

# Updating GX Files Automatically

## 1. Introduction

Document IN257 describes a new feature in GSM and GX that allows GX running on a thin-client PC to automatically download new versions of the GX.EXE and GXIO.EXE executables from a central "updates" directory on the server running the Global Client. This note describes a general-purpose technique that can be used to automatically download **ANY** file from the central server to the appropriate directory on the local GX PC. The ability to auto-download files from the server to the local PC, that is running GX, is becoming more pressing as the "richness" of GX is being improved to access more external files and resources.

This technique can also be used to download fresh copies of GX.INI and the various GXCUST\*.CUS files from a central server to each remote, thin-client PC.

## 2. Pre-Requisites

The following software versions are required:

GSM SP-9, or later;  
GLOBAL.EXE V3.5, or later;  
GX.EXE V2.8, or later

Pre-release versions of GSM SP-9 and GLOBAL.EXE V3.5 are available for evaluation. GX V2.8 will be released via the Global web-site on 15-Aug-2002.

## 3. Overview

All external files used by GX at run-time must be present in a "well-known" folder on the local GX PC. These "well known" local folders are always defined in the GX.INI file by a standard section/setting pair. At the time of writing (GX V2.8) the following section/setting combinations can be used to define "well known" folders (see gx28inifile.doc for further details):

<i>Section</i>	<i>Setting</i>	<i>Description</i>
[documentation]	Folder	Folder for G-3000 .chm files etc.
[documentation]	Folder%	Folder for extra .chm files etc.
[sounds]	Folder	Folder for .WAV files
[toolbar]	Folder	Folder for "snap in" toolbar icons
[icons]	Folder	Folder for button icons

On the server, the section/setting pair is indicated by a 2-level directory structure within the "gxupdates" directory. An example should make this clear. Assume the GX.INI file contains the following settings:

```
[documentation]
Folder=c:\gx\help
Folder1=c:\gx\extrahelp
Folder2=c:\gx\morehelp
[sounds]
Folder=c:\gx\wavfiles
[toolbar]
Folder=c:\gx\toolbaricons
```

and on the server the "gxupdates" directory, C:\GLOBAL\GXUPDATES, contains the following folder and files:

```
C:\GLOBAL\GXUPDATES\GX28.EX_
C:\GLOBAL\GXUPDATES\GXIO35C.EX_
C:\GLOBAL\GXUPDATES\DOCUMENTATION\FOLDER\CL.CHM
C:\GLOBAL\GXUPDATES\DOCUMENTATION\FOLDER\DL.CHM
C:\GLOBAL\GXUPDATES\DOCUMENTATION\FOLDER1\WW.CHM
C:\GLOBAL\GXUPDATES\DOCUMENTATION\FOLDER2\BART.CHM
C:\GLOBAL\GXUPDATES\SOUNDS\FOLDER\EATMYSHORTS.WAV
C:\GLOBAL\GXUPDATES\TOOLBAR\FOLDER\NEWICON.BMP
C:\GLOBAL\GXUPDATES\TOOLBAR\FOLDER\HNEWICON.BMP
```

then the automatic GX Files update option will copy the following files from the server to the local PC:

CL.CHM	to	c:\gx\help\cl.chm
DL.CHM	to	c:\gx\help\dl.chm
WW.CHM	to	c:\gx\extrahelp\ww.chm
BART.CHM	to	c:\gx\morehelp\BART.CHM
EATMYSHORTS.WAV	to	c:\gx\wavfiles\EATMYSHORTS.WAV
NEWICON.BMP	to	c:\gx\toolbaricons\NEWICON.BMP
HNEWICON.BMP	to	c:\gx\toolbaricons\HNEWICON.BMP

To avoid unnecessary communication with GX at start-up time, the automatic GX Files update option is only attempted if the following registry setting is enabled:

```
..\Global\Client\ServicePacks\UpdateGXFiles
```

The name of the "gxupdates" directory can be overridden by the following registry setting:

```
..\Global\Client\ServicePacks\GXUpdateDirectory
```

It should **not** normally be necessary to use this registry setting to change the default from "gxupdates", relative to the current GSM folder.

## 4. Enabling the Automatic GX Files Update Option

On the server running GLOBAL.EXE:

- Enable the following registry setting:

```
..\Global\Client\ServicePacks\UpdateGXFiles=On
```

- allocate a folder called "gxupdates" in the current GSM (Windows) folder. For example, if GSM (Windows) is installed in C:\GLOBAL\ then ensure that folder C:\GLOBAL\GXUPDATES\ is allocated. Note that this step is all that is necessary to enable the GX.EXE/GXIO.EXE update (see IN257);
- allocate the various top-tier folder(s) that correspond to the various GX.INI sections (e.g. DOCUMENTATION, TOOLBAR, SOUNDS);
- allocate the various second-tier folder(s) that correspond to the various GX.INI settings (e.g. DOCUMENTATION\FOLDER, TOOLBAR\FOLDER, SOUNDS\FOLDER);
- copy in the various files that are to be downloaded to GX (e.g. C:\GLOBAL\GXUPDATES\SOUNDS\FOLDER\EATMYSHORTS.WAV).

The automatic GX files update will be attempted each time a user signs on using GX (see section 5).

