



Shadow v1.0 User Guide 31 August 2012

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1.0 (U) Introduction

(S) Shadow is an "airgap" jumping tool which utilizes removable USB drives as transports on a network. Once multiple Shadow instances are installed and share drives, tasking and payloads can be sent back-and-forth.

1.1 (U) Requirement

(S) The Intelligence Community has identified the need (requirement # 2012-0552) for a capability to conduct asset validation via covert survey of asset's machine.

1.2 (U) Purpose

(S) This User Guide describes how to use Shadow v1.0. The document provides the Shadow configuration process, execution instructions, and postprocessor process.

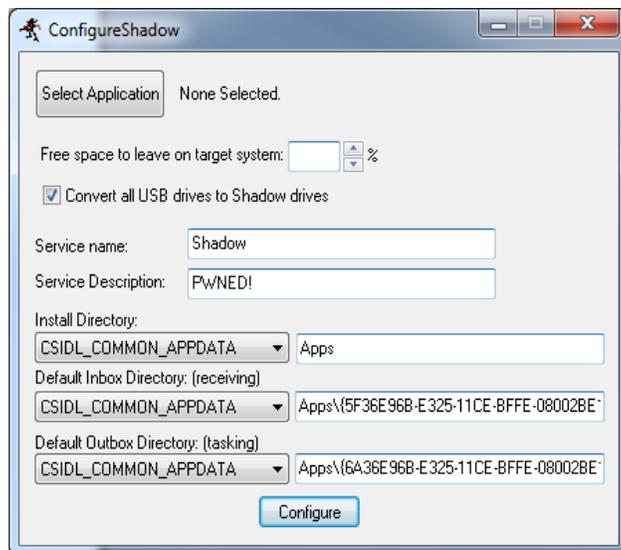
2.0 (U) System Overview

- (S) Configuration

- o (S) Shadow uses a Windows GUI application for configuration. The user can select how much free space to leave on the target drive when storing data locally, whether or not to convert all usb drives to shadow-usable drives (create covert partition), name/description of the service, and default storage directories.

- o (S) The Inbox Directory is the receiving directory, that is only used by servers. It's the directory the stores the collected take to later be postprocessed.

- o (S) The Outbox directory is used by all Shadow instances, and it stores the Incoming/outgoing packets for tasking.



- (S) Deployment and Execution

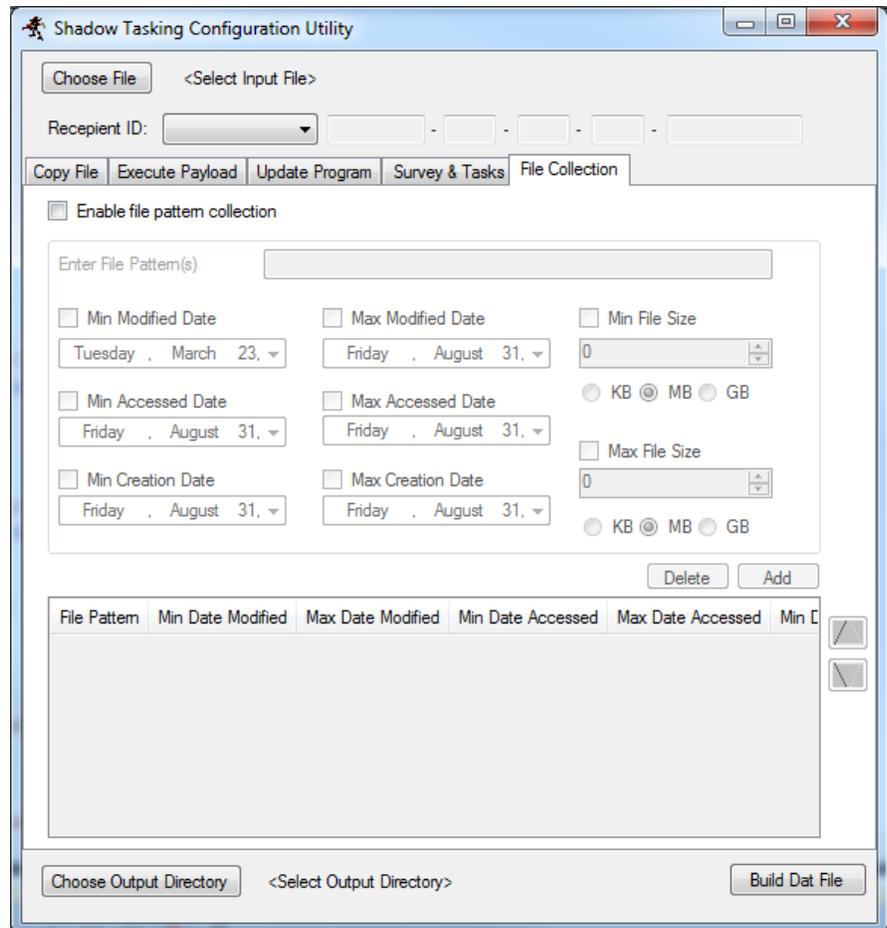
- o (S) Once the configure tool completes successfully, you can deploy Shadow on target machines. This installation mechanism can be whatever the operator selects, so long as it gives us admin privileges to install Shadow as a service. To install Shadow, run from a commandline, "Shadow.exe -i" or "Shadow.exe -iS" to install as a client or server, respectively.

