

# GX File Synchronization

## 1. Introduction

Although the GX File Download technique described in IN271 is adequate for updating “local” files used by GX it was not designed as a general-purpose File Synchronization facility. Three core features of the current GX File Download design prevent it from being used as a completely general-purpose facility:

- All the “master” files on the server must be held in a strict folder-hierarchy under the “GXUPDATES” folder;
- The target folders on the GX PC’s are specified by settings in the GX.INI file;
- The download facility only provides a simple update mechanism. For example, it does not provide a mechanism for “stale” files to be deleted on the GX PC.

This document describes a completely flexible File/Folder Synchronization facility that does not suffer from any of the design restrictions described above.

You will need:

GSM Service Pack 29 or later

GLOBAL.EXE 4.9f or later

GX.EXE 4.5d or later

GXSYNC.EXE dated 26.2.2013 or later, needs to reside in the same folder as GX.EXE

GXSYNC.EXE is included with gx45d.zip (and later) on <http://www.global3000.co.uk>

## 2. Overview (GXSYNC.INI file)

The File Synchronization is driven by entries in a server-side INI file: GXSYNC.INI. By default, the GXSYNC.INI file will reside in the current GSM folder but this can be overridden by a registry setting.

Every section in the GXSYNC.INI file will be a 3-digit number from 001 to 999. Sections will be processed in strict numeric order.

Every [nnn] section should contain the following settings:

### **Type=string**

This setting defines the synchronization type. The following Type settings will be recognized:

Update	Update files on GX PC (equivalent to the GX File Download)
Mirror	Ensure destination ClientFolder is a mirror of the source ServerFolder

Create	Create new files on the GX PC, leaving existing files untouched
Delete	Delete folder(s) on GX PC

The default type is “update”. See section-3, below for further details.

**ClientFolder=*folder***

This mandatory setting specifies the destination folder on the GX Client PC. The folder can either be an absolute path or a folder relative to the current GX folder.

**ServerFolder=*folder***

This setting specifies the source folder on the server. The folder can either be an absolute path or a folder relative to the current GSM folder (i.e. NOT the GXUPDATES folder).

Note that this setting is mandatory for some “types” but is not required for all types.

**Subfolders=*Boolean***

This setting determines if sub-folders of the server-folder and client-folder are to be processed. The default setting is “On”.

**LastSection=*Boolean***

This setting defines the current (numeric) section as the last one to be processed. This provides an “early exit” from the loop that would normally consider sections [001] through to [999].

The default setting is “Off”.

The following settings in the optional [options] section are supported:

**DisplayNewFilesDetected=*Boolean***

By default, the File Synchronization commences silently. If this option is enabled the operator is informed that the File Synchronization will commence.

The default setting is “Off”.

**DisplayFileTransferComplete=*Boolean***

By default, the File Synchronization terminates silently. If this option is enabled the operator is informed that the File Synchronization has completed.

The default setting is “Off”.

**CancelButtonInProgressMessage=*Boolean***

By default, the operator is not given the option to cancel the file transfer process. If this option is enabled, a “Cancel” button is available during the file transfer.

The default setting is “Off”.

**MaximumConcurrentSyncs=Number**

The File Synchronization process may place a high load on the server if multiple operators login simultaneously. This setting controls the number of concurrent users who can execute the File Synchronization process simultaneously. When the maximum concurrent count has been reached the File Synchronization process will be skipped for any users who login during that period. The process is not marked as pending so the operator must login again, to achieve synchronization.

The default setting is 3.

**3. Synchronization Types Detailed Description**

This section provides a detailed description of the various Synchronization Types.

**3.1 Update, Mirror and Create**

The file size and a file-hash of every file in the ServerFolder are compared to the size and file-hash of the same file in the ClientFolder". Important Note: The Last Modification Date (LMD) is **NOT** considered! The following combinations are possible:

Status	Update function	Mirror function	Create function
File exists in the ServerFolder but does not exist in the equivalent ClientFolder.	The file is copied from ServerFolder to the equivalent ClientFolder.	The file is copied from ServerFolder to the equivalent ClientFolder.	The file is copied from ServerFolder to the equivalent ClientFolder.
File exists in the ServerFolder and is identical (in terms of file-size and file-hash) with the same file in the equivalent ClientFolder.	No action.	No action.	No action.
File exists in the ServerFolder and is different (in terms of file-size or file-hash) with the same file in the equivalent ClientFolder.	The file is copied from ServerFolder to the equivalent ClientFolder.	The file is copied from ServerFolder to the equivalent ClientFolder.	No action.
File exists in the ClientFolder but does not exist in the equivalent ServerFolder.	No action	The file is deleted from the ClientFolder.	No action.

The decision to update a file is based on a simple Boolean comparison of the file-size and file-hash. No "fine-tuning" is allowed. For example, the following possible complex conditions are not supported:

- Consider a difference in file-size only;
- Consider Last Modification Date, Creation Date or Last Access Date rather than hash;
- Consider a difference in LMD only;

- Only consider +ve (or –ve) difference in file-size;
- Only consider +ve (or –ve) difference in file-date/time;
- Only consider difference of at least N bytes/km/mb in file-size;
- Only consider difference of at least N seconds/minutes/hours/days in file-date/time;

If the “Subfolders” setting is set to Boolean “On” (i.e. On, Yes, True or 1) all sub-folders under the specified ServerFolder are considered. Equivalent sub-folders under the ClientFolder are created if necessary.

If the “Mirror” option is selected then a sub-folder under the ClientFolder will be deleted, together with all files and sub-folders within it, if the equivalent sub-folder does not exist under the ServerFolder.

### **3.2 Delete**

This function only operates at the folder level i.e. it is not possible to selectively delete files on the GX PC by specifying a file-list on the server!

Only the “ClientFolder” setting is required. The specified folder on the GX PC is deleted even if it contains files and/or sub-folders.

## **4. Processing Details**

The bulk of the code is in GLOBAL.EXE (SVC-61) and GX.EXE.