## 5. Using the Automatic GX Files Update Option for generic files

All the examples included in section 3 describe downloading files from the server to a folder on the local GX PC that is defined in the GX.INI. In all cases the entry in the GX.INI file that effectively guides the download is also used by GX.EXE at run-time. For example, the folder defined by the following GX.INI setting:

```
[sounds]
Folder=c:\gx\wavfiles
```

was originally defined to provide the folder that is used by GX to search for .WAV files when the SOUND\$ routine is invoked. It is almost by "accident" that this setting can be used to provide the target folder for the GX file download option.

Some settings in the GX.INI file that implicitly refer to a folder, or folders, on the local GX PC do not include an explicit folder setting and thus can't naturally be used by the GX file download option. For example, the following settings in the GX.INI file only include filenames:

```
[bitmaps]
Initial=c:\bitmaps\myinitialbitmap.bmp
Bitmap001=c:\bitmaps\mybitmap1.bmp
```

The following setting, in the [bitmaps] section, which is ignored by the GX.EXE run-time code, can be used to "guide" the GX file download option:

```
Folder=c:\bitmaps
```

The various "master" copies of the bitmap files will be held in the following folder on the server:

```
..\gxupdates\bitmaps\folder\
```

This general technique can be extended to multiple folders. For example:

```
[bitmaps]
Initial=c:\bitmaps\myinitialbitmap.bmp
Bitmap001=c:\bitmaps1\mybitmap.bmp
Bitmap001=c:\bitmaps2\mybitmap.bmp
Bitmap001=c:\bitmaps3\mybitmap.bmp
Folder1=c:\bitmaps1
Folder2=c:\bitmaps2
Folder3=c:\bitmaps3
```

In this extended example, the various "master" copies of the bitmap files will be held in the following folders on the server:

```
..\gxupdates\bitmaps\folder1\
..\gxupdates\bitmaps\folder2\
..\gxupdates\bitmaps\folder3\
```

For example, a file called "mybitmap.bmp" in the "**..\gxupdates\bitmaps\folder3\**" folder on the server will be automatically downloaded to the "**c:\bitmaps3**" folder on the local GX PC.

## 6. Using the Automatic GX Files Update Option for GX.INI etc.

The technique described above is completely generic and can also be used to download new copies of the various .INI and .CUS files from a central server to each individual PC.

**Important Note-1:** Although the generic technique described in this document could be used to download new copies of GX.EXE and GXIO.EXE from the server you are strongly advised **NOT** to attempt to use the technique for this purpose. The technique described in Technical Note IN257 **MUST** be used to download GX.EXE and/or GXIO.EXE.

**Important Note-2:** If a GX.INI or GX\*.CUS file is downloaded while GX is running not all the settings will be recognised until GX is reloaded. Unlike the technique described in Technical Note IN257, there was no facility to force a reload of GX in the first release of the mechanism described in this document (however, see section 8.2 for an enhancement that does allow an optional GX reload).

The following setting within GX.INI is reserved to specify the "current GX" folder:

<i>Section</i>	<i>Setting</i>	<i>Description</i>
----------------	----------------	--------------------

[GXFolder]	Folder	Folder for GX.INI etc.
------------	--------	------------------------

The "Folder" setting should be set to "." if the GX.INI file etc. are installed in the same folder as GX.EXE; or to the Windows folder if GX.INI file etc. are installed in the Windows folder. Note that you are strongly recommended to install the GX.INI files in the same folder as GX.EXE.

**Important note:** For GSM SP-15, and later, any files in the following folder:

..\gxupdates\gxini\gxini\

are automatically transferred to the current GX folder, regardless of the settings in the GX.INI file, just as though every GX.INI file has the following section:

```
[gxini]
gxini=.
```

This feature has been added to allow a new GX.INI to be down-loaded to the current GX folder.

## 7. Download Processing

A special overlay in the GSM start-up process (\$STARQ), which is only invoked on GX thin-clients, scans the top-tier folders and second-tier folders in the GXUPDATES directory. For every combination of "top-tier" and "second-tier" folders under the GXUPDATES directory, a request is made to GX to read the GX.INI to determine if the corresponding folder exists on the GX PC. If a corresponding folder is present on GX, \$STARQ checks each file within the "second-tier" folder. A request is made to GX to determine if the file exists in the corresponding GX directory. If the file does exist on GX, the last modification date/time is requested. If the corresponding file does not exist on GX, or if the last modification time is earlier than the file date/time on the server, the "update file" is downloaded to GX.

## 8. Advanced Features (added for GSM SP-13 and GLOBAL.EXE V3.8)

This section describes a number of "advanced options" that will be added for GSM SP-13.

**Important Note:** All the new registry settings described in this section will be read dynamically (i.e. a change to any of these settings will **not** require a reload of GLOBAL.EXE); and the new setting will be recognised immediately on the next GX file download.

### 8.1 GX File Download Logging and Diagnostics

The various advanced options described below involve complex logic in both \$STARQ and GLOBAL.EXE. Copious logging and diagnostics are available to trouble-shoot

problems experienced during the GX File Download process. GX Download Logging is enabled by the following registry setting:

```
..\Global\Client\Diagnostics\GXFileDownloadLogging=On
```

The log records are written to the following log file:

```
GXDownloadLoggingForClientXX.log
```

where *XX* is the client node-id.

