

# FolderScanUltra



<https://github.com/MaximumOctopus/FolderScanUltra>

## Introduction

FolderScanUltra is a powerful folder/drive analysis tool. If you have any suggestions on how to improve this software or identify any bugs, then please email me at the address on the credits page.

The software is capable of giving a quick analysis of the distribution and contents of any folder. For desktop users and network administrators it should make finding unwanted content much easier.

Once a folder or drive has been scanned then you can create many different reports from that data.

## Installation

It's advised to run FolderScanUltra in administrator mode. This isn't mandatory but will allow it to read and write the entire file system. You may now need this, but if you get an read/write errors while using it then administrator mode may help.

FolderScanUltra doesn't need installing in the normal sense. Either add the folder where FolderScanUltra is located to the "path" environmental variable or refer to it by its full path in batch files (etc.).

The database can be anywhere, but a local install is best (if possible) as it will increase write/read performance. Writing to a local database (`sqlite` or `odbc`) is also kinder to the network.

There should be ten files in the root of `FolderScanUltra\system\` folder. The 9 ".txt" files contain associations that are used to decide which category a file belongs to. Each file contains a list of file extensions (without leading full stop) one per line. Feel free to edit these!

A new log file is created every FolderScanUltra is run, they can be found in the logs folder.

**IMPORTANT: The `sqlite3.dll` files for 32-bit and 64-bit version FolderScanUltra have the same file names, but are not compatible with the opposite version.**

**IMPORTANT: Keep a backup of your FolderScanUltra folder. Unzipping a new version will overwrite any edits you've made.**

## A sad addendum

You'll notice occasional references to xinorbis in this document. FolderScanUltra is an updated version of X.Robot, which was a powerful companion tool to xinorbis. As a console tool it could be used to quietly generate and store data without user intervention (in batch files, for instance).

FolderScanUltra still has all of these features. It's a great tool for adding to servers in a batch file or scheduled task.

Xinorbis is a powerful GUI version of this tool. Due to the stupidly high cost of Delphi (with which Xinorbis was developed), around £1200, this is no longer being maintained. I would like to do a C++ or C# rewrite but it would be a multi-year task and for now it's on hold (though not impossible it will be finished one day).

FolderScanUltra *is* actively being maintained and will see many new features and improvements over the next few years. If you have any suggestions then please get in touch ([paul@freshney.org](mailto:paul@freshney.org)).

## Conventions

When dealing with file sizes FolderScanUltra uses the following conventions.

1 kilobyte (1K)	= 1024 bytes
1 megabyte (1MB)	= 1048576 bytes (1024 x 1024)
1 gigabyte (1GB)	= 1073741824 bytes (1024 x 1024 x 1024)
1 terabyte (1TB)	= 1099511627776 bytes (1024 x 1024 x 1024 x 1024)

Not all applications follow this convention but as well as being the most commonly used throughout the industry it's also how Windows reports file sizes.

It's worth noting that hard disk manufacturers tend to use a slightly different method when reporting hard disk sizes.

1 gigabyte (1GB)	= 1000000000 bytes (1000 x 1000 x 1000)
1 terabyte (1TB)	= 1000000000000 bytes (1000 x 1000 x 1000 x 1000)

## Command Line Parameters

The first parameter should **always** the path to scan (unless you're using one of the help commands):

```
fsu.exe folder_to_scan (eg fsu "e:\pictures")
```

If FolderScanUltra is executed with just this one parameter, then it will output a simple summary of the scan to the console.

All comments and suggestions are gratefully received, please email them to me at [paul@freshney.org](mailto:paul@freshney.org)

## Miscellaneous Commands

*\*nothing\**

Outputs version and basic "about" information" (web address and email etc.)

*/? or /h*

Simple help, and a few stats.

*/o*

Disables status output.

*/p*

Show scan and processing progress

*/test*

Test parameters and custom.ini settings (doesn't scan anything)

*/allowvirtual*

By default, FolderScanUltra will ignore all virtual files. Running with this command line switch will enable processing of virtual files (this is likely to cause unreliable file count and file size results).

