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Automating System Firmware Updates with RemoteUX and UpdateXpress Version 3.02A

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I. Introduction

This white paper explains how to use the UpdateXpress utility, RemoteUX, to update the firmware of any given system in an automated environment.

In automated environments, customers need the ability to script the updating of the systems firmware during one reboot. The UpdateXpress RemoteUX utility can be used to accomplish this goal. However, the customer may not want to store the entire contents of the UpdateXpress CD, which is close to 650 MB, in their image or on a file server. After performing the steps outlined in this document, the size was trimmed down to 104 MB. This figure can be trimmed down even further, around 42 MB, by performing the optional steps outlined in Section IV of this document.

This white paper shows which files and directories can be removed from the UpdateXpress CD so that the remaining files and directories are all that is needed for RemoteUX to function.

This white paper was written for use with UpdateXpress version 3.02A and supported Windows operating systems.

Please note that the directory D:\CustomUX, which is used throughout this document, is a fictitious working directory. You can substitute any valid directory you choose.

Supported Servers:
> Please refer to the IBM web site for a complete list of servers supported by UpdateXpress 3.02A.

Supported Operating Systems:
> Windows NT
> Windows 2000
> Windows 2003

II. Required UpdateXpress CD Contents

Below is a list and a brief description of the files and directories required by RemoteUX to perform firmware updates. After performing the steps in the following sections, your directory structure should contain only the files and directories listed below.

\LaunchRUX.exe	- UpdateXpress remote launching utility
\pcdos.img	- IBM PC-DOS boot disk image
\RemoteUX.exe	- UpdateXpress remote update utility
\SGUIDE\ADAPT\TAPEDRV	- Tape drive update files
\SGUIDE\BIN	- UpdateXpress utilities
\SGUIDE\INI	- Files used to determine what to flash
\SGUIDE\MACH\ASMADAPT	- Service processor update files
\SGUIDE\MACH\ATI_BIOS	- RSA II Video BIOS update files
\SGUIDE\MACH\IDEHDD	- IDE hard drive update files
\SGUIDE\MACH\SCSIHDD	- SCSI hard drive update files
\SGUIDE\MACH\SR	- ServeRAID firmware update files
\SGUIDE\MACH\{system(s)}	- Machine specific firmware and drivers
\UpdateXpress	- Main UpdateXpress utilities
\vfirmbt	- PowerQuest utilities

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III. Customizing the Main Contents of the UpdateXpress CD

Follow the directions outlined below to create a directory structure that has only the files and directories required by RemoteUX to update firmware.

1. Copy the entire contents of the UpdateXpress CD to a working directory.
   a. Create a working directory (D:\CustomUX)
   b. Xcopy all of the contents of the UpdateXpress CD to the working directory.
   c. Reset the read-only attributes of the files that were copied (attrib D:\CustomUX*.* –r /s).

2. Delete all of the generic files and directories that are not needed for firmware updates.
   a. Delete the following files from the D:\CustomUX directory.
      i. \AUTORUN.INF
      ii. \boot.catalog
      iii. \cimv20.dtd
      iv. \ibmupdate.xsl
      v. \index.htm
      vi. \index.xml
      vii. \readme.txt
      viii. \SGUIDE\resp.txt
      ix. \SGUIDE\SPswitch.bat
   b. Remove the following directories from the D:\CustomUX directory.
      i. \help
      ii. \linux
      iii. \netware
      iv. \openserv
      v. \openunix
      vi. \os2
      vii. \SGUIDE\ADAPT\ActivePCI
      viii. \SGUIDE\ADAPT\ASMDevice
      ix. \SGUIDE\ADAPT\FamilyManager
      x. \SGUIDE\ADAPT\Networking
      xi. \SGUIDE\ADAPT\SCSI
      xii. \SGUIDE\ADAPT\SR
      xiii. \SGUIDE\ADAPT\VIDEO
      xiv. \SGUIDE\GRAPHICS
      xv. \SGUIDE\HELP
      xvi. \SGUIDE\JAVA
      xvii. \SGUIDE\MACH\ASMADAPT\PKGS
      xviii. \SGUIDE\MACH\ATI_BIOS\PKGS
      xix. \SGUIDE\MACH\IDEHDD\PKGS
      xx. \SGUIDE\MACH\GENERIC
      xxi. \SGUIDE\MACH\SCSIHDD\PKGS
      xxii. \SGUIDE\MACH\SR\PKGS
      xxiii. \SGUIDE\XML
      xxiv. \UXIndex
      xxv. \UXUtils

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3. Remove system specific directories.