In addition to the GX Download Logging option, low-level diagnostics are enabled by the following registry setting:

```
..\Global\Client\Diagnostics\GXFileDownloadDiagnostics=On
```

The diagnostic information is written to the following log file:

```
GXDownloadDiagsForClientXX.log
```

where *XX* is the client node-id.

## 8.2 Optional GX reload

Under some conditions it may be necessary to force a GX reload after a GX file has been downloaded. The most obvious example of such a file is the GX.INI file but this requirement may apply to other files.

A number of new registry settings control the "GX reload" option. If the following option is enabled, a GX reload is always forced if one, or more, files (regardless of the file-name or file-type etc.) are downloaded to GX:

```
..\Global\Client\ServicePacks\AlwaysReloadGXAfterFileDownload=On
```

The default setting is "Off".

The following series of registry settings allow the GX reload to be fine-tuned to only occur if a particular file(s), or file-type(s), are actually downloaded to GX:

```
..\Global\Client\ServicePacks\ReloadGXAfterFileDownload1=filename
..\Global\Client\ServicePacks\ReloadGXAfterFileDownload2=filename
...
..\Global\Client\ServicePacks\ReloadGXAfterFileDownload99=filename
```

The *filename* may be a normal filename (e.g. GX.INI) or, if the first character of the text-string a dot, a file-type (e.g. .INI). Note that the normal Windows wildcard characters are

not recognised by this processing (e.g. use .INI, instead of \*.INI, to specify all files with the .INI file-type).

### 8.3 Automatic Creation of Folders on GX

If the destination folder for a GX file download does not exist on the GX PC the file copy operation will fail. With the possibility of a new GX.INI file download with a concomitant GX reload the requirement for a folder creation function becomes necessary because the new GX.INI file may include folders that were not created when GX was installed.

The automatic creation of folders on the GX PC to satisfy options in the GX file download is unconditional and does not require any new registry settings.

### 8.4 Operator Dialogue (Part-1)

If one, or more, files are to be downloaded to GX the \$STARQ overlay displays a dialogue box that allows the operator to either proceed with, or cancel, the download process. It has been suggested that the download should be unconditional and run "silently" without any operator dialogue. It has also been suggested to make the download unconditional but prefixed with an information-only message box. It has also been suggested that the total size of the download files should be a factor in the absence and/or type of message that is displayed before the download commences.

The following registry settings fulfil all these requirements:

```
..\Global\Client\ServicePacks\TotalFileSizesForQuestion
..\Global\Client\ServicePacks\TotalFileSizesForInfo
```

The default for both settings are 0.

The logic in \$STARQ will be of the form:

```
IF total filesize >= TotalFileSizesForQuestion
    Display Question dialogue box          * for compatibility
    Wait or response
    IF response = "Yes"
        Proceed with GX file download
    ELSE
        Abort GX file download
    ENDIF
ELSE
    IF total filesize >= TotalFileSizesForInfo
        Display Info-only dialogue
        Wait for response
        Proceed with GX file download
    ELSE
        Proceed with GX file download
    ENDIF
```

ENDIF

For example, to always prompt the operator:

```
..\Global\Client\ServicePacks\TotalFileSizesForQuestion=0
..\Global\Client\ServicePacks\TotalFileSizesForInfo=0
```

To only prompt the operator if the total file size is 1Mb, or more (and to warn otherwise):

```
..\Global\Client\ServicePacks\TotalFileSizesForQuestion=1048576
..\Global\Client\ServicePacks\TotalFileSizesForInfo=0
```

To warn the operator if the total file size is 1Kb, or more:

```
..\Global\Client\ServicePacks\TotalFileSizesForQuestion=0xffffffff
..\Global\Client\ServicePacks\TotalFileSizesForInfo=1024
```

To prompt the operator if the total file size is 1Mb, or more; and to warn if the total file size is between 1Kb and 1Mb-1:

```
..\Global\Client\ServicePacks\TotalFileSizesForQuestion=1048576
..\Global\Client\ServicePacks\TotalFileSizesForInfo=1024
```

To always download "silently":

```
..\Global\Client\ServicePacks\TotalFileSizesForQuestion=0xffffffff
..\Global\Client\ServicePacks\TotalFileSizesForInfo=0xffffffff
```

Note that the file-size limits are specified in bytes (i.e. rather than Kb or Mb).

Note also that a TotalFileSizesForInfo setting that is greater than, or equal, to the TotalFileSizesForQuestion setting is meaningless.

## 8.5 Operator Dialogue (Part-2)

As described in section 8.4. two registry settings are available to control the dialogue of the file download process based on the total file **size** of the various files that will be downloaded. The following two alternate registry settings are available to control the dialogue of the file download process based on the total file **count** of the various files that will be downloaded:

```
..\Global\Client\ServicePacks\TotalFileCountForQuestion
..\Global\Client\ServicePacks\TotalFileCountForInfo
```

The default for both settings are 0.



The presence of the "TotalFileCountForQuestion" overrides the "TotalFileSizesForQuestion" and "TotalFileSizesForInfo" settings.

