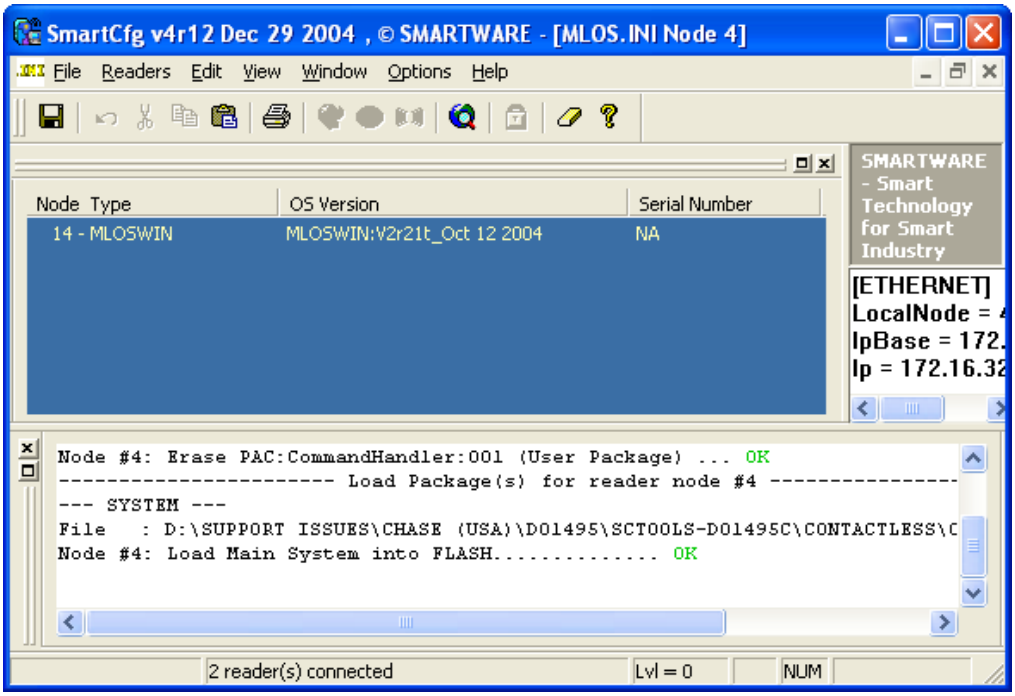
B. Select the type of component to load, browse to the file, and then click **Download**. To load the Command Handler, select **Application**.



You may download Boot and Safe System together in one download. It is recommended that you load the other components separately.

C. Click **Yes** at the confirmation dialog box.

You should see a green OK for each of the components you are loading for each coupler. See example below.



D. If your couplers are for rack style Smart Card modules, click **No** at the reboot prompt. For all other modules, click **Yes** to reboot the readers.

E. Repeat steps A through D for any other components you need to load.

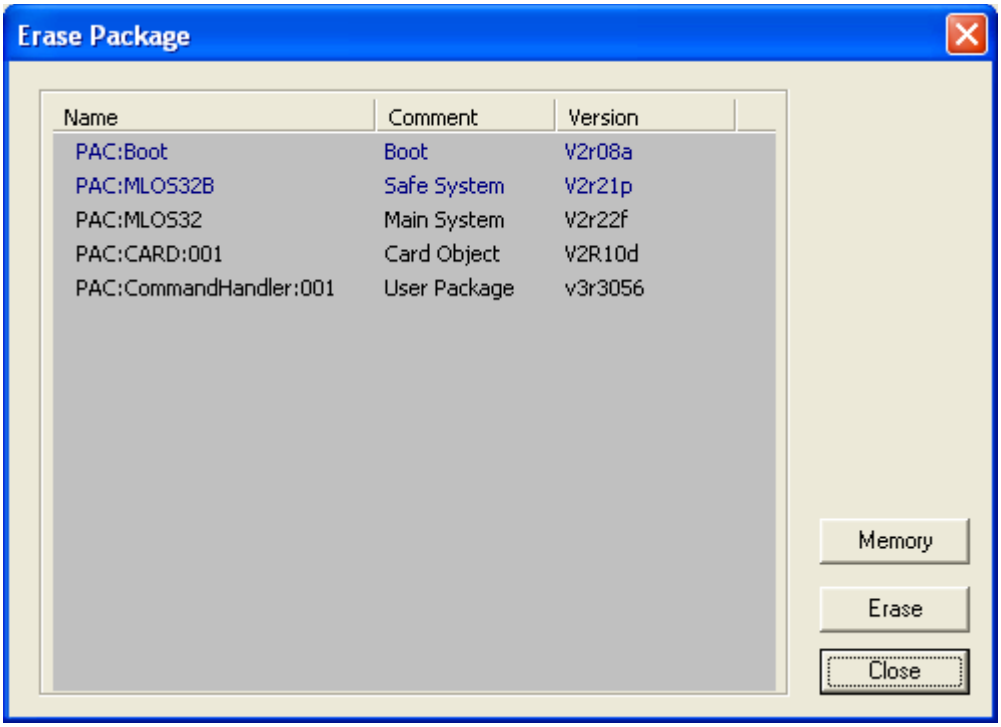
F. If you responded **No** at step 4D, reboot your system.

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" on page 3 for details on setting SmartCfg to the correct communication parameters.

2. Select the coupler(s), right-click, and select **Erase Packages**. The Erase Packages window opens and displays the current versions that are loaded.



Note that on Maxsys and MX6000 systems, the SCPMUS.SRE file is not downloaded to the programming stations automatically following the reset or power cycle of a module. It is downloaded at the start of the first job following a module reset/power cycle. Once loaded, it appears in the list of components beneath the command handler and is named "XLUS" (not SCPMUS.SRE). Therefore, "XLUS" may or may not appear in the list of packages. There is no need to update or manage XLUS, as this component is not stored permanently in the memory on the coupler.

3. Close the window when you have verified the versions.

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. Perform the steps in "Configuring SmartCfg" on page 3, but instead use an IP base of 192.168.0.80. Choose a node ID, such as 14. Your PC IP address would then be 192.168.0.94. Change the "TargetNodes =" to "TargetNodes = 1..255". This will allow for all possible node IDs (couplers) to be seen.
2. If this is a Maxsys or MX6000 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.
3. Perform the steps in "Updating a SmartWare Coupler" on page 8.
4. If the update is successful, you will "lose" the coupler within SmartCfg. Perform the steps as in step 1 again, but return to your original settings.
5. If applicable, remove the IP address added in step 2.