   System specific firmware updates (BIOS, Diagnostics, etc) are located in the \SGUIDE\MACH sub-directories. For example, all of the firmware updates specifically for an x345 reside in the \SGUIDE\MACH\x345 directory.

   a. Remove all of the directories that start with 7 or 8. These directories are used to update the drivers of a system and are not used for firmware updates. \SGUIDE\MACH\7081 and \SGUIDE\MACH\8670 for example.

   b. Remove all of the system specific directories within the \SGUIDE\MACH directory that you do not support.

   c. Remove the PKGS directory from the remaining directories. \SGUIDE\MACH\x345\PKGS for example.

   d. Remove the \SGUIDE\MACH\GENERIC directory.

IV. Further Customizing Firmware Updates

This section describes how to customize the remaining firmware updates in order to trim down the size even further. In this section, we will remove the SCSI Hard Drive and Tape Drive firmware updates, which are both common for every supported system. We will also remove the Diagnostic firmware update specifically for the x345.

Modifying the FlashIt.ini file:

Before attempting to customize the remaining contents, you must first understand the layout and syntax of the master firmware flashing configuration file, FlashIt.ini, which in located in the \SGUIDE\INI directory.

In the FlashIt.ini file, there is a section for the firmware updates that are common to all systems as well as a section for firmware updates that are specific to each supported system. The common section is labeled "[COMMON_FIRMWARE]". The system specific section for the x345 is labeled "[XSERIES_345]".

Each firmware update has three entries in the FlashIt.ini file. The first entry specifies the path and name of the firmware update program. The second entry specifies the command line switches, if any, that are required for the firmware update. Finally, the third entry specifies the version of the firmware update that is on the current UpdateXpress CD. Below is an example of the three entries for the Diagnostics firmware update for an x345.

Path and Name of Firmware Update Program:
SYSTEM_DIAGNOSTICS_Exec=Z:\SGUIDE\MACH\X345\DIAG\FLASH2.EXE
Firmware Update Command Line Switches:
SYSTEM_DIAGNOSTICS_Apply=/u /d
Current Version that is on the UpdateXpress CD:
SYSTEM_DIAGNOSTICS_CD=GEYT20

In order to remove an item from the FlashIt.ini file so that UpdateXpress will not attempt to update it, you need to add the comment character, a semicolon, ";", to the beginning of the line.

Note: You should never change or delete any of the entries in the FlashIt.ini file. All you should ever do is add the comment character to the beginning of the lines.

Load the FlashIt.ini file in your favorite text editor and perform the following steps to remove the common SCSI Hard Drive and Tape Drive firmware updates and the x345 specific Diagnostic firmware update.

Note: If you comment out any of the common firmware updates, they will not be available for any system.

1. Add the comment characters to the beginning of the three lines for the SCSI Hard Drive firmware update in the "[COMMON_FIRMWARE]" section.
2. Add the comment characters to the beginning of the three lines for the Tape Drive firmware update in the "[COMMON_FIRMWARE]" section.
3. Add the comment characters to the beginning of the three lines for the Diagnostic firmware update in the "[XSERIES_345]" section.
4. Save and close the file

Below are excerpts from the original and modified FlashIt.ini files.

Excerpt from Original D:\CustomUX\SGUIDE\INI\ FlashIt.ini file

```
[COMMON_FIRMWARE]
…
NETFIN_ADV_SYS_MGT_WISEMAN_ADAPTER_Exec=Z:\SGUIDE\MACH\ASMADAPT\FLASHM\FLASH2
NETFIN_ADV_SYS_MGT_WISEMAN_ADAPTER_Apply=/u /w /m /b
NETFIN_ADV_SYS_MGT_WISEMAN_ADAPTER_CD=61A

HARDDRIVE_MICROCODE_Exec=Z:\SGUIDE\MACH\SCSIHDD\DRIVEMIC\FLASHDRV\FLASHDRV.EXE
HARDDRIVE_MICROCODE_Apply=/CD:Z:\SGUIDE\MACH\SCSIHDD\DRIVEMIC\FLASHDRV /AUTOXPRESS:2
HARDDRIVE_MICROCODE_CD=Many

TAPEDRIVE_MICROCODE_Exec=Z:\SGUIDE\ADAPT\TAPEDRV\EXECUTE\TAPEDRV.EXE
TAPEDRIVE_MICROCODE_Apply=autoupdate /p Z:\SGUIDE\ADAPT\TAPEDRV\DRIVEMIC
TAPEDRIVE_MICROCODE_CD=Many
…


[XSERIES_345]
SYSTEM_BIOS_Exec=Z:\SGUIDE\MACH\X345\BIOS\FLASH2.EXE
SYSTEM_BIOS_Apply=/u
SYSTEM_BIOS_CD=50A

SYSTEM_DIAGNOSTICS_Exec=Z:\SGUIDE\MACH\X345\DIAG\FLASH2.EXE
SYSTEM_DIAGNOSTICS_Apply=/u /d
SYSTEM_DIAGNOSTICS_CD=GEYT20
…
```