For example, to always prompt the operator:

```
..\Global\Client\ServicePacks\TotalFileCountForQuestion=0
..\Global\Client\ServicePacks\TotalFileCountForInfo=0
```

To only prompt the operator if the file count is 10, or more (and to warn otherwise):

```
..\Global\Client\ServicePacks\TotalFileCountForQuestion=10
..\Global\Client\ServicePacks\TotalFileCountForInfo=0
```

To warn the operator if the file count is 10, or more:

```
..\Global\Client\ServicePacks\TotalFileCountForQuestion=0xffffffff
..\Global\Client\ServicePacks\TotalFileCountForInfo=10
```

To prompt the operator if the file count is 20, or more; and to warn if the file count is between 10 and 19:

```
..\Global\Client\ServicePacks\TotalFileCountForQuestion=20
..\Global\Client\ServicePacks\TotalFileCountForInfo=10
```

To always download "silently":

```
..\Global\Client\ServicePacks\TotalFileCountForQuestion=0xffffffff
..\Global\Client\ServicePacks\TotalFileCountForInfo=0xffffffff
```

Note also that a TotalFileCountForInfo setting that is greater than, or equal, to the TotalFileCountForQuestion setting is meaningless.

## 8.6 Options to Suppress Messages

By default the \$STARQ overlay will display a final message box to confirm that the GX File Download has completed successfully. This final message box can be suppressed by enabling the following registry setting:

```
..\Global\Client\ServicePacks\SuppressDownloadFinalMessage=On
```

The default setting is "Off".

By default the \$STARQ overlay will display a message box to warn that a GX File Download has failed. This warning message box can be suppressed by enabling the following registry setting:

```
..\Global\Client\ServicePacks\SuppressDownloadErrors =On
```

The default setting is "Off".

Note that the file download progress bar display by \$STARQ **cannot** be suppressed.

## 8.7 Multiple-Location GX File Download

The current GX file download methodology is single-location in that the same set of files on the server are downloaded to **all** GX clients. There is a requirement to optionally allow a multiple-location download (i.e. multiple download locations are available on the server, with each GX PC accepting downloads from one of the many locations).

The following registry setting must be set to "On" to enable the "advanced" multiple-location download:

```
..\Global\Client\ServicePacks\MultipleLocationDownload=On
```

The multiple-location download requires each GX to be configured with a "LocationReference" and a "ComputerReference". These settings must be defined in the [hosts] section of the GXHOSTS.INI file for each individual GX PC. For example:

```
[hosts]
hostID1=localhost:4723,Local Host (24 * 132)
LocationReference1=branchoffice
ComputerReference1=alanspcwithtwoprinters
```

**Important Note:** The GXHOSTS.INI file is deemed to be the fundamental INI file and should not be subject to a GX file download.

The LocationReference value provides a first-level override to the default gxupdates folder on the download server. The ComputerReference provides a second-level override to the default gxupdates folder on the download server. An example should make this clear:

Consider 2 locations ("east" and "west") and 3 PC's at each location. The 6 GXHOSTS.INI files include the following settings:

```
LocationReference1=east
ComputerReference1=pc1

LocationReference1=east
ComputerReference1=pc2

LocationReference1=east
ComputerReference1=pc3

LocationReference1=west
ComputerReference1=pc1

LocationReference1=west
ComputerReference1=pc2
```

```
LocationReference1=west
ComputerReference1=pc3
```

Consider a single-location "gxupdates" folder with the following structure:

Gxupdates\bitmaps\folder1=everyone.bmp

(i.e. this assumes the GX.INI file includes a [bitmaps] section which contains a "folder1" setting).

To implement a multiple-location download, in conjunction with the various GXHOSTS.INI files described above, the following directory structure must be present:

Gxupdates\bitmaps\folder1=everyone.bmp	(a)
Gxupdates\east\bitmaps\folder1=location_specific_bitmap.bmp	(b)
Gxupdates\west\bitmaps\folder1=location_specific_bitmap.bmp	(c)
Gxupdates\east\pc1\bitmaps\folder1=pc_specific_bitmap.bmp	(d)
Gxupdates\east\pc2\bitmaps\folder1=pc_specific_bitmap.bmp	(e)
Gxupdates\east\pc3\bitmaps\folder1=pc_specific_bitmap.bmp	(f)
Gxupdates\west\pc1\bitmaps\folder1=pc_specific_bitmap.bmp	(g)
Gxupdates\west\pc2\bitmaps\folder1=pc_specific_bitmap.bmp	(h)
Gxupdates\west\pc3\bitmaps\folder1=pc_specific_bitmap.bmp	(i)

- a). Files in this folder will be downloaded to all GX PC's;
- b). Files in this folder will only downloaded to PC's with a LocationReference of "east";
- c). Files in this folder will only downloaded to PC's with a LocationReference of "west";
- d). Files in this folder will only downloaded to PC's with a LocationReference of "east" and a "ComputerReference" of "pc1";
- e). Files in this folder will only downloaded to PC's with a LocationReference of "east" and a "ComputerReference" of "pc2";
- f). Files in this folder will only downloaded to PC's with a LocationReference of "east" and a "ComputerReference" of "pc3";
- g). Files in this folder will only downloaded to PC's with a LocationReference of "west" and a "ComputerReference" of "pc1";
- h). Files in this folder will only downloaded to PC's with a LocationReference of "west" and a "ComputerReference" of "pc2";