## Database Access

FolderScanUltra can update a folder history database if required to do so (this is probably its most powerful and useful feature). Use FolderScanUltra to update the database (e.g. automatically through a batch file or scheduled task) and then use X.Database, or Xinorbis, to view reports, graphs etc.

*/odbc*

Updates an ODBC compliant database with all file and folder information.

FolderScanUltra will expect a `custom.ini` file with a "connectionstring" parameter in the same format as Xinorbis. A template `custom.ini` file is included in the portable package.

Ideally Xinorbis and FolderScanUltra should live in the same folder; they'll be much happier and can share config information.

connectionstrings are database-voodoo, for more help on creating them see this excellent website: <https://www.connectionstrings.com/>.

*/sqlite*

Updates an SQLite 3 database with all file/folder details.

FolderScanUltra will read the config.ini file and use the same database as Xinorbis. If no config.ini file is present then the default path will be used. Depending on which version of Windows is installed:

```
C:\documents and settings\<user>\folderscanultra\folderhistory\database\xinorbis.db
```

```
C:\users\<user>\folderscanultra\folderhistory\database\xinorbis.db
```

`/updatescanhistory`

Updates the Xinorbis Scan History. Only useful if you use Xinorbis on the same PC as FolderScanUltra.

The command below will scan "somefolder" and update the Xinorbis database via ODBC and update the Xinorbis scan history:

```
fsu somefolder /odbc /updatescanhistory
```

If `somefolder` contains spaces, then you must use quotes around the folder path:

```
fsu "some folder" /odbc /updatescanhistory
```

## Alternative database structure

It's now possible to save scan data to an alternative database structure. This new structure is more suited to users who wish to interrogate the data with other tools (such as PowerBI).

`/dbstructured`

Will enable the new format.

`/systemtable;tablename`

Set the name of the system table. If this parameter is not specified, then "XinorbisSystem" will be used instead.

(it will be created if it doesn't exist)

`/datatable;tablename`

Set the name of the data table. If this parameter is not specified, then the following is used:

`MD5Checksum(scan path) + yyyyymmddHHMMSS`

(will be created if it doesn't exist)

## System table

One row per scan.

TableName	Name of the data table where the scan data is stored
Folder	Full path to the scanned folder
SizeString	Size of the scan written in the most convenient format (eg 51.22GB)
Size	Size of the scan in bytes
Files	File count
Folders	Folder count
ScanDate	Scan data formatted as yyyyymmddHHMMSS.

## Data table

One row per scanned object (file or folder). A field for each object property.

An extra field "ScanDate" matching the "ScanDate" field of the system table can be used to easily retrieve data.

Xinorbis cannot (yet) read data structured in this manner, it's designed for external tools only.

The X.Database tool will be updated soon to understand this format.

## Optimisations

`/notemp`

Temporary files will still be scanned, but the temporary file charts and lists will not be created. This might improve scan performance.

`/nouser`

Ignore file owner details. This option will improve scan performance, however it will mean that reports will not be able to show usage statistics based on file owner/creator.

`/noprocess`

If you only plan on producing file lists, or updating a database, then use this option as it will stop FolderScanUltra from unnecessarily processing the file data.

## Report Output

If no report options are selected, then a basic summary of the directory scan will be output to the console.

The configuration options in the braces {110} are *optional*. The defaults are specified where appropriate.

Most of FolderScanUltra's options are either on or off, toggling an option is simply a matter of replacing the letters (a, b, c etc.) with either:

**0** to disable the option

**1** to enable the option

Where an option has many settings then this is specified separately.

If no output file name is specified then FolderScanUltra will save the file to either:

The folder specified in the custom.ini file:

```
[FolderScanUltra]
DataPath=<folder>
```

Or if the above cannot be found, or is blank:

```
[Main]
DataPath=<folder>
```

If DataPath is blank then FolderScanUltra will use:

```
<data>\FolderScanUltra\Reports\<report>\fsu_yyyymmdd_hhmmss.xxx
```

typically: `c:\ProgramData\MaximumOctopus\xinorbis\FolderScanUltra\Reports\...`

If custom.ini cannot be found then, FolderScanUltra will use:

```
<install>\system\Reports\FolderScanUltra\<report>\xcom_yyyymmdd_hhmmss.xxx
```

## Generate CSV report

Outputs a CSV file to the path specified in <file name>.