3.0 (U) Getting Started

3.1 (U) Creating Tasking Packets: Basic Overview

- (S) On initial install of Shadow, it will perform a preliminary directory listing and system survey to then be exfiltrated on any available usb drive. In order to send tasking to shadow, you must use the Shadow Tasking Configuration Utility, which will build packets for the Shadow network.

- (S) There are several user-configurable packets available: Copy, execute, update, survey, collection; Each with its own configuration tab. All config options require you to select a recipient ID (which can be determined from postprocessed Shadow data) and an output directory. Additionally, you may choose a file if that operation requires it.



- (S) The copy operation requires a file input, and destination on the target machine to place it. This could be used for replacing target programs/files with trojaned versions.
- (S) The execute operation also requires a file input, and allows execution of a payload. As of now, all payloads will execute as System.
- (S) The Update operation allows for operators to perform updates on Shadow: updating the program version (requires file input), changing the node ID, or removing Shadow.
- (S) The Survey & Tasking operation allows for directory listing / survey tasking, and the File collect operation will collect specified files, as seen above.

3.2 (U) Creating Tasking Packets: odds and ends

- Whenever creating tasking packets, the most important step is ensuring the Recipient ID is properly configured. You can select a server or client ID to send the packets to, or you can select two specialized IDs: ANY_SERVER and ALL_SHADOW
 - Client: A Shadow instance installed with "Shadow.exe -i", and does not have any outside access. It is entirely contained within a closed network. It is differentiated by having the highest-order bit set to 0.
 - Server: A Shadow instance installed with "Shadow.exe -iS", and DOES have outside access. This machine can access the internet, and we can send collected data back to postprocess. Its highest-order bit is set to 1.
 - ANY_SERVER: Specifies the recipient can be any Shadow server. Should be used sparingly, as the exact machine or number of machines sent these packets is undefined.
 - ALL_SHADOW: Specified all Shadow instances should execute this packet. Should be used sparingly-- Only sent to all Shadow instances that are known by the first machine to receive this packet.
 - *Clipboard Paste*: Pastes from the clipboard the recipient ID copied from either text or a filename. This is the preferred option, since you only need to copy the ID.
- Generally speaking, you should always specify which packets to send by either using the "Clipboard Paste" option or manually typing the ID. If unsure if ID is client or server, the program will inform you when you attempt to build the dat file. The IDs are all contained in postprocessed data, and since all Shadow instances do surveys and directory lists, and send them back to a server-- you should always know which Shadow IDs are on your network. You simply need to copy the folder from this postprocessed data (IE. Server_C0829FCD-534F-D141-878C-CDC548A63947), or the text itself. You can either copy the name including the "Server_" / "Client_" prepended, or just the ID itself ("Server_C0829FCD-534F-D141-878C-CDC548A63947" or "C0829FCD-534F-D141-878C-CDC548A63947" or "C0829FCD534FD141878CCDC548A63947" is acceptable).
- "Configure Copy Option": This is an option for the "Copy File" and "Execute Payload" packets. You can specify to copy the chosen input file to the default directory, a specified directory, or a special CSIDL directory.
 - Default Directory: The default Inbox Directory, as identified in the Shadow configuration process in section 2.0
 - Specified Directory: You can actually specify a directory such as "C:\blah\..."
 - Special CSIDL directory: This is the recommended choice. You can select from a list of provided CSIDLs (constant special item ID list) that is supported by the Windows Operating System itself. See the CSIDL appendix for all these paths.
- "Update Program" task: "Remove Shadow": This task of removing Shadow will only effect the first machine that receives this packet if created with an ALL_SHADOW recipient. Be careful when generating this packet, and ensure you directly send to the desired recipient.