- i). Files in this folder will only be downloaded to PC's with a LocationReference of "west" and a "ComputerReference" of "pc3";

The algorithm for the multiple file location mechanism is described using a LocationReference of "west" and a "ComputerReference" of "pc1" as an example:

- 1). All the files in the folder Gxupdates\west\pc1\bitmaps\Folder1 on the Global server are "considered for download" where "considered for download" means that the equivalent folder on the GX PC is accessed to determine if the same file exists on the GX PC. The equivalent folder on the GX PC is specified by the "Folder1" setting in the [bitmaps] section of the GX.INI file. For example:

```
[bitmaps]
Folder1=c:\gx\localbitmaps
```

If a file exists in the Gxupdates\west\pc1\bitmaps\Folder1 folder on the Global server but the same file does not exist in the c:\gx\localbitmaps folder on the GX PC then it will be downloaded from the Global server to the GX PC. If a file exists in both the Gxupdates\west\pc1\bitmaps\Folder1 folder on the Global server and in the c:\gx\localbitmaps folder on the GX PC then the last modification dates of the files are compared. If the file on the Global server is more recent than the same file on the GX PC then it will be downloaded from the Global server to the GX PC.

- 2). All the files in the folder Gxupdates\west\bitmaps\Folder1 on the Global server are then "considered for download" where "considered for download" means that:

- a file of the same name does not exist in the Gxupdates\west\pc1\bitmaps\Folder1;
- the equivalent folder on the GX PC is accessed to determine if the same file exists on the GX PC.

If a file that exists in the Gxupdates\west\bitmaps\Folder1 folder on the Global server also exists in the Gxupdates\west\pc1\bitmaps\Folder1 folder on the Global server then it is not considered for download.

If a file that exists in the Gxupdates\west\bitmaps\Folder1 folder on the Global server (and does not exist in the Gxupdates\west\pc1\bitmaps\Folder1 folder) but the same file does not exist in the c:\gx\localbitmaps folder on the GX PC then it will be downloaded from the Global server to the GX PC. If a file exists in both the Gxupdates\west\bitmaps\Folder1 folder on the Global server (and does not exist in the Gxupdates\west\pc1\bitmaps\Folder1 folder) and in the c:\gx\localbitmaps folder on the GX PC then the last modification dates of the files are compared. If the file on the Global server is more recent than the same file on the GX PC then it will be downloaded from the Global server to the GX PC.

3). Finally, all the files in the folder Gxupdates\bitmaps\Folder1 on the Global server are "considered for download" where "considered for download" means that:

- a file of the same name does not exist in the Gxupdates\west\pc1\bitmaps\Folder1;
- a file of the same name does not exist in the Gxupdates\west\bitmaps\Folder1;
- the equivalent folder on the GX PC is accessed to determine if the same file exists on the GX PC.

If a file that exists in the Gxupdates\bitmaps\Folder1 folder on the Global server also exists in either the Gxupdates\west\pc1\bitmaps\Folder1 or Gxupdates\west\bitmaps\Folder1 folders on the Global server then it is not considered for download.

If a file that exists in the Gxupdates\bitmaps\Folder1 folder on the Global server (and does not exist in either the Gxupdates\west\pc1\bitmaps\Folder1 or Gxupdates\west\bitmaps\Folder1 folders) but the same file does not exist in the c:\gx\localbitmaps folder on the GX PC then it will be downloaded from the Global server to the GX PC. If a file exists in both the Gxupdates\bitmaps\Folder1 folder on the Global server (and does not exist in either the Gxupdates\west\pc1\bitmaps\Folder1 or Gxupdates\west\bitmaps\Folder1 folders) and in the c:\gx\localbitmaps folder on the GX PC then the last modification dates of the files are compared. If the file on the Global server is more recent than the same file on the GX PC then it will be downloaded from the Global server to the GX PC.

The following example should make this clear:

```
Gxupdates\bitmaps\folder1\bitmap1.bmp
Gxupdates\bitmaps\folder1\bitmap2.bmp
Gxupdates\bitmaps\folder1\bitmap4.bmp
Gxupdates\bitmaps\folder1\bitmap5.bmp
Gxupdates\west\bitmaps\folder1\bitmap1.bmp
Gxupdates\west\bitmaps\folder1\bitmap2.bmp
Gxupdates\west\bitmaps\folder1\bitmap4.bmp
Gxupdates\west\bitmaps\folder1\bitmap6.bmp
Gxupdates\west\pc1\bitmaps\folder1\bitmap1.bmp
Gxupdates\west\pc1\bitmaps\folder1\bitmap2.bmp
Gxupdates\west\pc1\bitmaps\folder1\bitmap3.bmp
Gxupdates\west\pc1\bitmaps\folder1\bitmap8.bmp
```

Only the files shown emboldened will be downloaded to GX provided that the same file with a more recent modification date/time does not already exist on the destination folder on the GX PC.