Excerpt from Modified D:\CustomUX\SGUIDE\INI\ FlashIt.ini file

```
[COMMON_FIRMWARE]
…
NETFIN_ADV_SYS_MGT_WISEMAN_ADAPTER_Exec=Z:\SGUIDE\MACH\ASMADAPT\FLASHM\FLASH2
NETFIN_ADV_SYS_MGT_WISEMAN_ADAPTER_Apply=/u /w /m /b
NETFIN_ADV_SYS_MGT_WISEMAN_ADAPTER_CD=61A

;HARDDRIVE_MICROCODE_Exec=Z:\SGUIDE\MACH\SCSIHDD\DRIVEMIC\FLASHDRV\FLASHDRV.EXE
;HARDDRIVE_MICROCODE_Apply=/CD:Z:\SGUIDE\MACH\SCSIHDD\DRIVEMIC\FLASHDRV /AUTOXPRESS:2
;HARDDRIVE_MICROCODE_CD=Many

;TAPEDRIVE_MICROCODE_Exec=Z:\SGUIDE\ADAPT\TAPEDRV\EXECUTE\TAPEDRV.EXE
;TAPEDRIVE_MICROCODE_Apply=autoupdate /p Z:\SGUIDE\ADAPT\TAPEDRV\DRIVEMIC
;TAPEDRIVE_MICROCODE_CD=Many
…


[XSERIES_345]
SYSTEM_BIOS_Exec=Z:\SGUIDE\MACH\X345\BIOS\FLASH2.EXE
SYSTEM_BIOS_Apply=/u
SYSTEM_BIOS_CD=50A

;SYSTEM_DIAGNOSTICS_Exec=Z:\SGUIDE\MACH\X345\DIAG\FLASH2.EXE
;SYSTEM_DIAGNOSTICS_Apply=/u /d
;SYSTEM_DIAGNOSTICS_CD=GEYT20
…
```

Now that you have successfully modified the FlashIt.ini file, you can remove the files from the D:\CustomUX directory which are no longer needed. Follow the directions outlined below to accomplish this.

You must first determine the root directory of the firmware updates you are removing. You can determine this by looking at the line in the FlashIt.ini file that specifies the path and name of the firmware update program. Take the following three lines for example:

HARDDRIVE_MICROCODE_Exec=Z:\SGUIDE\MACH\SCSIHDD\DRIVEMIC\FLASHDRV\FLASHDRV.EXE
TAPEDRIVE_MICROCODE_Exec=Z:\SGUIDE\ADAPT\TAPEDRV\EXECUTE\TAPEDRV.EXE
SYSTEM_DIAGNOSTICS_Exec=Z:\SGUIDE\MACH\X345\DIAG\FLASH2.EXE

By viewing the lines above and the remaining structure of the D:\CustomUX directory, we can easily determine that the \SGUIDE\MACH\SCSIHDD, \SGUIDE\ADAPT\TAPEDRV, and \SGUIDE\MACH\X345\DIAG directories can now be removed from the D:\CustomUX directory.

1. Remove the SCSI Hard Drive firmware update directory (\SGUIDE\MACH\SCSIHDD) from the D:\CustomUX directory
2. Remove the Tape Drive firmware update directory (\SGUIDE\ADAPT\TAPEDRV) from the D:\CustomUX directory
3. Remove the x345 Diagnostic firmware update directory (\SGUIDE\MACH\X345\DIAG) from the D:\CustomUX directory

V. Invoking the RemoteUX utility

The smaller directory structure created above can now be used in an automated environment to update the firmware of the system.

Sample syntax for invoking the RemoteUX utility:

"D:\CustomUX\RemoteUX \\targetserver –l:D:\CustomUX –f –a -r"

This will invoke the RemoteUX utility in the D:\CustomUX directory using the D:\CustomUX directory as the local source to update all of the firmware on the system identified by \\targetserver and reboot the system immediately. Note that \\targetserver can be a valid IP address, hostname, or the loopback address (\\127.0.0.1).

Detailed documentation of the RemoteUX utility and command line switches can be found in the HTML help pages of the UpdateXpress CD.