- "File Collection" task:
 - (S) For each file pattern entered, collection criteria is created and saved as a row in the collection priorities table. Wildcards and environment variables may be used in the file pattern field. For example, a file pattern of ***.doc** will collect all Microsoft Word docs off of all fixed drives in the system. A file pattern of **C:*.doc** will collect all Microsoft Word docs off of the C drive. Note that 2007 Office docs have an **x** on the extension, so to include all 2007 Word docs search with **C:*.docx or C:*.doc***. To search for specific files, enter the entire path to the file: **C:\Program Files\sample.txt**.
 - (S) To enable the date controls and the min/max file size fields, the appropriate check boxes must be selected.
 - (S) Once collection criteria are set, click the **Add Row** button. This will add a row to the table on the lower part of the screen. To add additional file patterns with different collection criteria, change the entries in the Collection Criteria area of the screen, and then click **Add Row** again to add a new entry to the table.
 - (S) Entries may be moved up and down within the table by clicking on the row of interest to move (it will be highlighted once it is selected), and then clicking the **Up** and **Down** buttons until the row is in the desired position. Note that collection will occur based on the priority of entries in the table, with the highest priority collection set starting at the top. Each collection set will run individually.
 - (S) To delete a row in the table, click on a row, (again it will be highlighted when selected), and then hit the **Delete Row** button.

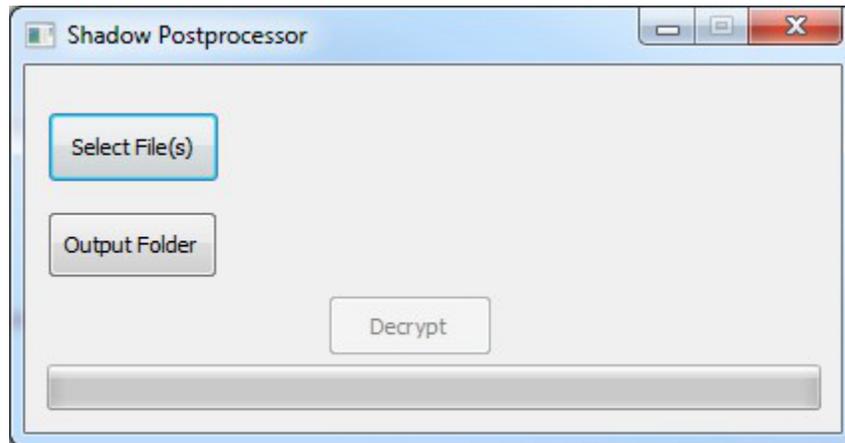
3.3 (U) Packet Deployment

- (S) Once you've built your .dat file, you must drop it in a Shadow outbox directory, as configured in the ConfigureShadow program ("Default Tasking Directory"). Shadow will then eat the packet, and determine what to do with it.
- (S) Shadow will forward the packet to the intended recipient if known, or broadcast the message to all Shadow instances on the network if the recipient is not known. If the recipient is designated "ALL_SHADOW", then a broadcast will be sent to all currently known recipients of the forwarding system.
- (S) If configured, Shadow will Watermark all removable media it discovers; Unbeknownst to the user, the drive will be repartitioned and space allocated for a Shadow covert storage area. Prior to Shadow using these drives, they must come into contact with other Shadow machines. Until the drive has been read by multiple other Shadow devices, the drive will not be used, nor partitioned but for 8MB. After it has been deemed usable, Shadow will allocate 10% of the drive for usage. You must select to "Convert all USB drives to Shadow drives" in the Shadow configure tool for this to occur. The only reason you wouldn't want to do this is if you already have Shadow drives on the closed network that you want

more direct control over. Otherwise, Shadow will not function with no drives to utilize and send packets.

3.4 (U) Post-deployment

- (S) To post-process the collected Shadow data, you must use the Shadow Postprocessor. This will take multiple files, and an output folder-- It will then create a directory with the packet's origination ID, then a directory containing the date-time stamp of collection, then the collected files in the same directory structure as they were collected or the directory/survey collects.



- (S) It's possible that some packets were lost or not transported along with this drive, in which case, the files will have missing chunks- In a hex viewer, you will see *MISSING_CHUNK* for the data that's missing. If these packets are later received, they will fill this missing data provided you give the postprocess the same output folder.