Items in { } are optional, <file name> parameter is optional. Default shows the values that will be used if no parameters are specified.

Usage: /CSV{abc};<file name>

Default: /CSV{110};<output folder>\xcom\_yyyymmdd\_hhmmss.csv

- option a:      0 - category output only  
                 1 - full file list (default)
- option b:      0 - Don't add "heading row"  
                 1 - Add "heading row" (default)
- option c:      0 - File sizes in most convenient format (1MB, 400bytes etc.)  
                 1 - All file sizes in bytes  
                 2 - All file sizes in kilobytes  
                 3 - All file sizes in megabytes

If a file name is not specified then it will be saved using the rules on **Page 4 – Report Output**.

Example:

/CSV{1}

Create only a list of files in the scan

/CSV{10}

Create only a list of files in the scan and don't add a heading row.

## Generate HTML report

Outputs an HTML report to the path specified in <file name>.

Items in { } are optional, <file name> parameter is optional. Default shows the values that will be used if no parameters are specified.

Usage: /HTML{abcdefghijklm};<file name>

Default: /HTML{1111111111120};<output folder>\xcom\_yyyymmdd\_hhmmss.htm

option a:	graphs on (1 default) or off (0)	
option b:	include File Attributes section	(default is 1)
option c:	include Category section	(default is 1)
option d:	include Directories section	(default is 1)
option e:	include Magnitude section	(default is 1)
option f:	include File Extension list section	(default is 1)
option g:	include Null Files section	(default is 1)
option h:	include File Dates section	(default is 1)
option i:	include Top 50 section	(default is 1)
option j:	include Users section	(default is 1)
option k:	include Temporary files section	(default is 1)
option l:	0 - report is 800 pixels wide	
	1 - report is 1024 pixels wide	
	2 - report is 1280 pixels wide	(default)
option m:	0 - File sizes in most convenient format (1MB, 400bytes etc.)	
	1 - All file sizes in bytes	
	2 - All file sizes in kilobytes	

If a file name is not specified then it will be saved using the rules on **Page 4 – Report Output**.

/deephtml

This is a new HTML report option that will include the second level of folder hierarchy below the root. This extra information is likely to be more useful than a top-level folder listing.

This uses the same options as a standard HTML report but includes more information at the bottom of the report.

## Generate Xinorbis report

This was a report specific to the Xinorbis application.

Support for this format is included for historical reasons, but it is not advised that you use it.



## **Generate a simple summary of findings**

Outputs a summary to the console.

Usage: `/SUM`

Default: `/SUM`

Only outputs data to the console.

## **Top 20 lists**

**All options output to the console.**

`/top20`

Top 20 largest files

`/bottom20`

Top 20 largest files

`/new20`

Top 20 newest files

`/old20`

Top 20 oldest files

`/top20folders`

Shows the top largest folders in the root of the scan folder, ordered by size.

## **Other console output options**

`/allfolders`

Shows all folders in the root of the scan folder, ordered by size.

## Generate an ASCII text report

Outputs an ASCII text report file to the path specified in <file name>.

Items in { } are optional, <file name> parameter is optional. Default shows the values that will be used if no parameters are specified.

Usage: /TEXT{abcdefghij};<file name>

Default: /TEXT{1111111111};<output folder>\xcom\_yyyymmdd\_hhmmss.txt

option a:	UNUSED	
option b:	include File Attributes section	(default is 1)
option c:	include Category section	(default is 1)
option d:	include Directories section	(default is 1)
option e:	include Magnitude section	(default is 1)
option f:	include File Extension list section	(default is 1)
option g:	include Null Files section	(default is 1)
option h:	include File Dates section	(default is 1)
option i:	include Top 50 section	(default is 1)
option j:	include Users section	(default is 1)

If a file name is not specified, then it will be saved using the rules on **Page 4 – Report Output**.