**Important Note:** For the 1st and 2nd tier folders (e.g. Gxupdates\bitmaps\folder1 and Gxupdates\west\bitmaps\folder1) the file modification times are only considered if a file with the same name does not exist in a higher level folder on the Global server. For example, if the modification date of file bitmap2.bmp on the GX PC is 20-Sept-2003 and the modification dates of the corresponding files on the server are:

Gxupdates\bitmaps\folder1\bitmap2.bmp	22-Sept-2003
Gxupdates\west\bitmaps\folder1\bitmap2.bmp	21-Sept-2003
Gxupdates\west\pc1\bitmaps\folder1\bitmap2.bmp	19-Sept-2003

then **no download will take place** for that file because only the file in the highest tier folder (i.e. the file with a modification date of 19-Sept-2003) will be considered, even though more recent copies of the file exist in lower-tier folder(s) on the Global server.

## 8.8 Multiple-Location GX File Download and Windows Computer Name

In the Multiple Location option, described above, the "ComputerReference" setting in the GXHOSTS.INI file can be replaced by the Windows computer name of the GX PC by enabling the following registry setting:

```
..\Global\Client\ServicePacks\UseWindowsComputerName=On
```

## 9. Further features added for GSM SP-15

This section describes a new option that has been added for GSM SP-15.

The files (e.g. bitmaps and icons) downloaded from the central folder on the host computer to the various PC's running GX are normally read-only. For these files, the Last Modification Date can be used as an accurate indication that a more recent version is available on the host computer. However, for those files on the GX PC are routinely updated by GX the Last Modification Date cannot be used to decide if a new version of the file is to be downloaded. In particular, the Last Modification Date can't be used to decide whether "master" GXCUST\*.CUS files are to be downloaded because GX regularly updated the local copies of these files.

For the GXCUST\*.CUS files (i.e. GXCUST1.CUS, GXCUST2.CUS etc.) a file version number has been introduced. **Important Note:** The GXCUST\*.CUS version numbers are only used to control the file download and are completely independent from the internal GX.EXE and GXIO.EXE version numbers.

A GXCUST\*.CUS version number is defined by adding the following section and setting within the text file:

```
[version]
version=Vx.y
```

where x and y are single digits. Note that GXCUST.CUS version numbers are always purely numeric (GX.EXE version numbers can be numeric or alphanumeric). The following GXCUST.CUS version numbers are valid: V1.0, V2.3. The following GXCUST.CUS version numbers are invalid: 1.0, V2.4A.

The various GXCUST\*.CUS version numbers are completely independent of each other (e.g. GXCUST1.CUS V3.4 can be mixed with GXCUST2.CUS V4.5).

When a GXCUST\*.CUS file is detected during the processing of the various files within the download folder(s) on the central server the file on the server is read to obtain the version number. If a version number is **not** present in the GXCUST\*.CUS file on the server, the normal processing, based on the Last Modification Date, takes place. However, if a version number **is** present in the GXCUST\*.CUS file on the server, the version number of the equivalent GXCUST\*.CUS file on the “target” folder on the GX PC is obtained. If a version number is **not** present in the GXCUST\*.CUS file on the GX PC a version of “V0.0” is assumed. If the version number of the GXCUST\*.CUS file on the server is higher than the version number of the equivalent file on the GX PC, a download will occur. The following table summarises the algorithm:

Version of GXCUST*.CUS on central server	Version of GXCUST*.CUS on GX PC	Action
None	None	The Last Modification Date will be used to control the download
Va.b	None	If Va.b is higher than “V0.0” a download will occur
None	Vc.d	The Last Modification Date will be used to control the download
Va.b	Vc.d	If Va.b is higher than Vc.d a download will occur

## 10. Further features added for GSM SP-16 (Sync files)

This section describes a new option that will be added for GSM SP-16.

If the following registry option is defined the file download processing is driven by an explicit *Sync File* rather than the implicit folder, sub-folder and file hierarchy described above:

```
..\Global\Client\ServicePacks\UseSyncFile=On
```

When the Sync File option is enabled the ComputerReferenceN defined in the GXHOSTS.INI file (see section 7) is used to form the name of the Sync File. The Sync File, as defined by the ComputerReferenceN setting is always assumed to be in the “gxupdates” folder. For example, the following GX.INI file setting:

```
ComputerReference1=syncfileforshopflooroperators.txt
```

specifies the following Sync File on the server:

```
$GSMDIR\gxupdates\syncfileforshopflooroperators.txt
```

If the string associated with the `ComputerReferenceN` setting does not include a file extension, an extension of .txt is assumed.

The Sync File contains a number of text lines of the following format:

```
command    file_spec    [file_spec]
```

The following commands are supported:

COPY	<i>files_on_server</i>	<i>folder_or_file_on_gx</i>
SYNC	<i>files_on_server</i>	<i>folder_or_file_on_gx</i>
DELETE	<i>files_on_gx</i>	
REMOVE	<i>files_on_gx</i>	

COPY unconditionally copies files from the server to the GX PC.

SYNC only copies files from the server to the GX PC if the Last Modification Date of the file on the server is more recent than the LMD of the file on the GX PC. **[Is there any point in having an option to copy files, regardless of dates, if the sizes are different?]**

DELETE unconditionally deletes files and directories on the GX PC.