(U) Appendix A: CSIDLs

CSIDL (constant special item ID list) values provide a unique system-independent way to identify special folders used frequently by applications, but which may not have the same name or location on any given system. For example, the system folder may be "C:\Windows" on one system and "C:\Winnt" on another. These constants are defined in Shlobj.h. A subset of them is also defined in Shfolder.h.

Constants

CSIDL_ADMINTOOLS (FOLDERID_AdminTools)

[Version 5.0](#). The file system directory that is used to store administrative tools for an individual user. The Microsoft Management Console (MMC) will save customized consoles to this directory, and it will roam with the user.

CSIDL_ALTSTARTUP (FOLDERID_Startup)

The file system directory that corresponds to the user's nonlocalized Startup program group. This value is recognized in Windows Vista for backward compatibility, but the folder itself no longer exists.

CSIDL_APPDATA (FOLDERID_RoamingAppData)

Version 4.71. The file system directory that serves as a common repository for application-specific data. A typical path is C:\Documents and Settings*username*\Application Data. This CSIDL is supported by the redistributable Shfolder.dll for systems that do not have the Microsoft Internet Explorer 4.0 integrated Shell installed.

CSIDL_BITBUCKET (FOLDERID_RecycleBinFolder)

The virtual folder that contains the objects in the user's **Recycle Bin**.

CSIDL_CDBURN_AREA (FOLDERID_CDBurning)

Version 6.0. The file system directory that acts as a staging area for files waiting to be written to a CD. A typical path is C:\Documents and Settings*username*\Local Settings\Application Data\Microsoft\CD Burning.

CSIDL_COMMON_ADMINTOOLS (FOLDERID_CommonAdminTools)

Version 5.0. The file system directory that contains administrative tools for all users of the computer.

CSIDL_COMMON_ALTSTARTUP (FOLDERID_CommonStartup)

The file system directory that corresponds to the nonlocalized Startup program group for all users. Valid only for Microsoft Windows NT systems. This value is recognized in Windows Vista for backward compatibility, but the folder itself no longer exists.

CSIDL_COMMON_APPDATA (FOLDERID_ProgramData)

Version 5.0. The file system directory that contains application data for all users. A typical path is C:\Documents and Settings\All Users\Application Data. This folder is used for application data that is not user specific. For example, an application can store a spell-check dictionary, a database of clip art, or a log file in the CSIDL_COMMON_APPDATA folder. This information will not roam and is available to anyone using the computer.

CSIDL_COMMON_DESKTOPDIRECTORY (FOLDERID_PublicDesktop)

The file system directory that contains files and folders that appear on the desktop for all users. A typical path is C:\Documents and Settings\All Users\Desktop. Valid only for Windows NT systems.

CSIDL_COMMON_DOCUMENTS (FOLDERID_PublicDocuments)

The file system directory that contains documents that are common to all users. A typical path is C:\Documents and Settings\All Users\Documents. Valid for Windows NT systems and Windows 95 and Windows 98 systems with Shfolder.dll installed.

CSIDL_COMMON_FAVORITES (FOLDERID_Favorites)

The file system directory that serves as a common repository for favorite items common to all users. Valid only for Windows NT systems.

CSIDL_COMMON_MUSIC (FOLDERID_PublicMusic)

Version 6.0. The file system directory that serves as a repository for music files common to all users. A typical path is C:\Documents and Settings\All Users\Documents\My Music.

CSIDL_COMMON_OEM_LINKS (FOLDERID_CommonOEMLinks)

This value is recognized in Windows Vista for backward compatibility, but the folder itself is no longer used.

CSIDL_COMMON_PICTURES (FOLDERID_PublicPictures)

Version 6.0. The file system directory that serves as a repository for image files common to all users. A typical path is C:\Documents and Settings\All Users\Documents\My Pictures.

CSIDL_COMMON_PROGRAMS (FOLDERID_CommonPrograms)

The file system directory that contains the directories for the common program groups that appear on the **Start** menu for all users. A typical path is C:\Documents and Settings\All Users\Start Menu\Programs. Valid only for Windows NT systems.

CSIDL_COMMON_STARTMENU (FOLDERID_CommonStartMenu)

The file system directory that contains the programs and folders that appear on the **Start** menu for all users. A typical path is C:\Documents and Settings\All Users\Start Menu. Valid only for Windows NT systems.

CSIDL_COMMON_STARTUP (FOLDERID_CommonStartup)

The file system directory that contains the programs that appear in the Startup folder for all users. A typical path is C:\Documents and Settings\All Users\Start Menu\Programs\Startup. Valid only for Windows NT systems.