/deeptext

This is a new Text report option that will include the second level of folder hierarchy below the root. This extra information is likely to be more useful than that a top-level folder listing.

This uses the same options as a standard Text report but includes more information at the bottom of the report.

## Generate an XML report

Outputs an XML 1.0 compliant report file to the path specified in <file name>. Report can either be a complete list of files along with properties, or, category usage data.

Items in { } are optional, <file name> parameter is optional. Default shows the values that will be used if no parameters are specified.

Usage: /XML{abcdefghijkl};<file name>

Default: /XML{011111111111};<output folder>\xcom\_yyyymmdd\_hhmmss.xml

option a:	file list (1) or summary of results	(default is 0)
option b:	include File Attributes section	(default is 1)
option c:	include Category section	(default is 1)
option d:	include Directories section	(default is 1)
option e:	include Magnitude section	(default is 1)
option f:	include File Extension list section	(default is 1)
option g:	include Null Files section	(default is 1)
option h:	include File Dates section	(default is 1)
option i:	include Top 50 section	(default is 1)
option j:	include Users section	(default is 1)
option k:	include Temporary files section	(default is 1)

If a file name is not specified, it will be saved using the rules on **Page 4 – Report Output**.

## Generate an XML file list report

<file name> parameter is optional. Default shows the values that will be used if no parameters are specified.

Usage: /XFL;<file name>

Default: /XFL

Outputs an XML 1.0 compliant report to the path specified in <file name>.

If a file name is not specified, then it will be saved using the rules on **Page 4 – Report Output**.

## Extra Commands

Usage: `/listroot`

Lists only the folders and files in the root of the selected scan folder. Doesn't scan anything.

If you're experimenting with access permissions to FolderScanUltra then this option will let you see what FolderScanUltra can see.

Usage: `/test`

Will test the validity of the FolderScanUltra command-line parameters. Use it to check `odbc` connectivity (and the connection string), status of the `sqlite` database, and various other system checks.

Usage: `/cat`

This option must **never** be used.

## Dynamic file name generation

For use in all options that take a file name as a parameter. These parameters are **case-sensitive**.

\$XD	The drive where FolderScanUltra was run from
\$XF	The folder where FolderScanUltra was run from
\$PC	The name (network) of the PC FolderScanUltra is executed on
\$User	The name of the user that executed FolderScanUltra
\$yyyy	Current year (e.g. 2009)
\$YY	Last two digits of current year (e.g. 08)
\$mm	Current month (01 for January, 02 for February, etc.)
\$MM	Current month as short word (Jan, Feb, Mar, Apr, etc.)
\$dd	Current day (01 through 28, 29, 30 or 31 depending on month)
\$DD	Current day as short word (Mon, Tue, Wed, etc.)
\$Th	Hour part of the current time (00 - 23)
\$Tm	Minute part of the current time (00 - 59)
\$Ts	Second part of the current time (00 - 59)

Examples of usage:

Current date in yyyymmdd format:

```
/TXT;c:\folderscanultra\%yyyy%mm%dd_dailyscan.txt
```

Store files in individual folders for month and year:

```
/TXT;c:\scan\%yyyy%\%mm%\%dd_dailyscan.txt
```

## XML Report Structure

FolderScanUltra outputs fully v1.0 compliant XML.