REMOVE unconditionally deletes files and **empty** directories on the GX PC.

## 10.1 File Specification, Folder Specification and Wildcards

The *files\_on\_server* and *folder\_or\_file\_on\_gx* options can specify a single file name, a single folder or a wildcard filename. The file/folder can be either an absolute pathname or a pathname relative to the "gxupdates" folder. For example:

examplefile.bmp	* single file, relative filename
G:\syncfolder\examplefile.bmp	* single file, absolute pathname
*.bmp	* wildcard filename, relative filename
G:\syncfolder\*.bmp	* wildcard filename, absolute path
a*b.bmp	* wildcard filename, relative filename
G:\syncfolder\a*b.bmp	* wildcard filename, absolute path
examplefolder\	* entire folder, relative to "gxupdates"
G:\syncfolder\examplefolder\	* entire folder, absolute pathname

When the *files\_on\_server* option is a folder all files, and all sub-folders, are processed.



Note that only simple DOS-style wildcards, involving "\*" and "?" meta-characters are allowed. Complex wildcards with selections inside square-brackets for example, are not supported. For example to sync' all \*.bmp and \*.icn files, 2 entries are required i.e.

```
*.bmp
*.icn
```

rather than:

```
*.[bmp,icn]
```

Note the difference between:

```
examplefolder\
and:
examplefolder\*
```

The former will result in the sync' of all files, all folders (and sub-folders) and all files within folders (and sub-folders). The later will just result in the sync' of all files within the "examplefolder" folder (i.e. wildcards only specify **files** and never folders).

The *folder\_or\_file\_on\_gx* option can specify an absolute pathname or a pathname relative to the GX folder. Note that the trailing slash is optional. The option can be <blank> to specify the GX folder itself. The following rules apply:

<b>files_on_server</b>	<b>folder_or_file_on_gx</b>
Single filename	Single filename (or blank to specify the current GX folder). This allows a single file to be renamed when copied from the server to GX.
Wildcard file name	Folder
Folder	Folder

## 10.2 Progress messages

A progress message box is only displayed if the file transfer process exceeds a certain threshold time period. By default, this period is 5 seconds but may be specified by the following registry setting:

```
..\Global\Client\ServicePacks\DisplaySyncProgressTimeout=5
```

## 10.3 Various

Sub-folders on the GX PC are created on an "as required" as the synchronisation progresses.

## 10.4 File Copy/Sync Permutations

Assuming the "gxupdates" folder is "C:\GSMN\GXUPDATES" then the possibilities for the SYNC and COPY commands in the Sync File are:

<b>COPY/SYNC source</b>	<b>COPY/SYNC dstn</b>	<b>Server file(s)</b>	<b>GX PC files(s)</b>
Single file in GXUPDATES folder			
FILE1		C:\GSMUPDATES\FILE1	FILE1
FILE1	FILE2	C:\GSMUPDATES\FILE1	FILE2
FILE1	DIR2\FILE2	C:\GSMUPDATES\FILE1	DIR2\FILE2
FILE1	D:\DIR3\FILE2	C:\GSMUPDATES\FILE1	D:\DIR3\FILE2
FILE1	DIR2\	C:\GSMUPDATES\FILE1	DIR2\FILE1
FILE1	DIR3\DIR2\	C:\GSMUPDATES\FILE1	DIR3\DIR2\FILE1
FILE1	D:\Dir3\	C:\GSMUPDATES\FILE1	D:\DIR3\FILE1
Single file in sub-folder under GXUPDATES folder			
DIR1\FILE1		C:\GSMUPDATES\DIR1\FILE1	FILE1
DIR1\FILE1	FILE2	C:\GSMUPDATES\DIR1\FILE1	FILE2
DIR1\FILE1	DIR2\FILE2	C:\GSMUPDATES\DIR1\FILE1	DIR2\FILE2
DIR1\FILE1	D:\DIR3\FILE2	C:\GSMUPDATES\DIR1\FILE1	D:\DIR3\FILE2
DIR1\FILE1	DIR2\	C:\GSMUPDATES\DIR1\FILE1	DIR2\FILE1
DIR1\FILE1	DIR3\DIR2\	C:\GSMUPDATES\DIR1\FILE1	DIR3\DIR2\FILE1
DIR1\FILE1	D:\Dir3\	C:\GSMUPDATES\DIR1\FILE1	D:\DIR3\FILE1
Single file in absolute folder			
C:\Dir4\File1		C:\Dir4\File1	FILE1
C:\Dir4\File1	FILE2	C:\Dir4\File1	FILE2
C:\Dir4\File1	DIR2\FILE2	C:\Dir4\File1	DIR2\FILE2
C:\Dir4\File1	D:\DIR3\FILE2	C:\Dir4\File1	D:\DIR3\FILE2
C:\Dir4\File1	DIR2\	C:\Dir4\File1	DIR2\FILE1
C:\Dir4\File1	DIR3\DIR2\	C:\Dir4\File1	DIR3\DIR2\FILE1
C:\Dir4\File1	D:\Dir3\	C:\Dir4\File1	D:\DIR3\FILE1
Wildcard file(s) in GXUPDATES folder			
WILD1		C:\GSMUPDATES\WILD1	D:\GX\WILD1
WILD1	FILE2	*** ILLEGAL ***	*** ILLEGAL ***
WILD1	DIR2\FILE2	*** ILLEGAL ***	*** ILLEGAL ***
WILD1	D:\DIR3\FILE2	*** ILLEGAL ***	*** ILLEGAL ***
WILD1	DIR2\	C:\GSMUPDATES\WILD1	D:\GX\DIR2\WILD1
WILD1	DIR3\DIR2\	C:\GSMUPDATES\WILD1	D:\GX\DIR3\DIR2\WILD1
WILD1	D:\Dir3\	C:\GSMUPDATES\WILD1	D:\DIR3\WILD1
Wildcard file(s) in sub-folder under GXUPDATES folder			
DIR1\WILD1		C:\GSMUPDATES\DIR1\WILD1	D:\GX\FILE1
DIR1\WILD1	FILE2	*** ILLEGAL ***	*** ILLEGAL ***
DIR1\WILD1	DIR2\FILE2	*** ILLEGAL ***	*** ILLEGAL ***
DIR1\WILD1	D:\DIR3\FILE2	*** ILLEGAL ***	*** ILLEGAL ***
DIR1\WILD1	DIR2\	C:\GSMUPDATES\DIR1\WILD1	D:\GX\DIR2\WILD1
DIR1\WILD1	DIR3\DIR2\	C:\GSMUPDATES\DIR1\WILD1	D:\GX\DIR3\DIR2\WILD1
DIR1\WILD1	D:\Dir3\	C:\GSMUPDATES\DIR1\WILD1	D:\DIR3\WILD1
Wildcard file(s) in absolute folder			
C:\Dir4\WILD1		C:\Dir4\File1	D:\GX\FILE1
C:\Dir4\WILD1	FILE2	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\WILD1	DIR2\FILE2	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\WILD1	D:\DIR3\FILE2	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\WILD1	DIR2\	C:\Dir4\WILD1	D:\GX\DIR2\WILD1
C:\Dir4\WILD1	DIR3\DIR2\	C:\Dir4\WILD1	D:\GX\DIR3\DIR2\WILD1
C:\Dir4\WILD1	D:\Dir3\	C:\Dir4\WILD1	D:\DIR3\WILD1
Entire folder in GXUPDATES folder			