CSIDL_COMMON_TEMPLATES (FOLDERID_CommonTemplates)

The file system directory that contains the templates that are available to all users. A typical path is C:\Documents and Settings\All Users\Templates. Valid only for Windows NT systems.

CSIDL_COMMON_VIDEO (FOLDERID_PublicVideos)

Version 6.0. The file system directory that serves as a repository for video files common to all users. A typical path is C:\Documents and Settings\All Users\Documents\My Videos.

CSIDL_COMPUTERSNEARME (FOLDERID_NetworkFolder)

The folder that represents other computers in your workgroup.

CSIDL_CONNECTIONS (FOLDERID_ConnectionsFolder)

The virtual folder that represents Network Connections, that contains network and dial-up connections.

CSIDL_CONTROLS (FOLDERID_ControlPanelFolder)

The virtual folder that contains icons for the Control Panel applications.

CSIDL_COOKIES (FOLDERID_Cookies)

The file system directory that serves as a common repository for Internet cookies. A typical path is C:\Documents and Settings\ *username*\Cookies.

CSIDL_DESKTOP (FOLDERID_Desktop)

The virtual folder that represents the Windows desktop, the root of the namespace.

CSIDL_DESKTOPDIRECTORY (FOLDERID_Desktop)

The file system directory used to physically store file objects on the desktop (not to be confused with the desktop folder itself). A typical path is C:\Documents and Settings\ *username*\Desktop.

CSIDL_DRIVES (FOLDERID_ComputerFolder)

The virtual folder that represents My Computer, containing everything on the local computer: storage devices, printers, and Control Panel. The folder can also contain mapped network drives.

CSIDL_FAVORITES (FOLDERID_Favorites)

The file system directory that serves as a common repository for the user's favorite items. A typical path is C:\Documents and Settings\ *username*\Favorites.

CSIDL_FONTS (FOLDERID_Fonts)

A virtual folder that contains fonts. A typical path is C:\Windows\Fonts.

CSIDL_HISTORY (FOLDERID_History)

The file system directory that serves as a common repository for Internet history items.

CSIDL_INTERNET (FOLDERID_InternetFolder)

A virtual folder for Internet Explorer.

CSIDL_INTERNET_CACHE (FOLDERID_InternetCache)

Version 4.72. The file system directory that serves as a common repository for temporary Internet files. A typical path is C:\Documents and Settings\ *username*\Local Settings\Temporary Internet Files.

CSIDL_LOCAL_APPDATA (FOLDERID_LocalAppData)

Version 5.0. The file system directory that serves as a data repository for local (nonroaming) applications. A typical path is C:\Documents and Settings\ *username*\Local Settings\Application Data.

CSIDL_MYDOCUMENTS (FOLDERID_Documents)

Version 6.0. The virtual folder that represents the My Documents desktop item. This value is equivalent to [CSIDL_PERSONAL](#).

CSIDL_MYMUSIC (FOLDERID_Music)

The file system directory that serves as a common repository for music files. A typical path is C:\Documents and Settings\User\My Documents\My Music.

CSIDL_MYPICTURES (FOLDERID_Pictures)

Version 5.0. The file system directory that serves as a common repository for image files. A typical path is C:\Documents and Settings*username*\My Documents\My Pictures.

CSIDL_MYVIDEO (FOLDERID_Videos)

Version 6.0. The file system directory that serves as a common repository for video files. A typical path is C:\Documents and Settings*username*\My Documents\My Videos.

CSIDL_NETHOOD (FOLDERID_NetHood)

A file system directory that contains the link objects that may exist in the **My Network Places** virtual folder. It is not the same as [CSIDL_NETWORK](#), which represents the network namespace root. A typical path is C:\Documents and Settings*username*\NetHood.

CSIDL_NETWORK (FOLDERID_NetworkFolder)

A virtual folder that represents Network Neighborhood, the root of the network namespace hierarchy.

CSIDL_PERSONAL (FOLDERID_Documents)

Version 6.0. The virtual folder that represents the My Documents desktop item. This is equivalent to [CSIDL_MYDOCUMENTS](#).

Previous to Version 6.0. The file system directory used to physically store a user's common repository of documents. A typical path is C:\Documents and Settings*username*\My Documents. This should be distinguished from the virtual **My Documents** folder in the namespace. To access that virtual folder, use [SHGetFolderLocation](#), which returns the [ITEMIDLIST](#) for the virtual location, or refer to the technique described in [Managing the File System](#).