### Structure for XML file list:

```
<folderscanultrafilelist>
  <file>
    <name>          File name
    <path>          Full file path
    <sizewords>      Size represented in most convenient format: 1MB, 500K etc.
    <sizebytes>     Size in bytes
    <sizeondiskwords> Used disk space in the most convenient format: 1MB, 500K etc.
    <sizeondiskbytes> Actual used disk space in bytes
    <owner>         File owner
    <datecreated>   Date file created in DD/MM/YYYY format
    <datemodified>  Date file modified in DD/MM/YYYY format
    <dateaccessed>  Date file was last accessed in DD/MM/YYYY format
    <category>      File category (1- programs etc.)
    <directory>     1 if folder, 0 if file.
    <readonly>      1 if file is read only
    <hidden>        1 if file is hidden
    <system>        1 if file is system file
    <archive>       1 if file is archive
  </file>
</folderscanultrafilelist>
```

### Structure for XML report output

```
<folderscanultrareport>
<information>
  <directory>      analysed path
  <date>           date of analysis
  <numberoffiles>  number of files included in analysis
  <numberofdirectories> number of folder in analysis
  <sizeoffiles>    total size of the files analysed
  <diskspacefree>  disk space available on target drive
  <diskspacemax>  disk space total on target drive
  <sectorspercluster> number of sectors per cluster
  <bytespersector> number of bytes per sector
  <freeclusters>  free clusters on hard disk
  <totalclusters> total clusters on hard disk
  <volumename>    volume name of hard disk
  <serialnumber>  hard disk serial number
  <filesystem>    file system type (FAT32, NTFS etc.)
</information>

<categorylist>
  <category name=""> one section for each of the 10 file categories
  <numberoffiles>    number of files belonging to relevant category
  <numberoffilesaspercent> number of files as percentage of total analysed
  <sizeoffiles>      size of files analysed, belonging to relevant category
  <sizeoffilesaspercent> size of files as percentage of total analysed, relevant category
</categorylist>

<dirlist>
  <dir name="">      one section for each dir analysed
  <numberoffiles>    number of files in analysed folder
  <numberoffilesaspercent> number of files as percentage of total analysed
```

```

        <sizeoffiles>                combined size of files
        <sizeoffilesaspercent>      combined size of files, as percentage of total analysed
    </dir>
</dirlist>

<magnitudelist>
    <magnitude name="">            one section for each magnitude category
        <numberoffiles>            number of files in analysed folder
        <numberoffilesaspercent>    number of files as percentage of total analysed
        <sizeoffiles>              combined size of files
        <sizeoffilesaspercent>      combined size of files, as percentage of total analysed
    </magnitude>
</magnitudelist>

<extensiondata>
    <extensioncategory name="">    one section for each extension category
        <numberoffiles>            number of files in analysed folder
        <numberoffilesaspercent>    number of files as percentage of total analysed
        <sizeoffiles>              combined size of files
        <sizeoffilesaspercent>      combined size of files, as percentage of total analysed

        <extension name="">        one section for extension within this category that has more
                                    than one file associated with it

        <numberoffiles>            number of files in analysed folder
        <numberoffilesaspercent>    number of files as percentage of total analysed
        <sizeoffiles>              combined size of files
        <sizeoffilesaspercent>      combined size of files, as percentage of total analysed
    </extension>
    </extensioncategory>
</extensiondata>

<top50largest>
    <top50large size="">path to file</top50large>
</top50largest>

<top50smallest>
    <top50small size="">path to file</top50small>
</top50smallest>

<nullfiles>
    <nullfile name="">path to</nullfile>
</nullfiles>

</folderscanultrareport>

```

If you need any help with the XML output, please don't hesitate to contact me.

# Credits

<b>Programming</b>	Paul Alan Freshney
<b>Development Cats</b>	Rutherford, Freeman, and Maxwell ( <a href="http://maximumoctopus.com/developmentcats.htm">maximumoctopus.com/developmentcats.htm</a> )
<b>Database Engine</b>	SQLite ( <a href="http://www.sqlite.org">www.sqlite.org</a> )
<b>Czech Translation</b>	Jakub Markytán
<b>French Translation</b>	Christian Perronnet
<b>German Translation</b>	Marcus Barkhahn
<b>Hungarian Translation</b>	Zsolt Brechler
<b>Russian Translation</b>	kopejkin
<b>Italian Translation</b>	Victor
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And *everyone* who has sent me feedback. Please keep it coming!

All of my software is free and open source.

Please donate to your local cat charity or shelter, thanks.



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<https://github.com/MaximumOctopus/FolderScanUltra>