## Updating GX Files Automatically

Dir5\		C:\gsm\updates\dir5\*	D:\gx\dir5\*
Dir5\	File2	*** ILLEGAL ***	*** ILLEGAL ***
Dir5\	Dir2\File2	*** ILLEGAL ***	*** ILLEGAL ***
Dir5\	D:\dir3\file2	*** ILLEGAL ***	*** ILLEGAL ***
Dir5\	Dir2\	C:\gsm\updates\dir5\*	D:\gx\dir2\dir5\*
Dir5\	Dir3\dir2\	C:\gsm\updates\dir5\*	D:\gx\dir3\dir2\dir5\*
Dir5\	D:\Dir3\dir2\	C:\gsm\updates\dir5\*	D:\dir3\dir2\dir5\*
Entire folder in sub-folder under GXUPDATES folder			
Dir1\dir5\		C:\gsm\updates\dir1\dir5\*	D:\gx\dir1\dir5\*
Dir1\dir5\	File2	*** ILLEGAL ***	*** ILLEGAL ***
Dir1\dir5\	Dir2\File2	*** ILLEGAL ***	*** ILLEGAL ***
Dir1\dir5\	D:\dir3\file2	*** ILLEGAL ***	*** ILLEGAL ***
Dir1\dir5\	Dir2\	C:\gsm\updates\dir1\dir5\*	D:\gx\dir2\dir1\dir5\*
Dir1\dir5\	Dir3\dir2\	C:\gsm\updates\dir1\dir5\*	D:\gx\dir3\dir2\dir1\dir5\*
Dir1\dir5\	D:\Dir3\dir2\	C:\gsm\updates\dir1\dir5\*	D:\dir3\dir2\dir1\dir5\*
Entire absolute folder			
C:\Dir4\dir5\		*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\dir5\	File2	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\dir5\	Dir2\File2	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\dir5\	D:\dir3\file2	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\dir5\	Dir2\	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\dir5\	Dir3\dir2\	*** ILLEGAL ***	*** ILLEGAL ***
C:\Dir4\dir5\	D:\Dir3\dir2\	*** ILLEGAL ***	*** ILLEGAL ***

### Summary of rules:

1. A single file is copied with the same name if the destination is a folder. A single file may be renamed if the destination is also a filename.
2. Wildcards are not allowed in the destination file or folder specification.
3. Wildcards in the source file spec are not allowed in folder names.
4. A source wildcard spec can only be copied to a destination folder. A source wildcard spec cannot be copied to a destination file.
5. If source folder matches the "wildcard" spec then that folder and all files and sub-folders etc. will be copied.
6. A source folder spec can only be copied to a destination folder. A source folder spec cannot be copied to a destination file.
7. The source folder is itself created, if necessary, on the GX PC.
8. An absolute source folder spec is illegal as logically this would imply that a disk-partition would have to be created on the GX PC !!!!