CSIDL_PRINTERS (FOLDERID_PrintersFolder)

The virtual folder that contains installed printers.

CSIDL_PRINTHOOD (FOLDERID_PrintHood)

The file system directory that contains the link objects that can exist in the **Printers** virtual folder. A typical path is C:\Documents and Settings*username*\PrintHood.

CSIDL_PROFILE (FOLDERID_Profile)

Version 5.0. The user's profile folder. A typical path is C:\Users*username*. Applications should not create files or folders at this level; they should put their data under the locations referred to by [CSIDL_APPDATA](#) or [CSIDL_LOCAL_APPDATA](#). However, if you are creating a new Known Folder the profile root referred to by CSIDL_PROFILE is appropriate.

CSIDL_PROGRAM_FILES (FOLDERID_ProgramFiles)

Version 5.0. The Program Files folder. A typical path is C:\Program Files.

CSIDL_PROGRAM_FILESX86 (FOLDERID_ProgramFilesX86)

CSIDL_PROGRAM_FILES_COMMON (FOLDERID_ProgramFilesCommon)

Version 5.0. A folder for components that are shared across applications. A typical path is C:\Program Files\Common. Valid only for Windows NT, Windows 2000, and Windows XP systems. Not valid for Windows Millennium Edition (Windows Me).

CSIDL_PROGRAM_FILES_COMMONX86 (FOLDERID_ProgramFilesCommonX86)

CSIDL_PROGRAMS (FOLDERID_Programs)

The file system directory that contains the user's program groups (which are themselves file system directories). A typical path is C:\Documents and Settings*username*\Start Menu\Programs.

CSIDL_RECENT (FOLDERID_Recent)

The file system directory that contains shortcuts to the user's most recently used documents. A typical path is C:\Documents and Settings*username*\My Recent Documents. To create a shortcut in this folder, use [SHAddToRecentDocs](#). In addition to creating the shortcut, this function updates the Shell's list of recent documents and adds the shortcut to the **My Recent Documents** submenu of the **Start** menu.

CSIDL_RESOURCES (FOLDERID_ResourceDir)

Windows Vista. The file system directory that contains resource data. A typical path is C:\Windows\Resources.

CSIDL_RESOURCES_LOCALIZED (FOLDERID_LocalizedResourcesDir)

CSIDL_SENTO (FOLDERID_SendTo)

The file system directory that contains **Send To** menu items. A typical path is C:\Documents and Settings*username*\SendTo.

CSIDL_STARTMENU (FOLDERID_StartMenu)

The file system directory that contains **Start** menu items. A typical path is C:\Documents and Settings*username*\Start Menu.

CSIDL_STARTUP (FOLDERID_Startup)

The file system directory that corresponds to the user's Startup program group. The system starts these programs whenever any user logs onto Windows NT or starts Windows 95. A typical path is C:\Documents and Settings*username*\Start Menu\Programs\Startup.

CSIDL_SYSTEM (FOLDERID_System)

Version 5.0. The Windows System folder. A typical path is C:\Windows\System32.

CSIDL_SYSTEMX86 (FOLDERID_SystemX86)

CSIDL_TEMPLATES (FOLDERID_Templates)

The file system directory that serves as a common repository for document templates. A typical path is C:\Documents and Settings*username*\Templates.

CSIDL_WINDOWS (FOLDERID_Windows)

Version 5.0. The Windows directory or SYSROOT. This corresponds to the %windir% or %SYSTEMROOT% environment variables. A typical path is C:\Windows.

Flags

CSIDL_FLAG_CREATE (KF_FLAG_CREATE)

Version 5.0. Combine with another CSIDL to force the creation of the associated folder if it does not exist.

CSIDL_FLAG_DONT_UNEXPAND (KF_FLAG_DONT_UNEXPAND)

Combine with another CSIDL constant to ensure the expansion of environment variables.

CSIDL_FLAG_DONT_VERIFY (KF_FLAG_DONT_VERIFY)

Combine with another CSIDL constant, except for [CSIDL_FLAG_CREATE](#), to return an unverified folder path with no attempt to create or initialize the folder.

CSIDL_FLAG_NO_ALIAS (KF_FLAG_NO_ALIAS)

Combine with another CSIDL constant to ensure the retrieval of the true system path for the folder, free of any aliased placeholders such as %USERPROFILE%, returned by SHGetFolderLocation. This flag has no effect on paths returned by SHGetFolderPath.

CSIDL_FLAG_PER_USER_INIT

CSIDL_FLAG_MASK

A mask for any valid CSIDL flag value.